



ARWA

(Advanced Regulatory Wiki Application)

Second Edition

*Omani Environmental Regulations
International References Documents
SEU Guidance Notes*

*Issued by the Sohar Environmental Unit
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1. RD 46/1995 Law of Handling and Use of chemicals

Royal Decree No. 46/95 Issuing the Law of Handling and Use of Chemicals.

We, Qaboos Bin Said, Sultan of Oman.

After perusal of Royal Decree No. (26/75) issuing the Law Regulating the Administrative Structure of the State and its Amendments.

And Royal Decree No. (82/77) concerning the Law of the use and handling of explosives in the Sultanate and its Amendments.

And Royal Decree No. (10/82) issuing the Law of the Conservation of Environment and Prevention of Pollution and its Amendments.

And Royal Decree No. 76/91 issuing the Law of Civil Defence.

And according to the requirements of the public interest.

Have Decreed:

Article (1): The provisions of the attached Law of Handling and Use of Chemicals shall come into effect.

Article (2): The Minister of Regional Municipalities & Environment shall issue the Regulations and Decisions necessary to enforce this Law.

Article (3): The government and non-government bodies and individuals, who are governed by the provisions of this Law, shall be committed to adjust their status according to these provisions within a period of not more than one year from the date of enforcement. The Minister of Regional Municipalities Environment may extend this period for not more than another year, if necessary.

Article (4): Any provisions contradicting or contravening this Decree shall be considered void.

Article (5): This Decree shall be published in the Official Gazette and shall come into force as from the date of publication.

Qaboos Bin Said

Sultan of Oman.

Issued on: 22nd. Rabie Al-Than, 1416 H.

C.T: 18th September 1995.

Published in the Official Gazette No. (560) issued on
1.10.1995.

The Law of Handling and Use of Chemicals

Article (1): In compliance with the provisions of this Law, the words and terms used herein shall have the following meanings unless otherwise stated.

Law:	The Law of Handling and Use of Chemicals.
Minister:	The Minister of Regional Municipalities and Environment.
Concerned Agency:	Any government agency authorized to supervise or license activities involving the use of chemicals.
Committee:	The Permanent Committee for Chemicals.
Department:	Department of Chemicals at the Ministry of Regional Municipalities & Environment.
User:	Any natural or juridical person who has obtained a permit from the Department to handle or use hazardous chemicals.
Chemical:	Any substance, enlisted, as hazardous material according to the International classification of hazardous material, which affects the public health and the environment. Explosives defined in the referred Royal Decree concerning the use and handling of explosives are excluded.
Label:	Any written, printed or drawn information attached to the chemical container which illustrates its composition, properties and instructions for use.
Licensed place:	Any place, registered at the Department, to keep or store chemicals with the aim of distributing, handling, manufacturing, unloading, diluting, mixing, or preparing chemicals.
Inspector:	The officer appointed by the Minister who is authorized to enter licensed places and inspect registers to ensure the proper enforcement of the Law, and the Regulations and Decisions issued to implement its provisions and to stop any violations.

Article (2): Manufacture, import, export, transport, storage, handling, and use of any chemical shall comply with the provisions of this Law, and the Regulations and Decisions issued thereof.

Article (3): A Permanent Committee for Chemicals shall be set up by a Decision from the Minister, under the chairmanship of the Undersecretary for Environment Affairs and members at the level of Director General from Royal Oman Police, Ministry of Regional Municipalities and Environment, Ministry of Defense, Ministry of Agriculture and Fisheries, Ministry of Health, Ministry of Oil and Gas, Ministry of Commerce and Industry, Ministry of Water Resources, Sultan Qaboos University, and any other agency defined by the Minister.

Article (4): The Committee shall have the following responsibilities:

- Draft Regulations and Decisions required to enforce the Law in accordance with the Sultanate's prevailing enactments and those internationally applied, and follow up their implementation.
- Develop the procedures and conditions of manufacturing, importing, exporting, transporting, storing, handling and use of chemical, as well as the disposal of their waste, in coordination with the concerned agencies.
- Based on recommendation of the Department, investigate and suspend the user from continuing his activities in manufacturing, importing, exporting transporting, storing, handling or using any chemical to avoid any hazard threatening public health and the environment.

The Department shall notify the user and the concerned agency of the decision to suspend and the reasons upon which such a decision was taken.

The user may appeal to the Minister against the decision within fifteen days from the date of written notification. The submittal of the appeal shall not result in suspending the decision. Decision on the appeal shall be taken within a period not exceeding thirty days from date of submission and the Minister's Decision shall be final.

Article (5): The Committee shall convene at least biennially at the request of the chairman and whenever necessary, and a quorum shall be the attendance of two thirds of the members. The Committee can seek the assistance of experts who may be invited to attend by not vote.

- Article (6):** The Ministry shall establish a Department for chemicals entrusted with the following:
- a) Implement the Regulations and ministerial decisions issued to enforce the provisions of this law.
 - b) Conduct tests on chemicals to determine their toxicity and extent of hazard.
 - c) Before the issuance of the license by the concerned agencies, and without prejudice to the authorities of the concerned government bodies in determining the type of chemical to be used, issue Permits to use, manufacture, import, export or handle hazardous chemicals, according to the stated procedures and decisions issued to enforce this law.
 - d) Issue Permits, for experimental and scientific research purposes, for any hazardous chemical to research centers, scientific and educational institutions and labs.
 - e) Prepare inventories and registers for chemicals, as well as their users; collect related information and data, in addition to amending or cancelling the register, so as to allow the concerned agencies to examine and inspect them.
 - f) Classify chemicals according to local and international classification.
 - g) Liaise and coordinate locally and internationally to exchange data and decisions pertaining to handling of chemicals.
 - h) Establish a database for chemicals.
 - i) Provide technical advice to government and private bodies regarding chemicals.
 - j) Develop guidelines, programs and rules for staff training in the field of chemicals and promote public awareness for the safe use of chemicals.
 - k) Check, through inspectors, that all legal conditions are fulfilled, chemical registers examined at site and stop violations of the provisions of the Law and the regulations and decisions implementing it.
 - l) Present periodic report to the Committee on the Department's activities, list of users registered and permitted to handle hazardous chemicals or any other matters to be submitted to the Committee.
 - m) Prepare agenda and make arrangements for the committee meetings, follow up the implementation of its decisions and coordinate between the Committee and the other agencies.

Article (7): The Minister shall issue in coordination with the Ministry of Finance and Economy, decisions on fees to be collected for the implementation of this law.

Article (8): License shall be obtained, from the Directorate General of Civil Defence -R.O.P., for transporting or storing any hazardous chemical according to its Regulations issued in this respect.

Article (9): It is not permissible to import, export, transport, store or handle any hazardous chemical unless packed in special containers according to the approved and recognized specifications in the Sultanate.

Article (10): Government and non-government agencies shall provide the Department with all available information required concerning hazardous chemicals in use.

Article (11): The user of hazardous chemicals shall be committed to dispose of hazardous chemical waste empty containers and any substance in violation of the Law, at his expense and under the supervision of the Ministry, as per the Regulations in force.

Article (12): The user of hazardous chemicals shall comply with the following:

- a) Take necessary precautions to protect the working staff against health hazards and work risks and provide them with complete personal protective kits. They must be fully aware of and trained in the best possible means of handling and confronting the risks of chemicals according to the Regulations issued in this respect.

Prepare registers, indicating names of persons, chemicals, quantities, numbers, extent of hazard and methods of handling. These shall be submitted to the staff of the Department whenever requested.

Article (13): Without prejudice to any more severe punitive measures stipulated by any other law, any offender to provisions of this law, or the Regulations or Decisions issued thereof, shall be jailed for a maximum period of three years and a fine not exceeding five thousand Omani Rials or one of these two penalties. Chemicals in violation shall be confiscated and if the offence is repeated the penalty shall be doubled.

2. RD 29/2000 Law of protection of water resources

Sultan Decree No. 29/2000 Promulgating the Law of Protection of Water Resources

We, Qaboos bin Said

Sultan of Oman

Having considered the Basic Statute of the State promulgated by Sultani Decree No.1 01/96;

And Sultani Decree No. 82/88 pursuant to which stored water is considered national wealth;

And Sultani Decree No. 3/94 which transfers the responsibilities and competencies relating to dams

and falaj to the Ministry of Water Resources;

And in accordance with the requirements of the public interest

Have decreed as follows

Article (1): The attached law shall apply for the protection of water wealth.

Article (2): The Minister of Water Resources shall issue the necessary regulations and decisions for the implementation of the provisions of the attached law and until promulgation of the same the existing regulations and decisions shall apply to the extent that they are not contradictory to the provisions thereof.

Article (3): Sultani Decree No. 82/88 is repealed and also whatever contradicts the attached law or is contrary to its provisions is repealed.

Article (4): This Decree shall be published in the Official Gazette and shall come into force from the date of publication.

The Law of Protection of water resources

Article (1): In the application of the provisions of this law, the following words and phrases shall have the meaning mentioned against each of them unless the context requires otherwise:

The Ministry: The Ministry of Water Resources

The Minister: Minister of Water Resources

Water: Underground water and surface water -except sea water -including well water, valleys, falaj, dams, springs and rain water and other water stored or produced in water establishments.

Water pollution: Any physical, chemical or organic change in the nature of water which makes it damaging to public health.

Protection area: The area specified by the Ministry for the protection of water resources and public fields' water supply from pollution, exhaustion and underground passage of salt water.

Water stored: Geological layer of rocks or dregs which contain water.

Article (2): Water in the Sultanate of Oman is considered national wealth, and its utilisation is subject to the rules to be laid down by the Ministry for the organisation of its utilisation in a manner which best serves the comprehensive development plans of the state. Such rules must particularly specify the protection areas and those activities which are prohibited inside them without a licence, and the rules regulating the digging of wells, maintaining the same, utilising their water, maintenance of falaj and their installations and the rules and procedure for control of water in order to discover any water pollution.

Article (3): The Ministry must take necessary procedures and arrangements to prevent the occurrence of any deterioration in the quantity and quality of water in any area in the Sultanate, and in the event of occurrence of the same, it must take whatever steps are necessary to minimise the deterioration and remedy the same.

Article (4): Government departments must provide the Ministry with whatever particulars are available with them regarding:

- a) The quantity of water consumed in utilisation within its competencies
- b) Its requirements of necessary water for the implementation of its plans and future projects.

Article (5): It is prohibited to undertake any work which negatively affects the underground supply of the water table, whoever the owner of the land in which the table exists might be. And it is not permissible to undertake any work which may change the direction of a falaj or its uses without a licence from the Ministry.

Article (6): Those staff members who may be specified by decision from the Minister shall have the capacity of judicial control in the application of the provisions of this law and its implementing regulations and decisions.

Article (7): Licensing fees for companies and individuals for digging any wells or undertaking any works thereupon including maintenance, deepening, widening, fixing of bumps or desalination units or replacing the same shall be fixed by a decision from the Minister, as well as fees for issuing certificates of digging and registration, and the fees for registration of contractors working in the field of digging wells or undertaking any works thereupon and the fees for renewal of such registration. Whoever is receiving a salary in accordance with the Social Guarantee Law shall be exempted from the fees.

Article (8): Without prejudice to any stricter punishment provided for in any other law, whoever violates the provisions of Article 2 and the implementing regulations and decisions and Article 5 of this law shall be punished by imprisonment for a period not more than one year and a fine which shall not exceed RO 2000 or by any of the mentioned penalties. The penalty shall be doubled in case of repetition of the violation.

3. RD 114/2001 Law on Conservation of the Environment and Prevention of Pollution

Royal Decree No. 114/2001

Issuing the law on conservation of the environment and prevention of pollution

We, Qaboos Bin Said, Sultan of Oman,

After perusal of the basic law of the state issued by the Royal decree No.101/96, and

The law on conservation of the environment and prevention of pollution issued by the Royal Decree No.101/96, and

The Royal Decree No.86/2001 specifying the responsibilities of the Ministry of Regional Municipality, Environment and Water Resources and approving its organizational chart, and

In accordance with the exigencies of the public interest

Have Decided:

- Article (1): The provisions of the attached law on conservation of the environment and prevention of pollution shall have effect.
- Article (2): The above-mentioned Royal Decree No. 10/82 and all that contravenes the attached law shall be cancelled.
- Article (3): The Minister of Regional Municipalities, Environment and Water Resources shall issue regulations and decisions necessary for enforcement of the attached law, until then the current regulations and decisions shall remain applicable in such a manner that shall not conflict with the provisions of this law.
- Article (4): This Royal Decree shall be published in the Official Gazette and shall come into force from the date of its issue.

Qaboos Bin Said

Sultan of Oman.

Issued on: 28 Shaban, 1422 H

Corresponding to 14 November 2001

Chapter I
Definitions and general provisions

Article (1): In the application of this law the following words and expressions shall have the meaning assigned to each of them unless the context otherwise requires:

The Ministry:	The Ministry of Regional Municipalities, Environment & Water Resources.
The Minister:	The Minister of Regional Municipalities, Environment & Water Resources.
The Directorate General:	The Ministry's Directorate General of Environmental Affairs/Directorate General of Regional Municipalities, Environment & Water Resources in the concerned Governorate/Region.
The Environment:	The setting in which human beings live, including living organisms such as man, animals and plants as well as the surrounding air, water, soil and solid, liquid, gaseous or radioactive substances in addition to man-made stationary or non-stationary establishments.
Sustainable development:	Linking environmental conditions with planning and development policy in order to satisfy needs and aspirations of the present generation without endangering future needs and requirements.
Air:	The mixture of gases to which living and non-living organisms are exposed in public, private or working place.
Water:	Includes: a) Internal surface and/or ground water within the territories of the Sultanate of Oman whether such water is fresh, saline or blackish. b) Marine water of the Sultanate's exclusive economic zone i.e. the water belt extending 200 nautical miles from the base line from which the width of the regional sea is measured, subject to the provisions of the Royal Decree No. 15/81 concerning the regional sea, the continental shelf and the economic exclusive zone beyond the two hundred nautical miles.
Oil:	All kinds of crude oil and its derivatives including liquid carbohydrates, lubrication oil, refined oil, furnace oil, tar and other substances extracted from oil and its waste.
Wildlife:	All kinds of living organisms such as plants, animals, bacteria, fungi and others exist within or outside their habitat.
Nature conservation areas:	Areas designated for the conservation of one or more species of wildlife particularly endangered ones whose removal, hunting, transporting or damaging is prohibited. These areas shall also include archaeological sites or natural sceneries and public natural parks.
Environment protection:	Conservation of the components of the environment and its properties, natural balance and ecosystems and preventing its deterioration or pollution through reduction and control of such pollution and conservation of natural resources, rationalization of their use and protection of living organisms particularly the rare and endangered ones.
Environmental pollution:	Alteration or impairment of the properties or quality of the environment through direct or indirect introduction of any polluting substances or factors posing danger on human or wild life health or causing damage to the ecosystems rendering them unsuitable for their intended purposes.
Deterioration of the environment:	Environmental impacts, which minimize its value, change its nature or deplete its natural resources.
Environmental damage:	Damage to the environment, which affects, directly or indirectly, its properties, functions or minimizes its capacity.
Environmental disaster:	Accidents resulting from natural factors or human act causing pollution, deterioration of the environment or serious damage to the living organisms or establishments.
Environmental pollutants:	Solid, liquid, gaseous substances or fumes, vapors odors, noise, radiation, heat, vibration or others which directly or indirectly lead to environmental pollution.
Discharge:	Direct or indirect dumping, leaking emitting pumping, pouring, discharging or dropping of any environmental pollutants into air, water or soil.
Discharge specifications:	The rate of concentration of any pollutant contained in the discharged matter during a specific period or operation cycle.

Pollution Standard:	The maximum discharge level, which should not be exceeded during a specific period of time.
Final point of discharge:	The point at which pollutants from the area of work are discharged and after which the owner cannot control the discharge resulting from his activities.
Reception facilities:	Installations equipment and docks designated for receiving storage, settlement, treatment and discharge of pollutants or ballast water, as well as installations provided by companies involved in oil loading and unloading or other agencies responsible for ports and waterways.
The owner:	Any natural or juristic person (public, private, natural or foreign) owning or leasing a source or an area of work or being responsible for operation or management of the same.
Source:	The process or activity, which may directly or indirectly, causes environmental pollution.
Area of work:	A terrestrial, coastal or afloat site in ports or in exclusive economic zone of the Sultanate where one or more sources of pollution exist.
Safe area:	The area separating the source or area of work from ecosystem, which requires a special protection. The Ministry shall determine such area and the activities to be practiced therein.
Environmental Inspector:	Every employee appointed by the Minister to enforce the provisions of this law and its implementing regulations and decisions.
Marine structures:	The facilities which work or prepared to work in navigation including oil tankers, commercial and warships, any afloat marine structures of any type or those moving on air cushions or immersed in water and every stationary or mobile facility constructed on the coast or water surface with the aim of practicing any commercial, industrial, tourist, scientific or military activity.
Natural resources:	Non-man made living or non-living components of the environment.
Environmental permit:	The approval issued by the concerned authority in the Ministry including the permission given to the owner to practice a certain activity after ensuring its environmental integrity.
Environmental impact assessment study:	A study conducted to determine whether the source or area of work would have any adverse impact on the environment including measures required to deal with such impact.
Hazardous substance:	The natural or manufactured substances with harmful, toxic, explosive or combustible properties or those capable of causing corrosion or having radiation activity of more than 100 Becquerels /gm. occurring in the environment in such quantities or concentrations that may cause damage to the characteristics of the environment, human or wildlife health or affect embryos.
Waste:	The various types of refuse resulting from industrial, mining, agricultural, handicraft, domestic, hospitals, public establishments or other operations, which are disposed, re-cycled or neutralized in accordance with the provisions of the laws in force in the Sultanate.
Oil mixture	Any mixture containing any fraction of oil.
Hazardous waste:	Waste that maintain its toxic, explosive and combusting properties or its capability to cause corrosion or having radiation activity of more than 100 Becquerels /gm .and which by its nature, formation, quantities or otherwise, poses risks to human health and life or to the environment whether by itself or as a result of its contact with other waste.
Nuclear plant:	Nuclear reactors, nuclear fuel cycle plants, nuclear accelerators and radioactive materials that produce nuclear radiation exceeding 100 Becquerels /gm.
Nuclear waste:	Waste having radiation activity more than 100 Becquerels /gm. which poses risk to human life and health or the environment whether by itself or as a result of its contact with other waste.
Handling hazardous substances and waste:	All operations of moving hazardous substances or waste for the purpose of collecting, transporting, storing, treating, re-using, disposing or re-exporting them, including subsequent care given to their disposal or burial sites.
Dumping:	Includes: <ul style="list-style-type: none"> a) The deliberate disposal of waste or any other materials into the sea from marine structures or aircrafts. b) The deliberate disposal of marine structures or aircrafts into the sea.

Article (2): The Ministry shall represent the Sultanate of Oman in negotiations regarding regional and international environmental conventions and shall have the right to recommend accession or non-accession to such conventions.

Article (3): The environmental inspectors and the persons designated by a decision from the Minister of Justice by agreement with the Minister, shall have judicial powers in respect of enforcement of this law and its implementing regulations and decisions.

Article (4): The Minister shall, after co-ordination with the Ministry of Finance, issue a decision specifying fees payable for obtaining environmental permits issued by the Ministry and the environmental services rendered in accordance with the provisions of this law and its implementing regulations and decisions.

Article (5): Any concerned party may appeal to the Minister against any decision or action taken by the Ministry or the Directorate General within one month from the date of notification of the decision or action or from the date of his certain knowledge of the same.

Chapter two

Rules and Principles to ensure safety of Oman Environment

Article (6) The Ministry shall disseminate environmental knowledge education and awareness among all sectors of the Community. In order to achieve this end, the Ministry has the right to take all actions necessary to manage and protect Oman environment, in coordination with the concerned bodies. Each Government unit shall, within the scope of its jurisdiction, cooperate with the Ministry in implementation of, and abidance by the provisions of this law. The responsibility for conservation and preservation of the environment is the duty of all whether individually or in groups.

Article (7): It is not allowed to use Oman environment for the disposal of environmental pollutants in such quantities and types that may adversely affect its intactness and its natural resources or nature conservation areas and the historical and cultural heritage of the Sultanate. No pollutants shall be disposed of in the natural ecosystems unless in accordance with the regulations and conditions issued by a decision from the Minister.

Article (8): No safe area determined by the Ministry, shall be used for any purpose contradictory to the provisions of this law and it's implementing regulations and decisions.

Article (9): No establishment of any source or area of work shall be started before obtaining an environmental permit confirming its environmental soundness. The permit shall be issued upon an application to be submitted by the owner to the Ministry. The Minister shall issue a decision specifying procedures conditions and rules regulating issue, term and renewal of such permit.

Article (10): The owner shall take the necessary measures and adopt the state-of-the-art techniques, approved by the Ministry in coordination with the concerned bodies, to minimize generation of waste at the source and to use clean production techniques to prevent pollution of the environment and protect its natural resources. The owner undertakes to submit a contingency plan for approval by the Ministry. The plan shall be reviewed periodically.

Article (11): No owner shall, by omission or commission, increase the level of environmental pollution in ecosystems or in nature conservation areas, above the pollution standards and discharge specifications to be specified by a decision from the Minister.

Article (12): The owner is prohibited to discharge, order or allow the discharge of any environmental pollutants, at the final point of discharge of the source or the area of work under his responsibility, unless the levels of such pollutants are equal to or less than the percentage fixed for discharge specifications by the implementing regulations and decisions of this law or within the limits equal to or less than the percentage specified to the owner upon obtaining the environmental permit. Excepted from the provisions of the preceding paragraph, are the cases of discharge to ensure safety of the source or the area of work or to save lives in cases of emergency due to unexpected fault in the operations or equipment of the source or area of work, provided that the owner shall take immediate measures to rectify the fault, inform the Ministry and comply with what has been decided by the environmental inspector.

Article (13): The owner shall immediately inform the Ministry in writing of any discharge that contravenes this law or its implementing regulations and decisions or the issued environmental permit. He shall

also inform the Ministry of any incident leading to pollution or damage of the environment. The owner shall specify reasons and nature of the incident or the incompatible discharge together with the measures taken to rectify the situation and the time required.

The owner shall keep records containing quantities, types and methods of discharge. The Ministry shall have the right to examine these records at any time.

Article (14): The site on which the source or area of work is established, shall have reasonable safe area to ensure that pollutants shall not exceed the allowed limits and that the rate of pollution generated by all sources in the area of work is within the limits allowed by the regulations and decisions issued in implementation of this law.

Article (15): The precautions specified by the regulations and decisions issued in implementation of this law, shall be adopted when various construction works are carried out or upon transportation of the resulting debris or soil or burning of any fuel. The concerned authorities shall ensure comply with such precautions before issue of the permits.

Article (16): The owner of any source or area of work which – according to the basis specified by the Ministry – may constitute an avoidable or curable risk to the environment, shall submit, prior to the application for the environmental permit, a detailed environmental impact assessment study confirming that the benefits of the source or area of work surpass the potential damage to the environment.

The authorities responsible for issue of permits for such sources or areas of work shall stipulate submission of Environmental Impact Assessment study with the documents submitted for obtaining such permits. The cost of such detailed study and the cost of the measures pertaining to mitigation, treatment or control of such impacts, shall be included in the total cost of the source or the area of work. No permit shall be given to practice any activity, which may cause inevitable or incurable damage to the environment.

Article (17): The Ministry shall have the right to take the necessary measures to monitor and control the ecosystems, the natural processes and wildlife species, in the light of which environment conservation policies and methods shall be re-assessed.

Article (18): The owner of any nuclear establishment or any establishment dealing with radioactive materials whether through transportation, storage or usage, shall obtain the prior consent of the Ministry and shall submit for the Ministry's approval, a contingency plan to encounter risks of radioactive pollution. The Ministry shall monitor nuclear radiation in coordination with regional and international monitoring centres as per the procedures to be specified by the Minister.

Article (19): No hazardous waste or substance shall be handled, dealt with or disposed of in the Omani environment without obtaining a permit from the Ministry.

Article (20): No hazardous waste or substances or other environmental pollutants shall be discharged in Wadis, watercourses, groundwater recharge areas, rainwater and flood drainage systems or *aflaj* and their channels. It is also not allowed to use or discharge untreated wastewater in the above-mentioned places. No treated wastewater shall be used or discharged unless a permit to that effect is obtained from the Ministry according to procedures and conditions to be specified by a decision from the Minister.

Article (21): The Ministry shall, in coordination with the concerned bodies, take all measures necessary to conserve soil and combat desertification in accordance with the physical characteristics of the soil and the condition of the area. In this regard it is not allowed to:-

- a) Cut down, uproot or damage any tree, shrub or grass in public forests, without obtaining a permit from the Ministry.
- b) Practice any activity which may damage quantity or quality of the vegetation cover in any area, or which may lead to desertification or deterioration of the natural environment.
- c) Remove stones, uproot trees, shrubs and grass or remove soil or sand from watercourses, beaches, wadis, ponds and water drainage canals and their banks, without obtaining a permit from the Ministry.

Article (22): No waste or any other substances of whatever kind, form or state shall be dumped into the marine environment without obtaining a permit from the Ministry

Article (23): No ship shall discharge oil or oil mixture or any other environmental pollutants in the internal waters or territorial waters or the exclusive economic zone.

Article (24): The owner, captain or person in charge of the ship shall execute the instructions issued by the environmental inspector and shall keep necessary records and data.

Article (25): The owner, captain or person in-charge of any marine structure and those who are responsible for transportation of oil, gas, and environmental pollutants within the territorial waters or the exclusive economic zone, as well as institutions licenced to explore, extract or exploit oil, gas or any hazardous substances whether in water or land, shall immediately notify the Ministry of any oil spill incident. The notification shall specify the circumstances of the incident and type and quantity of spilled substance and the measures taken to stop or control the spillage.

Article (26): Marine structures or aircrafts or institutions undertaking works pertaining to exploration or exploitation of natural resources or any other works, shall not dump waste, whatsoever it is, into the territorial waters or the exclusive economic zone.
Delivery of waste shall take place at the reception facilities or any other places specified by the Ministry after payment of the prescribed fees.

Article (27): The institutions engaged in exploitation of natural resources shall set up controls for optimum exploitation of such resources to ensure their conservation and protection from pollution. Concessions for exploration of oil, gas or any other natural resources shall include provisions that ensure commitment of the contracting parties to observe the provisions of this law and its implementing regulations and decisions.

Article (28): The Minister shall, in cases where the violation leads to a serious danger or harmful effect on the environment or the public health, take the necessary actions to avoid the damage or mitigate its effect and issue a decision to suspend the violator from practicing his activity for a period not exceeding one month. The Minister may renew the suspension decision for another period if the violation continues.

Article (29): Bodies undertaking preparation and implementation of development and land use plans, shall coordinate with the Ministry upon the preparation of such plans and before and during implementation, and shall observe environmental considerations throughout all stages and planning levels, and shall consider environmental planning in all aspects, in order to realize the concept of sustainable development and give priority to conservation of the environment and prevention of pollution.

Article (30): The owner shall undertake monitoring work pertaining to implementation of the provisions of this law and shall keep special records for that and shall submit to the Ministry periodical reports about such monitoring works on periods to be specified by the Minister.

Chapter Three Penalties

Article (31): Without prejudice to any severer penalty provided for in any other law, whoever violates the provisions of articles (7, 9, 11, 12, 13, 15, 16 and 19) of this law shall be punished with fine not less than RO 200 and not more than RO 2000. The fine shall be increased at a rate of 10% for each day as from the fourth day of the violator's notification of the violation.

In the event of continuation of the violation for more than one month, the violator may be suspended from practicing his activity until causes and effects of the violation are removed. Activity in violation shall be removed from the safe area and the competent authorities shall be notified of the same.

Article (32): Without prejudice to any severer penalty provided for in any other law whoever presents false or misleading statements in the application for environmental permit or the application for obtaining the Ministry's approval for establishment of a source or area of work, shall be punished with imprisonment for a term not exceeding six months and with fine not exceeding 5% of the invested capital or either of these two penalties. Moreover the activity may be ceased and the permit may be cancelled.

Article (33): Whoever corrupts or spoils nature conservation areas or wildlife, whether by cutting down, poaching or killing or in any other manner shall be punished with the following:

- a) Imprisonment for a term not less than six months and not exceeding five years and with fine not exceeding RO 5000 and not less than RO 1000 or with any of these two penalties in the event of killing or poaching animals or birds of the first category according to the attached appendix no. (1).
- b) Imprisonment for a term not exceeding three months and with fine not less than RO 100 and not more than RO 1000 or with any of these two penalties in the event of killing or poaching animals or birds of the second category according to the attached appendix no. (2).

- c) Imprisonment for a term not exceeding one month and with fine not less than RO 10 and not more than RO 500 or with any of the two punishments in the event of cutting trees or poaching animals or birds not mentioned in clauses (a) and (b) above.

The Minister may issue a decision to amend or add to the mentioned animals or birds categories. In all cases seized animals, birds, tools and instruments used in committing the violation shall be confiscated and the Minister may order that seized items be sued or disposed of in the manner he deems fit.

The preceding punishments shall apply even if the crime against animals and birds is committed after they have been released or moved outside the boundaries of the nature reserve.

Article (34): Without prejudice to any severer penalty provided for in any other law, whoever contravenes the provisions of Article (20) of this Law, and every owner who fails to notify the Ministry of the occurrence of an environmental disaster or incompatible discharge by reason pertaining to his source or area of work, shall be punished with imprisonment for a term not less than one month and not exceeding one year or with fine not less than RO 500 and not more than RO 50000 or with any of the two penalties.

Article (35): Without prejudice to any severer penalty provided for in any other law, whoever contravenes the provisions of article (8) of this law shall be punished with fine not less than 5% and not more than 10% of the invested capital.

Article (36): Without prejudice to any severer penalty provided for in any other law, whoever prevents or cause to prevent the environmental inspector from exercising the powers vested in him, shall be punished with imprisonment for a term not exceeding three months and with fine not more than RO 500 or with any of the two penalties and the court may order close of the source or area of work for a period not exceeding one month.

Article (37): Without prejudice to any severer penalty provided for in any other law, whoever contravenes the provisions of article (18) of this law shall be punished with imprisonment for a term not exceeding three years and not less than six months and with fine not less than RO 5000 and not more than RO 50000 or with any of the two penalties.

Whoever contravenes the provisions of articles 22 and 26 of this law shall be punished with imprisonment for a term not exceeding two years and not less than one month and with fine not less than RO 5000 and not more than RO 50000 or with any of the two penalties.

Article (38): Without prejudice to any severer penalty provided for in any other law, whoever contravenes the provisions of article (21) of this law, shall be punished with imprisonment for a term not less than 10 days and not exceeding three months and with fine not less than RO 500 and not more than RO 5000 or with any of the two penalties. The penalty shall be doubled if the same violation is repeated.

Article (39): Whoever contravenes the provisions of article (23) of this law shall be punished with imprisonment for a term not less than one month and not exceeding two years and with fine not less than RO 500 and not more than RO 50000 and the ship committed the violation may be seized.

Article (40): Whoever contravenes the provisions of articles 24, 25 and 27 of this law shall be punished with fine not less than RO 1000 and not more than RO 5000. The penalty shall be doubled for repetition of the same violation.

Article (41): Without prejudice to the penalties provided for in this law, whoever causes environmental damage shall undertake to remove it at his own expense and shall reinstate the environmental status in addition to payment of necessary compensation. In the event of failure of the violator to remove reasons of the violation within the specified period, the Ministry shall have the right to arrange for removal of the same at the expense of the violator.

Article (42): Without prejudice to any severer penalty provided for in any other law, whoever disposes of nuclear waste in Oman environment shall be punished with imprisonment for life and with fine not less than RO 100,000 and not exceeding RO 1,000,000 or with any of the two penalties. The violator undertakes to remove causes of the violation and reinstate the environmental status at his own expense in addition to payment of the compensation specified in this regard.

Article (43): The Minister may specify in the regulations and decisions he issues on the Ministry's exercising of its powers provided for in this law, administrative and penal punishments for contravention of the provisions of this law. Violations shall be administratively and judicially dealt with in accordance with laws

and regulations in effect provided that fine shall not exceed RO 5000 and without prejudice to the penalties provided for in Chapter three.

Appendix No. (1)

Animals and Birds of the first category

S. No.	Scientific Name	Common Name
1	Oryx Leucoryx	ARABIAN ORYX
2	Panthera pardus	ARABIAN LEOPARD
3	Hemitragus jayakari	ARABIAN TAHAR
4	Gazella subgutturosa	REEM (SAND GAZELLE)
5	GAZELLE gazelle	ARABIAN GAZELLE (IDMI)
6	Capra aegagrus	NUBIAN IBEX
7	Felis caracal	CARACAL LYNX
8	Chelonia myds	STRIPED HYAENA
9	Felis silvestris	WILD CAT
10	Canis lupus	ARABIAN WOLF
11	Mellivora capensis	HONEY BADGER
12	Felis margarite	SAND CAT
13	Vulpes ruepplii	SAND FOX
14		HARE
15	Eretmochelys	HAWKSBILL TURTLE
16	Chalmydotis undulata	HOUBARA BUSTARD

Appendix No. (2)

Animals and birds of the second category

- Red Fox
- Green Turtle
- Loggerhead Turtle
- Olive Ridely Turtle
- All falcon, owl, vulture, eagle, flamingo, pelican, gull and tern species
- All mammal species not mentioned in Appendix no. (1) except tamed mammals

4. RD 115/2001 Law on protection of source of potable water from pollution

Royal Decree No. 115/2001

Issuing law on Protection of sources of potable water from pollution

We, Qaboos bin Said

Sultan of Oman

After perusal of the State's Basic Law issued by the Royal Decree No. 101/96 and The Royal Decree No. 66/2001 on determination of the responsibilities of the Ministry of Regional Municipalities, Environment & Water Resources and approved by of its Organizational chart, and the Law on Protection of the Environment and Pollution Control issued by the Royal Decree No. 114/2001 and in accordance with the exigencies of the public interest.

Have decided,

- Article (1): The provisions of the attached law shall have effect on protection of sources of potable water from pollution.
- Article (2): The Minister of Regional Municipalities, Environment and Water Resources shall issue the regulations and decisions implementing this law. Until then the current regulations and decisions shall remain applicable in such a manner that shall not conflict with the provisions of this law.
- Article (3): This decree shall be published in the Official Gazette and shall come into force from the date of its issue.

Issued on 28 Shaaban 1422 AH
Qaboos bin Said
Sultan of Oma
Corresponding to: 14 November 2001

Law on Protection of sources of potable water from pollution

Article (1): In application of this law, the following words and expressions shall have the meanings assigned to each of them unless the context otherwise requires.

The Ministry:	The Ministry of Regional Municipalities, Environment and Water Resources.
The Minister:	The Minister of Regional Municipalities, Environment and Water Resources.
Water Protection:	Maintaining safety and natural balance of components and characteristics of water and prevention of deterioration of its quality or reduction and control of water pollution.
Sources of potable water:	Includes rainwater, surface and ground water, whether fresh saline or brackish, within the territory of the Sultanate.
Discharge level:	Percentage of concentration of pollutants in the discharge according to the specified standards of pollution.
Pollution standard:	The maximum discharge level which should not be exceeded during specific period.
Water Pollution	Any change or alteration to the quality or chemical, physical or biological characteristics of water through direct or indirect introduction of any polluting element or material which may damage or endanger health of human beings or the environment or render water unsuitable for any of its intended uses.
Water Pollution Inspector:	Any employee appointed by the Minister in order to enforce the provisions of this law and its implementing regulations and resolutions.
Water Pollutants:	Liquid, solid, gaseous, radiation or any other material, which leads directly or indirectly to water pollution.
Discharge:	Direct or indirect dropping, leakage, emission, pumping, pouring discharging or dumping any water pollutants in soil or water.
Protection zones of sources potable water:	Zones specified by the Ministry to prevent water pollution.
Owner:	Any natural or juristic person, whether public or private, national or foreign, owning or leasing a source or area of work or being responsible for management or operation of the same.
The Source:	The operation of the activity, which may directly or indirectly lead to water pollution.
Area of work:	The site in which there is one source or more.
Waste water:	Liquid wastes discharged from any household, commercial, agricultural, industrial or laboratory uses or any other uses.
Treated waste water:	Waste water after being treated in a wastewater treatment plant.
Sludge:	Liquid, solid or semi-solid material resulting from treatment of wastewater.
Treated sludge:	Sludge which has been suitably treated in order to be re-used or disposed of in accordance with this law.
Wastewater Treatment Plant:	A single integrated unit or several different units for treatment of wastewater through physical, chemical or biological methods or any other method in an open or partially closed system.
Final point of discharge:	The point at which the pollutants are disposed of from the source or the area of work, and after which the owner cannot control the discharge resulting from his activities.
Septic Tank:	Any structures designed to treat household effluent by integrated settlement and anaerobic biological degradation.
Holding tanks:	Any structures designed to hold effluent without any leakage, seepage or overflow of the effluent into the surrounding environment.
Soakaway:	Any pits or any other subsurface system constructed for seep away of treated household effluent into the ground by permeability.
Wastes:	The various types of refuse resulting from industrial, mining, agricultural, artisinal, domestic, hospitals, public establishments or

Treatment of wastes:	other operations which are disposed, recycled or neutralized in accordance with the provisions of the laws in force in the Sultanate. Any natural, physical, chemical or biological process applied to wastes in order to alter their properties in a way that prevents or reduces their harmful effects or renders them more suitable for re-use in part or whole.
Sanitary landfill:	Any site licensed by the Ministry for disposal of non-hazardous solid waste.
The concerned authority:	The authority responsible for day-to-day work and management of collection and disposal of non-hazardous solid wastes.
Wastes recycling:	The selective controlled and beneficial separation of wastes components at or after the point of origin.
Non-household liquid wastes:	Liquid wastes out flowing out of any site used partially or wholly for industrial, agricultural, commercial, constructional or research purposes or any other purposes, save household wastewater.
Hazardous waste:	Waste that maintain its toxic properties or susceptibility to explosion or combustion or their ability to cause corrosion or having radiation activity of more than 100 Becquerels/gm and which by their nature, formation, quantities or otherwise pose risks to human health and life or to environment and water, whether by itself or as a result of contact with other waste.
Institutions:	Public or private buildings such as schools, colleges, universities and offices, save factories and hospitals.
Population Equivalent:	The estimated number of population discharging domestic effluent equivalent in its organic load to that of the effluent discharged by non-residential premises. For design purposes, the population equivalent shall be calculated by dividing the daily biochemical oxygen demand (in grams) by 60 or the daily volume (in litres) by 180 assuming that the population equivalent is the larger of the two figures so calculated.

Article 2): The Ministry shall assume the powers stated in this law and shall have the right to take all measures necessary to maintain safety of sources of drinking water and protect them from pollution.

All concerned parties are required to cooperate with the Ministry in implementing the provisions of this law.

Article (3): The Ministry shall, in coordination with concerned bodies, specify zones of protection of sources of potable water from pollution, and the activities prohibited to be practiced within such zones, which may pollute water and its sources.

The Ministry shall also, specify terms, specifications and requirements of maintaining safety of drinking water and its sources, protection from pollution and conformity to the standards. The Ministry shall monitor the implementation of the same.

Article (4): Owners of wells, water tankers and distribution networks, shall abide by hygienic and environmental conditions stipulated by the Ministry in coordination with the concerned bodies. Such water shall be in conformity with national standards for potable water.

It is not allowed to sell potable water or to construct networks pertaining thereto, unless the necessary environmental permits are obtained in accordance with the rules and principles specified by the Minister.

Article (5): The owner undertakes to apply the best technical and scientific methods approved by the Ministry to prevent, discharge of environmental pollutants or to treat them or reduce their effect on water from all sources (surface or underground water or rain water), subject to the provisions of article (3) of this law.

Article (6): The Ministry shall approve all private laboratories conducting tests of potable water and treated wastewater and shall set up the necessary rules. Test results issued by laboratories not approved by the Ministry shall not be accepted.

Article (7): Construction of septic tanks connected to holding tanks or soakaways shall be allowed to serve institutions and houses discharging domestic effluent with an equivalent population less than (150) according to appendix no. (2) attached to this law. Large institutions shall be served by sewage treatment plants according to appendix no. (1) attached to this law.

Article (8): Non-household effluent shall not be discharged in sewage networks unless it is treated in order to be in conformity with the specifications stated in appendix no. (3) attached to this law. No sewage water or any other water pollutants shall be discharged in rainwater drainage networks.

Article 9): Solid non-hazardous waste shall only be disposed of in sanitary landfills licensed by the Ministry. No solid non-hazardous waste shall be mixed with any category of hazardous waste at any stage.

Article 10): The concerned authority shall obtain from the Ministry, a licence for its sanitary landfill, which will be designed and operated in accordance with the guidelines stated in appendix (4) attached to this

law. The concerned authority shall submit to the Ministry an environmental impact statement about sanitary landfills showing their effect on potable water sources and whether such landfills are used or not.

Article (11): No solid non-hazardous waste shall be disposed of without obtaining a permit from the Ministry. The owner shall submit to the Ministry a detailed statement of the hazardous waste generated by his activities including the method of disposal of such waste and the extent of its effect on sources of potable water.

Article (12): The Minister of Justice shall issue, upon request from the Minister, a decision granting judicial powers to water pollution inspectors and other persons designated by him.

Article (13): Without prejudice to the penalties stipulated by this law, every person who pollutes water shall be bound to remove such pollution at his own expense and pay compensation for the damage. The Ministry shall have the right, in the event of the failure of the violator to remove the violation within the specified period, to arrange for removal of the violation at the expense of the violator.

Article (14): After coordination with the Ministry of Finance, the Minister shall issue a decision fixing the fees payable against obtaining permits pertaining to protection of sources of potable water from pollution and the services rendered by the Ministry in accordance with the provisions of this law and its implementing regulations and decisions.

Article (15): The Minister, in cases where the violation causes serious danger or harmful effect on sources of potable water or public health, shall take the necessary action to avoid the damage or mitigate its effect and to prevent the violator from practicing his activity.

Article (16): No hazardous substances or waste or other water pollutants shall be discharged in aflag and their channels, surface watercourses, wadis or places of underground water recharge.

Article (17): The Minister shall issue a decision specifying procedures for obtaining licences provided for in this law, detailing term of such licences, procedures for renewal and appeal to the concerned bodies against decisions in this regard, in addition to determination of administrative penalties, and fines payable in cases of delay of renewal of licences prescribed by this law, provided that fine shall not exceed RO 1000/-

Article (18): Without prejudice to any severer penalty provided for in any other law, whoever violates the provisions of articles (5 and 11) shall be punished with fine not less than RO 200/- and not more than RO 2000/-. The fine shall be increased at a rate of 10% per day as from the fourth day of the date of notifying the violator of the violation. The violator may be suspended from practicing his activity until the causes and effects of the violation are removed and the concerned bodies are notified of the same.

Article (19): Without prejudice to any severer penalty provided for in any other law, whoever violates the provisions of articles (8,9 and13) shall be punished with imprisonment from one month to three years and with fine not exceeding RO 2000/- or by either of the two penalties.

Article (20): Without prejudice to any severer penalty provided for in any other law, whoever prevents or cause to prevent the water pollution inspector from exercising the powers vested in him shall be punished with imprisonment for a period not exceeding two months and with fine not exceeding RO 1000/- or by either of the two penalties. The penalty shall be doubled if the same violation is repeated.

Appendix No. 1

Conditions for treatment, re-use and discharge of wastewater

1. The discharge of any wastewater or sludge is prohibited without a discharge permit from the Ministry. The Ministry may amend the permit at any time after giving reasonable notice of any change to the owner.
2. Details of wastewater and sludge re-use practices shall be in accordance with tables (b) and (c) attached to this law.
3. Discharge of wastewater shall be in accordance with the drawings attached to the permit.
4. Discharge shall be in accordance with the standards set out in the attached table (a) or in accordance with any other standards contained in the permit.
5. The soil on which sludge may be applied shall be tested by the owner for the metals listed in table (b) and for PH value prior to any initial application. The sludge quality and re-use method shall be in accordance with the standards contained in table (b) or in accordance with any further limits included in the permit.
6. Any sludge having concentrations of metals greater than the limits prescribed in table (b) shall be disposed of in solid waste sanitary landfill or in any other site but only with the prior approval of the Ministry.
7. The owner undertakes to maintain wastewater treatment plant and its accessories and to provide equipment for sampling, measuring and recording quantity and rate of discharge of wastewater and determining its characteristics.
8. The owner shall take samples and readings at intervals to be specified in the permit or as required by the Ministry. All data shall be recorded and submitted at the end of each month to the Ministry in the prescribed form.
9. Wastewater or sludge shall not be discharged sacrificially except in exceptional circumstances where no form of wastewater re-use is possible.
10. No wastewater or sludge shall be transported from the site of its origin without obtaining a prior approval from the Ministry showing transportation method.
11. The Ministry shall have the right to inspect any wastewater treatment plant and to collect samples of wastewater, sludge or soil.
12. These provisions shall not apply to discharge from septic tanks, or to the discharge of wastewater into the marine environment or to the discharge of wastewater or sludge, which contain radioactive matter.

Table (A)

Wastewater standards (maximum allowed limits mg/l unless otherwise stated)

Matter	Standard (see table c)	
	A-1	A-2
Biochemical oxygen demand (5 days @ 20° c)	15	20
Chemical oxygen demand	150	200
Suspended solid	15	30
Total dissolved solids	1500	2000
Electrical conductivity (micro s/cm)	2000	2700
Sodium absorption ratio *	10	10
PH (within range)	6-9	6-9
Aluminum (as Al)	5	5
Arsenic (as As)	0.100	0.100
Barium (as Ba)	1	2
Beryllium (as Be)	0.100	0.300
Boron (as B)	0.5	0.5
Cadmium (as Cd)	0.010	0.010
Chloride (as Cl)	650	650
Chromium (total as Cr)	0.050	0.050
Cobalt (as Co)	0.050	0.050
Copper (as Cu)	0.500	1
Cyanide (as Cn)	0.050	0.100
Fluoride (as F)	1	2
Iron (total as Fe)	1	5
Lead (as Pb)	0.100	0.200
Lithium (as Li)	0.070	0.070
Magnesium (as Mg)	150	150
Manganese (as Mn)	0.100	0.500
Mercury (as Hg)	0.001	0.001
Molybdenum (as Mo)	0.010	0.050
Nickel (as Ni)	0.100	0.100
Nitrogen: Ammonical (as N)	5	10
Nitrogen: Nitrate (as No ₃)	50	50
Nitrogen: Organic (kjeldahl) (as or)	5	10
Oil and Grease (total extractable)	0.500	0.500
Phenols (total)	0.001	0.002
Phosphorus (total as P)	30	30
Selenium (as Se)	0.020	0.020
Silver as (Ag)	0.100	0.100
Sodium (as Na)	200	300
Sulphide (as S)	0.100	0.100
Vanadium (as V)	0.100	0.100
Zinc (as Zn)	5	5
Faecal Coliform Bacteria (per 100 ml)	200	1000
Viable Nematode Ova (per litre)	< 1	< 1

* The effect of sodium on soil absorption

Table (B)

Re-use of sludge in agriculture – conditions for application to land

Metal	Maximum concentration (mg/kg of dry solids)	Maximum Application rate (kg/ha)*	Maximum permitted concentration in soil (mg/kg of dry solids)
Cadmium	20	0.150	3
Chromium	1000	10	400
Copper	1000	10	150
Lead	1000	15	30
Mercury	10	0.100	1
Molybdenum	20	0.100	3
Nickel	300	3	75
Selenium	50	0.150	5
Zinc	3000	15	300
After the spreading of sludge there must be a minimum period of three weeks before grazing or harvesting of forage crops.			
Sludge use is prohibited:			
- On soils whilst fruits or vegetable crops, other than fruit trees, are growing or being harvested.			
- For six months preceding the harvesting of fruit or vegetables, which grow in contact with the soil and which are normally eaten raw.			
- On soils with a PH < 7.0			

* Based on a ten-year average and a soil PH > 7.0

Table (C)

Waste water reuse

Areas of application of standard A-1 and A-2 (Table A)

	See Table (A)	
	A-1	A-2
Crops	Vegetables and fruits likely to be eaten raw within two weeks of irrigation	Vegetables to be cooked or processed. Fruits if not irrigated within two weeks of cropping. Fodder cereal and seed crops
Grass and ornamental areas	Public Parks Hotel Lawns Recreational areas Areas and lakes accessed by the public	Pastures and Areas with no public access
Aquifer re-charge	All aquifer recharge controlled and monitored by the Ministry	
Methods of irrigation	Spray or any other method of aerial irrigation not permitted in areas with public access unless with timing control.	
Any other re-use applications	Subject to the approval of the Ministry	

APPENDIX NO.2

Provisions and Conditions for Septic Tanks, Holding Tanks and Soakaways

Provisions for Septic Tanks

- 1 Septic tanks shall be allowed in institutions and houses discharging domestic effluent having an equivalent population not greater than 150. Larger institutions shall be served by sewage treatment plant as per provisions Annex no.1
- 2 Septic tanks shall only be installed with the approval and consent of the competent municipality, which shall only be given where public sewage system is not available.
- 3 Septic tank capacity shall be calculated according to the procedures set out in Appendix A2 and shall be designed according to the criteria given in Appendix B2.
- 4 Soakaways or Seep away systems shall be designed on the basis of permeability tests to be carried out by the owner at his expense and under the supervision of the competent municipality as described in Appendix 2-C of these regulations. The wastewater from septic tanks shall be discharged into holding tanks which shall be installed according to Appendix 2D. If the ground nature, hydrological conditions and population density so allow, the wastewater from septic tanks will be discharged into permeable soakaways or into a permeable underground construction approved by the concerned authorities.
- 5 Septic tanks shall be constructed by using appropriate materials and in a manner that prevents seepage and keeps them watertight at all times.
- 6 Septic tanks shall always be maintained so as to remain in a fully functional condition.
- 7 Sludge within septic tanks shall periodically be removed when necessary. Disposal shall be in a manner approved by the competent municipality.
8. Septic tanks and soakaways shall comply with the following conditions –
 - a) Always be constructed on land under the legal control of the owner of the premises or on a land to be designated by the competent municipality in coordination with other concerned authority.
 - b) Be located at least 100 meters away from public water sources, wells and *aflaj* or at least 30 meters away from private wells. The competent municipality, in coordination and consultation with the concerned authorities, may change these distances.
 - c) Be located at least 3 meters away from any wall of an occupied building, water pipes and matured trees. The competent municipality in coordination with the concerned authorities may determine the distance which shall not be less than 2 metres.
 - d) Their top levels shall not be higher than the levels of the nearest wellheads so that the pollutants cannot reach such wells. They shall be located in an appropriate position to facilitate future connection when a public sewer becomes available.
 - e) Be located in a position where they can be served by wastewater tanker vehicles and at a distance not more than 20 metres from the nearest tanker access point.
 - f) Be located at least 30 metres from excavation and filling sites.

Provisions for Holding Tanks:

1. Holding tanks shall only be installed with the approval of the competent municipality and shall be designed according to the criteria given in Appendix D-2.
2. The effluent from holding tanks shall be transported by wastewater tankers to a place approved by the competent municipality at such intervals as will ensure there is no overflow of waste from the Holding tanks at any time.
3. Holding tanks shall be constructed by using appropriate materials and in a manner that prevents leakage and keeps them watertight. They shall comply with the following conditions –

- a) Always be constructed on land under the legal control of the owner of the premises or on a land to be designated by the competent municipality in coordination with other concerned authorities.
- Be located at least 15 meters away from any water source and in such a position that the wastewater flow cannot reach such source.
 - Be located at least 1.5 meters away from any wall of an occupied building.
 - Their top levels shall not be higher than the levels of the nearest wellheads, so that the pollutants cannot reach such wells. They shall be located in an appropriate position to facilitate future connection when a public sewer becomes available.
 - Be located in a position where they can be served by wastewater tankers and at a distance of not more than 20 meters from the nearest tanker access point.

APPENDIX A-2

Calculation of Septic Tank Capacity:

The capacity of the Septic tank is calculated on the basis of the volume of the wastewater discharge into it in a normal operation mode.

In case of Houses,

The tank capacity is calculated on the basis of 240 litres per person provided that the capacity shall not be less than 2000 litres.

In case of Institutions,

The tank capacity is calculated on the same basis applied to houses and the number of persons at each institution shall be considered according to the population equivalent.

APPENDIX B-2

Design and measurements of Septic Tanks:

1. Septic tank capacity shall be calculated according to the procedures set out in Appendix A-2.
2. The Septic tank will normally be rectangular where the length of the tank shall not be less than 3 times and not more than 4 times the width and the depth of the tank shall not be less than 1.2 metres for tanks serving 10 persons or less, and not less than 1.5 metres serving more than 10 persons. In special circumstances alternative shapes may be accepted at the discretion of the competent municipality.
3. The Septic tank shall have two compartments. The compartment into which the wastewater feeds shall have twice the capacity of that from which the tank effluent discharges. Alternative designs can be accepted at the discretion of the competent municipality.
4. The two compartments shall be interconnected by means of circular holes of 150 mm diameter or by a square or rectangular slot or slots of 100 mm deep, the top of which shall be 300mm below the water level. The horizontal distance between the pipes or slots shall be 300 mm from the slots center.
5. There shall be 2 tanks operating in parallel when serving population equivalent that exceeds 100 persons. Each tank shall be capable of operating when isolated from the other. Each tank shall have half of the total capacity calculated according to Appendix A-2.
6. The tank floor shall be flat but for large tanks a floor slope of 1:4 is preferred.
7. The inlet to the tank shall consist of a single 'T' shaped dip pipe for tanks not wider than 1.2 meters. For tanks wider than 1.2 meters there shall be two 'T' shaped dip pipes each set at a distance from the side nearest to it equivalent to one quarter of the tank width.
8. The inlet dip pipe shall have a diameter not less than the diameter of the incoming sewer. The top limb shall rise at least 150 mm above the water level and the bottom limb shall extend 450 mm below the water level.
9. The outlet of a tank less than 1.2 metre wide shall consist of a single 'T' shaped dip pipe of 100mm internal diameter set at a level of 25mm below the tank inlet level.
10. For tanks wider than 1.2 metres, a full width outlet weir shall be provided and shall be fitted with a full width steel plate (weir plate set at a distance of 200mm in front of the weir) to hold scum within the tank. The apex of the deflector shall be 150 mm above the water level and the bottom 600mm below the water level. The weir plate shall be painted with anti rust paint.
11. In tanks fitted with weir, full width triangular deflectors of 200mm thick shall be fitted in the internal wall to hold solid waste and shall be 150mm below the bottom of the weir.
12. Drawings of typical Septic tanks are given in Appendix E and F.

13. Septic tanks shall be of reinforced concrete or any other material strong enough to withstand heavy loads such as cars and trucks.
14. Tanks shall be provided with openings of not less than 600mm in dimension to permit easy access to tank inlets, connecting holes, sludge and scum boards and should be provided with covers of heavy duty type in order to withstand heavy traffic and prevent escape of air and they should be approved by the competent municipality.
15. Septic tanks shall be provided with ventilation pipes 100 mm in diameter, to a height not less than 1metre above the roof of the adjoining buildings or above the eaves of buildings having pitched roofs according to the following;
 - No ventilation pipe shall be fixed in a manner that allows escape of foul air into the building.
 - The open end of every ventilation pipe shall be provided with suitable wire netting to prevent the access of extraneous matter whilst not impeding airflow.
 - Ventilation pipes shall be straight except where this is not possible provided that the competent municipality shall approve change of shape.
 - Ventilation pipes shall not be used for drainage of rain water.

Procedure for percolation test and soakaway design**Percolation test:**

In order to determine the area of land required, the following tests should be carried out:

Level the ground and then excavate a hole 300mm square and 600 mm deep. Fill it with water and allow it to seep away. Refill the hole with water to a depth of at least 300mm and observe the time in minutes for this to seep away completely. Divide the time in minutes by the depth in mm of water placed in the holes, and the result is the average time taken for the water to drop 1mm. The effective absorption area can then be calculated from the following table.

Absorption area required for soakaways

Time for test water to fall 25mm (in minutes)	Actual absorption/seep away area required m ² /person	
	Houses	Institutions
2 or less	1.2	0.5
3	1.8	0.6
4.	2.4	0.7
5.	2.8	0.8
10	3.7	0.9
15	4.6	1.2
30	6.3	1.7
60	8.4	2.2

The above figures give the actual area required for absorption, calculated on the basis of the area of the walls and base of the pit.

Remarks:

Percolation test shall be conducted three times at least and the average shall be taken as a basis.

Soakaway shall be either filled with brickbats or large pieces of special materials or may be empty and lined with brickbats or prepared concrete rings (porous or perforated) allowing percolation of wastewater into the surrounding land. The pit should be covered by a slab with a manhole. Appendix (g) shows a drawing of a typical soakaway.

Appendix (D-2)

Design and Measurements of Holding Tanks

1. The holding tank capacity shall be calculated on the basis of storage for a period not less than three days at a rate of 240 liters for each one of the occupants of the building, provided that the tank capacity shall not be less than 3000 liters.
2. The holding tank shall normally be rectangular, but other shapes may be used at the discretion of the competent municipality.
3. The depth of the holding tank shall be between 1.5 and 2 meters.
4. When the number of people exceeds 100 people, two separate holding tanks operating in parallel, shall be used. Each tank shall be controllable in isolation from the other. The capacity of each tank shall be half the capacity calculated according to clause (1) of this appendix.
5. The tank floor shall have a slope of I: 4 towards the suction side and a sump 600x600mm and 300mm depth from the tank floor beneath the opening provided for the suction pipe to facilitate complete emptying of the tank.
6. Tank openings shall be of reinforced concrete or any other materials as stated in clause (10) of appendix B-2. They shall be strong enough to withstand heavy load such as cars and trucks.
7. Holding tanks shall be provided with manholes of dimensions not less than 600mm. Manhole covers shall be heavy-duty type in order to withstand heavy traffic and prevent escape of air and they should be approved by the competent municipality.
8. Ventilation: Holding tanks shall be provided with ventilation pipes as per the conditions stated in clause (5) of Appendix (B). Appendix C shows a drawing of a typical holding tank.

Appendix (3)

Standards for discharge of non-household liquid waste into sewage system

Components	Standards
pH	6-10
Colour	Raises no objection
Biochemical Oxygen Demand (5 days)	Not more than (1000) mg/L
Chemical Oxygen Demand	Not more than (1500) mg/L
Temperature	Not more than 43C0
Suspended solid	Not more than (1000) mg/L
Total dissolved solids	Not more than (3000) mg/L
Grease and oil	Not more than (30) mg/L
Sulphide (expressed in tons)	Not more than (3) mg/L
Sulphate (expressed in tons)	Not more than (500) mg/L
Phenols	Not more than (5) mg/L
Cyanide	Not more than (1) mg/L
Detergents	Not more than (30) mg/L
Alkalinity	Not more than (2000) mg/L
Toxic metals	Not more than (10) mg/L
Aluminum (expressed in tons of Aluminum)	Not more than (10) mg/L
Arsenic (expressed in Arsenic)	Not more than (1) mg/L
Barium (expressed in Barium)	Not more than (10) mg/L
Beryllium (expressed in Beryllium)	Not more than (5) mg/L
Cadmium (expressed in cadmium)	Not more than (2) mg/L
Chromium (total in tons of chromium)	Not more than (2) mg/L
Copper (expressed in tons of copper)	Not more than (1) mg/L
Iron (expressed in tons of iron)	Not more than (5) mg/L
Lead (expressed in tons of lead)	Not more than (2) mg/L
Mercury (expressed in tons of mercury)	Not more than (0.1) mg/L
Nickel (expressed in tons of nickel)	Not more than (2) mg/L
Silver (expressed in tons of silver)	Not more than (0.1) mg/L
Zinc (expressed in tons of zinc)	Not more than (2) mg/L
Calcium Carbide.	Not seen
Radioactive substances..	Not seen
Yeast, sugar, raw tar, crude oil.	Not seen
Hydrogen sulphide and polysulphides.	Not seen
Petroleum spirit, flammable solvents or volatile noxious solvents gases or solids.	Not seen
Unpolluted water (including condensation and cooling water and water drained from roof's of buildings).	Not seen
Insecticides, herbicides, pesticides, fungicides	Imperceptible
Any substance (whether by itself or with any other substance allowed to be discharged into sewage system).	Imperceptible
Any material that may render wastewater harmful or makes formal treatment of such waste difficult.	Imperceptible

Appendix (4)

Guidelines for location, design and operation of sanitary landfills for non-hazardous solid waste

Introduction:

These guidelines are advisory. Although they are not binding, they should not be ignored. Moreover they do not constitute a design pamphlet nor they set up specified rules for the procedures to be followed for optimum operation of waste sanitary landfills, as all details relating to design and operation shall be prepared by competent specialists.

These guidelines apply to all sanitary landfills for disposal of existing or future non-hazardous solid waste as specified by the Regulations for Management of non-hazardous solid waste issued by the Ministerial Decision No.17/93. These guidelines may be amended to suit small rural sites.

Risks of sanitary landfills:

It is well known that waste sanitary landfills involve a lot of environmental risks during and after their operative lifetime. Such risks continue until landfills reach a state of environmental stability. These risks include:-

- Diffusion of disposed of solid waste to cover large space by wind.
- Accumulation and re-production of insects and rodents and spread of the same outside the waste site.
- Congregation of animals and birds, which may lead to spread of diseases.

Other risks arising out of spread of disease either directly from the landfill or by reason of solids dispersed by wind or through people who may catch diseases at the site of the landfill.

Fire and/or explosions inside or outside the landfill by reason of gases generated by buried materials and the possibility of seepage of pollutants into the earth. Such seepage may extend to large distances and may continue for years after close of the landfill. Air pollution as a result of odor emissions from buried materials or by smoke; fumes and smells emitted by sudden combustion.

Pollution of surface and underground water.

There are other less important risks such as:

- Solid waste dropping out of trucks transporting wastes to sanitary landfills.
- Noise generated by trucks moving on the road or activities practiced at the site of the landfill.

Abidance by the guidelines shall reduce the above mentioned health and environmental risks and the dangers arising out of other less important risks.

Standards of the site and its design.

Article (14): of the Regulations for Management of solid non-hazardous waste stipulates that the competent authority or the body responsible for day to day work and management of collection and disposal of solid non-hazardous waste, shall prepare an environmental impact statement for each sanitary landfill or dumping site as designated by the Ministry. The environmental impact statement shall be produced taking into account the “Guidelines for location, design and operation of sanitary landfills for solid non-hazardous waste” as mentioned in the permit

3- The standards and guidelines to be observed upon site selection are:

- 3-1 The site shall be at a reasonable distance from a network of good roads in order to reduce transportation costs and to avoid expenditure in construction of subways. Nuisance to the public by traffic in highways should be avoided.
- 3-2 The site shall be far away from residential areas and other sensitive areas. The site should not be less than two km from residential areas and one km from other institutions.
- 3-3 The site shall be far away from air navigation lines in order to avoid air incidents arising out of congregation of birds in an around the site. The distance preferably be not less than seven km and the approval of the Ministry of Transport and Housing (DG Civil Aviation & Meteorology) should be obtained in this regard.
- 3-4 The site shall be away from wadi courses and flood plains. The approval of water resources should be obtained in this regard.
- 3-5 The site shall be hygienically suitable. The approval of the Ministry of Health should be obtained.
- 3-6 There shall be near the site sufficient quantities of non-organic soil. (Clay, sandy or alluvial soil) to be used for filling up.
- 3-7 A comprehensive survey shall be conducted at the site including soil survey as part of a detailed survey covering technical, topographical, hydrological and geological aspects.
- 3-8 The site should be, as far as possible, on a non-porous or impermeable rocky layer. If this is not possible the site should be lined by impermeable material such as clay soil or plastic or both to prevent seepage of pollutants from the site to the ground water.
- 3-9 Construction of a drainage system to discharge liquids flowing from the site. The system should end with an evaporation bond lined by impermeable material.
- 3-10 Installation of water pollution monitoring network and monitoring programme. Collection of samples and site visits should not be less than twice a year in order to detect the efficiency of the precautionary measures at the site.
- 3-11 Installation of ventilation system including wells and conduits to control release and disposal of gases in a safe way in accordance with experts recommendations and nature of each site in order to avoid generation of toxic or explosive gases and to make use of some of these gases if required.
- 3-12 The site should be outside the area of direct recharge of underground water.
- 3-13 Preparation of a site plan detailing all development activities, premises if any, geographical features and natural resources including water resources such as wells and *afalaj*. The plan shall cover a circle of a radius of 10km around the site.

4- Equipment necessary at the sanitary landfill:

Equipment to be available at the site.

- 4-1 Compactor and earthmover to be available on daily basis.
- 4-2 Bulldozer to remove and distribute the soil required for the daily filling up operation, if this cannot be done by the compactor.
- 4-3 Drilling equipment and tippers for transportation and dispersion of the soil required for filling up operation.
- 4-5 Simple fire fighting equipment

Note: The required equipments differ according to the quantity of solid waste to be disposed of

5- General site plan

The site of sanitary landfill shall include waste receipt area and waste disposal area. The receipt area shall be at the entrance of the landfill. Movement to all directions shall be branched from this point. Disposal area is divided into various stages. One stage shall be operative at a time. The design of each stage shall allow accommodation of waste for a period ranging between 3 to 4 years.

In order to estimate the site capacity it can be assumed that compacted waste, after a certain degree of stability, may occupy a space reaching 1.2 m³/ton while incompact waste may occupy a space of 2 m³/ton.

Moreover, materials used for daily and final, filling up operations must be included in capacity estimation. Ironware and old vehicles shall be stored at a specific area in order to be disposed of in due time.

6- Operation

- 6-1 No waste other than solid non-hazardous waste shall be disposed of in sanitary landfills.
- 6-2 Sludge originating from treated wastewater shall be dried in order to contain at least 20% of dry solid, provided that sludge shall not exceed 15% of the total volume of deposited solids. No sludge shall be accepted or disposed of in the site without obtaining the approval of this ministry.
- 6-3 No carcass or slaughterhouse waste shall be disposed of at the site without obtaining the approval of this Ministry.
- 6-4 No liquid waste or hazardous waste including hospital waste shall be disposed of in sanitary landfills.
- 6-5 The site shall be fenced and the entrance shall be closed in order to avoid random waste dumping and dispersion by wind and to keep animals out of the site.
- 6-6 The entrance should be guarded during work hours and closed by the end of work hours.
- 6-7 All waste received at the site shall be monitored and recorded by type quantity and source.
- 6-8 Site staff shall be given necessary instructions about management of the site and type of solid waste, which may be received at the site.
- 6-9 Large refuse heaps should be covered by nets or temporary fences to avoid dispersion of refuse.
- 6-10 In coming solid waste shall be discharged at front edge of the dump.
- 6-11 Discharged solid waste shall be layered and compacted.

- 6-12 Spaces between waste particles allow penetration of oxygen, which mixes with gases generated by waste decomposition, a process that may lead to internal combustion by heat. Therefore the compactor shall be moved over the waste layers several times so as to crush and compress waste particles.
- 6-13 Depth of each waste layer shall be in the range of 0.5-2.0 metres before compaction. Compacted waste layers shall be covered by a layer of suitable filling material of a thickness of 0.25 meters.
- 6-14 It is not allowed to leave solid waste uncovered after the end of work hours.
- 6-15 Sanitary landfill shall always be kept clean and tidy. Sweeping and scavenging are not allowed in order to avoid health hazards and interruption of operation process. Waste incineration and setting on fire is not allowed at the site.
- 6-16 After final closing of the sanitary landfill, measures necessary to maintain environmental integrity of the site shall immediately be taken in coordination with this Ministry.

6. MD 18/2012 Issuance of the Executive Regulations for Management of Climate Affairs

Ministry of Environment & Climate Affairs

Ministerial Decision No. 18/2012

On Issuance of the Executive Regulations for Management of Climate Affairs

Based on Royal Decree No. 119/2012 on approving the Sultanate membership of some international conventions;

And to the Law of Protecting the Environment and Fighting Pollution No. 114/2001 and to Royal Decree No. 107/2004 on approving the Kyoto Protocol attached to the United Nations Framework Convention on Climate Change;

And to Royal Decree No. 18/2008 on specifying jurisdictions of the Ministry of Environment and Climate Affairs and approval of its organizational structure;

And to Board of Regulations on approving clean development projects under the umbrella of Kyoto Protocol issued by Ministerial Decision No. 30/2010;

And to the approval of the Ministry of Finance in their letter Ref. Finance/T 4020/MTD/6/3/2011 dated 18/4/2011;

It is decided:

Article 1: The Attached Executive Regulations for Climate Affairs Administration shall be effective.

Article 2: Operational projects shall correct their position in line with Articles 7 and 9 of this Executive Regulations within 3 years from the effectiveness of this Executive Regulations.

Article 3: To nullify any that contradicts with the attached Executive Regulations.

Article 4: This Decision shall be published in the Official Gazette and shall come into force from date of publication.

Issued on 4th March 2012

Mohammad bin Salim bin Said Al Tobi

Minister of Environment and Climate Affairs

Article 1 : Definitions ...

Article 2: Without prejudice to the laws regulating the issuance of approval to clean projects under the Kyoto Protocol umbrella mentioned above, the attached Executive Regulations shall apply to projects that causes greenhouse gases as describes in Annexures 1 & 2 here attached, the Directorate shall review those projects periodically in addition to any projects that this Ministry may specify.

Article 3: The owner of any source or site that is classified in the attached Annexures 1&2 here attached shall apply for a Climate Affairs Permit from this Ministry to discharge greenhouse gases emissions.

Article 4: This Directorate of Climate Affairs shall carry out the following tasks:

- 1- To prepare a national Inventory of anthropogenic sourced emissions from all greenhouse gases sources and the discharge of those emissions and to prepare and execute a national program that shall include procedures and precautions to alleviate climate change through treatment of those anthropogenic sourced greenhouse gases sources and to protect and reinforce the discharge and storage of greenhouse gases and take all procedures and precautions to facilitate adaptations of the climate change within the sustainable development programs and plans in the Sultanate.
- 2- To carry out scientific, technological and technical researches and exchange information and reinforce regular monitoring and storage of data of the climate system.
- 3- To review and asses applications for Climate Affairs permits for projects and to ensure completeness of data and documentation for such a permit.
- 4- To carry out field visits to visit projects sites and specify the required conditions for the issuance of a Climate Affairs Permit.
- 5- To ensure that projects will help in alleviating harmful effects and climate change and its treatment and adaptation to ensure the goals and principals of sustainable development in Oman and to work towards transferring good environment practices to the Sultanate.
- 6- To collect and store data of projects in a database.
- 7- The issuance of Climate Affairs Permit for projects mentioned in Annexure 1&2 attached, valid for two years renewable for the same term. Renewal application shall be within one month from its date of expiry.

Article 5: The owner shall apply for a Climate Affairs Permit from the Directorate General of Climate Affairs on a prescribed form attaching all required documentation before applying for a Final Environment Permit from this Ministry.

Article 6: The owner shall collect and store the data and reports and information on his execution of the conditions of the Climate Affairs for his project and shall prepare an anthropogenic sourced emissions from all greenhouse gases sources and shall reinforce discharges and storage of those gases as per the

prescribed forms prepared by the Directorate of Climate Affairs for that purpose and to submit to the Directorate periodical reports on those obligations.

Article 7: The owner shall present to the Directorate a plan to plant the surrounding area of the project and shall choose the appropriate plants that suit the local environment and helps in absorbing the greenhouse gases from the atmosphere, and to specify the plans, procedures and proposed precautions to meet the dangers of severe climate changes, hurricanes, floods, increase in climate temperature and increase of sea level and shall review and update the plan periodically.

Article 8: The owner may use renewable energy sources, scientific methods and appropriate technics to improve efficiency of power consumption and saving during the operation of the project, in line with the basis specified by this Directorate.

Article 9: The Owner shall use techniques and equipment of low emissions of greenhouse gases and shall control hose emissions through periodical maintenance of those equipment.

Article 10: The owner shall notify the Directorate of any changes to the ownership of the project or changes to the operation and production of the project.

Article 11: Fees for issuance of the Climate Affairs Permit shall be RO 100/- for grade 1 projects as outlined in Annexure 2. Fees for issuance of Climate Affairs Permit shall be RO 50/- for projects as outlined in Annexure 3.

Article 12: A fine of RO 10/- shall be posed for every month of delay in renewing the Permit limited to RO 200/-

Article 13: Without prejudice to any tougher penalty as specified in the Environment Protection and Pollution Control Law mentioned above, any violator to this Executive Regulations shall be penalized with a fine not less than RO 200/ for the projects outlined in Annexure 2 and not less than RO 100/- for projects outlined in Annexure 3 limited to RO 5000/-.

Annexure1:

Greenhouse Gasses: CO₂, CH₄, N₂O, HFCs PFCs, SF₆

Annexure 2:

- 1- Chemical Industries
- 2- Oil and Gas Projects
- 2- Power Plants and Transmission of Power
- 4- Petrochemical Industries
- 5- Aluminum Industries
- 6- Pharmaceutical Industries
- 7- Detergents Industries
- 8- Cement Factories
- 9- Smelting furnaces
- 10- Waste incinerators
- 11- Asphalt plants
- 12- Copper Factories
- 13- Oil Refineries
- 14- Urea fertilizer factories
- 15- Ammonia fertilizer factories
- 16- Boilers, furnaces and factories, and smelting furnaces
- 17- Extraction and production of minerals
- 18- Desalination Plants
- 19- Waste hygienic landfills

- 1- Poultry Farms
- 2- Slaughterhouses
- 3- Cattle Pens
- 4- Waste Water treatment plants
- 5- Dairy Production Plants

7. MD 118/2004 Air pollution from stationary sources

Regulation on Controlling Air Pollutants (MD118/2004)

Issued by Ministry of Regional Municipalities, Environment & Water
Resources, Sultanate of Oman
(August 7, 2004)

Article (1): The rules and regulations specified hereunder shall apply for controlling air pollutants released from stationary sources. These rules and regulations supercede those issued under MD 5/86. These rules and regulations come into force effective from the date of publication in the Official Gazette.

Article (2): The owner shall use scientific means to prevent direct or indirect emissions of toxic and hazardous gases and particulates from site, and treat such gases and particulates appropriately to render them harmless and to comply with the ministry's standards.

Article (3): The owner shall comply with the standards specified in the annexure, monitor the particulate and gas emissions from time to time, carry out any necessary alterations to the stacks or the sources of generation, and report the results of emission monitoring to the ministry. The ministry reserves the right to issue any modifications to the methods and equipment used for monitoring by the owner.

Article (4): In case of any potential risk to human health or odour /noise nuisance caused by air emissions released from a work site, the ministry shall specify, from time to time, the necessary mitigation measures to be undertaken by the owner.

Article (5): Dark smoke shall not be emitted from a chimney of any building, any industrial / commercial premises, or any other site. Open burning of organic or agricultural wastes is prohibited. In special cases, the ministry may allow the emission of dark smoke for a limited period with special conditions and stipulated, provided the ministry accepts the reasons given by the owner.

Article (6): The owner shall apply for an environmental permit. No construction or operation shall commence before the ministry approves the height of the chimney which shall be sufficient to prevent, as far as is practicable, the smoke, grit, dust and gases emitted from the chimney causing injury to health or nuisance. The minimum stack heights (from ground level) are as follows:

Power Plants

Plants generated by natural gas	26 m
Plants generated by diesel oil	35 m

Boilers

Boilers generated by natural gas	15 m
Boilers generated by diesel oil	20 m

Furnaces

Cement manufacturing ovens	40 m
Ceramic manufacturing ovens	20 m

Melting Kilns

Metallic and non-Metallic Elements	45 m
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Incinerators

Medical, municipal and industrial waste incinerator	15-20 m
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For other categories, the stack height shall be at least 2.5 times the height of the tallest building around the facility.

Article (7): The permit to operate shall be issued for a period of three years, which can be renewed for a similar period or longer. Application for renewal shall be made at one month before the expiry date. A fee of twenty-five (25) Omani Rials is to be paid for the permit application or renewal.

In case of late renewal of the permit, a five (5) Omani Rials fine is to be paid for every month (or part of a month) with the maximum limit of one hundred (100) Omani Rials.

Article (8): Environmental Inspectors from the ministry are authorized to enter any work site at any time in order to inspect any process emitting noxious or offensive substances, to check the efficiency of pollution control systems and to monitor / test the emission quantities and quality.

Article (9): The owner or his representative shall permit the Environmental Inspectors to enter the work site, inspect the facilities and carry out the necessary tests. On written request from the Inspectors, the owner or his representative shall provide the necessary flow sheets and layout plans, which shall be maintained confidential by the ministry.

Article (10): The owner shall notify in writing to the ministry of any changes made with respect to the ownership or the manufacturing process.

Annexure: Emission Standards

The standards shown here are numerical standards for emissions to air, which can be measured with instruments. There may be many sources of fugitive emissions, for which emissions rates may be estimated using mass balances.

1 - General

Grit and dust (<76µm diameter) 0.050 g/m³
Dark smoke – products of combustion shall not emit smoke as dark as darker than shade 1 on the Ringelmann Scale (20% opacity).

2 - Aggregates Works

Particulates 0.050 g/m³

3 - Asbestos Works

Crocidolite asbestos –where not banned, emission of crocidolite to air shall not exceed 0.5 fibers/mL over a period of not less than 10 minutes.

Total particulates 0.050 g/m³

4 - Asphalt Works

Bitumen fumes 0.030 g/m³
Total particulates 0.050 g/m³

5 - Cement Works

Particulates 0.100 g/m³
Sulphur dioxide 0.035 g/m³

6 - Ceramic Works

Total particulates 0.050 g/m³
Hydrogen fluoride 0.005 g/m³
Hydrogen chloride 0.050 g/m³

7 - Copper Works

Total particulates 0.200 g/m³
Copper compounds 0.100 g/m³
Zinc compounds 0.100 g/m³
Cadmium compounds 0.005 g/m³
Sulphur dioxide calculated as sulphur trioxide 0.050 g/m³

The mass rate of emission from the site shall not exceed 1.0 kg/h calculated as cadmium.

8 - Lead Works

Lead or its compounds 0.030 g/m³
Total particulates 0.050 g/m³

The mass rate of lead emission from the site shall not exceed 3.0 kg/h, calculated as lead.

9 - Incineration Works

Hydrogen chloride 0.050 g/m³
Hydrogen fluoride 0.010 g/m³
Oxides of nitrogen, calculated as nitrogen dioxide 0.200 g/m³
Phosphorous compounds, calculated as phosphorus pentoxide 0.050 g/m³
Hydrogen sulphide 5 ppm v/v
Dioxin 0.5 ng/m³
Totals particulates 0.050 g/m³

10 - Lime Works

Particulates from kiln emission 0.100 g/m³
Particulates from slacking 0.100 g/m³
Carbon monoxide 0.050 g/m³
Particulates from ancillary processes 0.050 g/m³

11 - Petroleum Works

Particulates from catalytic crackers	0.100 g/m ³
Sulphur recovery units minimum efficiency	99.9%
Organic compounds from fume recovery units	0.035 g/m ³
Hydrogen sulphide	5 ppm v/v

12 - Flaring in Refinery and Petroleum Fields

Carbon monoxide	0.050g/m ³
Sulphur dioxide	0.035 g/m ³
Nitrogen dioxide	0.150 g/m ³
Carbon dioxide	5 g/m ³
Unburned hydrocarbons	0.010 g/m ³
Particulates	0.100 g/m ³

13 - Power Plant

Plant generated by natural gas:

Nitrogen dioxide	0.150 g/m ³
Particulates	0.050 g/m ³
Unburned hydrocarbons	0.010 g/m ³
Carbon dioxide	5 g/m ³

Plant generated by diesel oil (<0.5% sulphur):

Sulphur dioxide	0.035 g/m ³
Carbon monoxide	0.050 g/m ³
Nitrogen dioxide	0.150 g/m ³
Particulates	0.100 g/m ³
Unburned hydrocarbons	0.010 g/m ³

14 - Urea/Ammonia Fertilizer Factories

Ammonia	0.020 g/m ³
Urea particulates	0.050 g/m ³
Nitrogen dioxide	0.150 g/m ³
Carbon dioxide	5 g/m ³
Unburned hydrocarbons	0.010 g/m ³

15 - Pharmaceuticals (Antibiotic)

Particulates (10 microns in size)	0.030 g/m ³
Volatile organic matter	0.035 g/m ³
Ammonia	0.02 g/m ³
Carbon disulphide	0.0015 g/m ³

16 - Aluminium Factory (Melting)

Hydrogen fluoride (total surface gaseous emissions)	0.005 g/m ³ Emission per ton:
Electric analysis cell	1.0 kg/ton of aluminium
Cathode	0.05 kg/ton of aluminium
Particulates	0.150 g/m ³
Carbon monoxide	0.050 g/m ³
Sulphur dioxide	0.035 g/m ³

17 - Di-Isocyanates

Volatile di-Isocyanates	0.1 ppm v/v
Di-Isocyanates particulates	0.001 g/m ³

18 - Firing Sources (Factories Boilers, Kilns and Melting Kilns)

Generated by diesel oil:

Carbon monoxide	0.050 g/m ³
Sulphur dioxide	0.035 g/m ³
Nitrogen dioxide	0.150 g/m ³
Particulates	0.1 g/m ³
Unburned hydrocarbons	0.010 g/m ³

Generated by natural gas:

Nitrogen dioxide	0.150 g/m ³
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Particulates	0.050 g/m ³
Unburned hydrocarbons	0.010 g/m ³
Carbon dioxide	5 g/m ³
19 - Desalination Plants	
Chlorine (fugitive emission)	0.005 g/m ³
20 - Petrochemical Works	
Hydrocarbons	0.010 g/m ³
Nitrogen oxides	0.150 g/m ³
Carbon monoxide	0.050 g/m ³
Total particulates	0.1 g/m ³
Sulphur dioxide	0.035g/m ³
21 - Metal Works	
Furnace (Kiln) operated with electricity:	
Total particulates	0.1 g/m ³
Carbon monoxide	0.050 g/m ³
Fluorine	0.003 g/m ³
Furnace (Kiln) operated with diesel oil or gas:	
Total particulates	0.1 g/m ³
Carbon monoxide	0.050 g/m ³
Fluorine	0.003 g/m ³
Sulphur dioxide	0.035 g/m ³
Nitrogen oxides	0.150 g/m ³
Hydrocarbons	0.010 g/m ³
22 - Glass Works	
Silicon tetrafluoride	0.010 g/m ³
Total Particulates	0.1 g/m ³
Carbon monoxide	0.050 g/m ³
Nitrogen oxides	0.150 g/m ³
Sulphur dioxide	0.035 g/m ³

Note: In the absence of specified reference temperature, 0°C may be taken as the reference temperature while calculating the emissions concentrations. (Note inserted by HMR Consultants)

9. MD 248/1997 Registration of Chemical Substances and relevant Permits

Ministerial Decision No. (248/97) Issuing the Regulation for the Registration of Chemical Substances and the Relevant Permits.

The Minister of Regional Municipalities and Environment.

- Based on the Law of the Conservation of Environment and Prevention of Pollution issued by the Royal Decree No. (10/82) and amendments.
- And the Law of Handling and Use of Chemicals issued by Royal Decree No. (46/95).
- And according to the requirements of the public interest,

Has decided

Article (1): The provisions of the attached Regulation for the Registration of Chemical Substances and the Relevant Permits shall come into effect.

Article (2): This decision shall be published in the Official Gazette and shall enter into force as from date of publication.

AMER BIN SHUWAIN AL-HOSNI
Minister of Regional Municipalities & Environment
Issued on: 30 Safar 1418 H
C.T.: 06 July 1997

REGULATION FOR THE REGISTRATION OF CHEMICAL SUBSTANCES AND THE RELEVANT PERMITS

Article (1): The words and terms used in this Regulation shall have the meanings designated in the Law of Handling and Use of Chemicals issued by Royal Decree No. (46/95) or those stated herein:

Manufacture: Any of the production processes that aim at providing or formation of material in certain shape such as extraction, composition, mixing, kneading, fragmentation, grinding, packing or others.

Handling: Any transfer of Chemical between natural or juridical persons, by sale, purchase, distribution or exchange Chemical

Safety Data: Written, printed or drawn information issued by the original source which indicate the composition and characteristics of chemicals, the instructions for use and the necessary precautions to avoid or eliminate their hazards under normal conditions or in emergencies.

Article (2): Any natural or juridical person who intends to deal with any hazardous chemical by manufacture, import, export, transport, storage, handling, use or disposal shall apply to the Ministry, by filling the designated form, obtain the environmental permit after paying the necessary fees.

Article (3): The Department of Chemical Substances shall maintain a list of, hazardous chemicals according to the international classifications. The Department may also prepare a local classification for the hazardous chemicals based on the hazardous characteristics illustrated in Annex (1), to determine the level and mode of handling and use.

Article (4): Any person dealing with hazardous chemicals shall maintain a valid environmental permit and chemical safety data as per Annex (2), and shall keep copy of the permit and the data in a safe place far from where the chemical is kept or transported.

Article (5): The dealer shall abide to carry out all condition, follow all procedures specified in the chemical safety data or any other conditions or procedures required in the environmental permit or in the Law.

The environmental permit may be cancelled if an international embargo on the chemical has been proclaimed in accordance with Article (4), -C of the Law. A temporary environmental permit may also be granted for qualified scientific institutions to experimentally use of some banned chemicals.

Article (6): Staff designated by decision of the Minister shall have the powers to examine any chemical transaction, activity, or conduct necessary tests and investigations to enforce the provisions of these regulations.

Article (7): Offenders of the provisions of these regulations shall be liable to penalties stated in the Law.

HAZARDOUS CHARACTERISTICS *

** Corresponds to the hazard classification system included in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC. 10/01 Rev. 5, United Nations, New York, 1988)*

CHARACTERISTICS

1. Explosives (other than those stated in Royal Decree 82/77):

An explosive substance is a solid or liquid substance (or mixture of substances) which is in itself capable, by chemical reaction, of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.

2. Flammable liquids :

The word "flammable" has the same meaning as "inflammable". Flammable liquids, are liquids, or mixture of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers) which give off a flammable vapour at temperatures of not more than 60.5. C, closed-cup test, or not more than 65.6°C, open-cup test. (since the results of open-cup tests and of the closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition).

3. Flammable solids :

Solids other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.

4. Substances liable to spontaneous combustion :

Substances which are liable to spontaneous heating under normal conditions encountered in transport, or to heating upon on contact with air, and being then liable to catch fire.

5. Substances in contact with water emit flammable gases :

Substances which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

6. Oxidizers :

Substances which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.

7. Organic Peroxides :

Organic substances which contain the bivalent -O -O -structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.

8. Poisons (Acute) :

Substances liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

9. Corrosives

Substances which, by chemical reaction, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.

10. Liberation of toxic gases in contact with air or water :

Substances which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.

11. Toxins (Delayed or Chronic):

Substances, if inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects including carcinogenicity.

12. Ecotoxins :

Substances which if released present or may present immediate or delayed adverse impacts to the environment by means of bio-accumulation or toxic effects upon biotic systems.

13. Substances, when disposed, yield harmful materials :

Substances capable, by any means, after disposal, of yielding another material, e.g. leachate, which possesses any of the characteristics listed above.

Annex (2)

INFORMATION TO BE INCLUDED IN THE CHEMICAL SAFETY DATA (CSD)

- 1 -Scientific Name
- 2 -Commercial and Common Name
- 3 -CAS Number
- 4 -Chemical Composition
- 5 -Chemical and Physical Properties
- 6 -Stability and Reactivity
- 7 -Toxicity & Hazard to Man & to the Environment (Refer to Appendix 1)
- 8 -Safety Precautions
- 9- First Aid and Accidental Release Measures (Fire, flood, spill, poisoning etc.)
- 10- Packing, Handling and Storage Measures
- 11 -Transport Information
- 12 -Disposal Considerations
- 13- Other Information (Sample Expiry Date)

N.B.:-

This information must be certified by the exporter, the manufacturer, the producer or by a laboratory recognized by the Ministry.

If original data received from the source of origin were not complete, additional certified papers can be attached.

Such data or a certified copy must be kept near the chemical, for easy reaching and review during handling.

8. MD 317/2001 Regulation for packing and labelling of hazardous chemicals



Ministry of Regional Municipalities, Environment and Water Resources

Ministerial Decision Number 317/2001 Issuing the Regulations for the Packing, Packaging, and Labeling of Hazardous Chemicals

P.O. Box 323, Muscat Postal Code 113 Tel.: 692550 website : www.nirniewr.gov.om

Ministerial Decision Number 317/2001

Issuing the Regulations for the Packing, Packaging, and Labeling of Hazardous Chemicals. based on the Law of Handling and Use of Chemicals, issued by Royal Decree No. (46/95), and the Law of the Conservation of Environment and Prevention of Pollution, issued by Royal Decree No. (114/2001), and the Regulations issued by Ministerial Decision No. (248/97) for the Registration of Hazardous Chemicals and the Relevant Permits; and according to the requirements of public interest.

has decreed the following :

Article (1): The provisions of the attached Regulations for Packing, Packaging, and Labeling of Hazardous Chemicals, shall come into effect.

Article (2): This Decision shall be published in the Official Gazette and shall come into force as from the first day of June, 2002.

Dr. Khamis bin Mubarak bin Essa Al-Alawi

Minister of Regional Municipalities, Environment and Water Resources

Issued on 24th Ramadan 1422 H corresponding to 10^h December 2001

Article (1): Any person whatsoever, who imports, exports, transports, stores, handles, uses or discharges any hazardous chemical, shall adhere to the following terms and conditions:

First - concerning containers:

- a) containers shall be strong, vibration proof, and resistant to damage, whether this may be caused either by the external environment or the contained substance.
- b) containers shall be previously unused and shall be leak proof and non-reactive.
- c) containers shall be firmly sealed so as to prevent any leakage.

Second - concerning labeling :

Labels shall be firmly fixed to the container and shall clearly include not less than the following details :

- a) both the scientific and commercial names of the contents plus the quantity.
- b) the chemical and physical properties of the contained substance.
- c) the degree of risk of the contained substance plus its international hazards warning symbols; in both the Arabic and English Languages.
- d) chemical safety guidelines for handling or dealing with chemicals, especially during any incident or emergency.
- e) the purpose of use of the contents and the date of expiry.
- f) the full name and address of the manufacturer or producer.
- g) storage instructions relating to temperature, pressure, light, and so forth.
- h) all labels shall be clearly written, easily readable, and firmly fixed to the container.
- i) labels and tags shall be damage resistant, non-flammable, and shall not be readily removed.

Article (2): All such relevant hazardous chemical warning symbols as depicted in the attached Appendix, shall also be drawn on, or fixed to, each container.

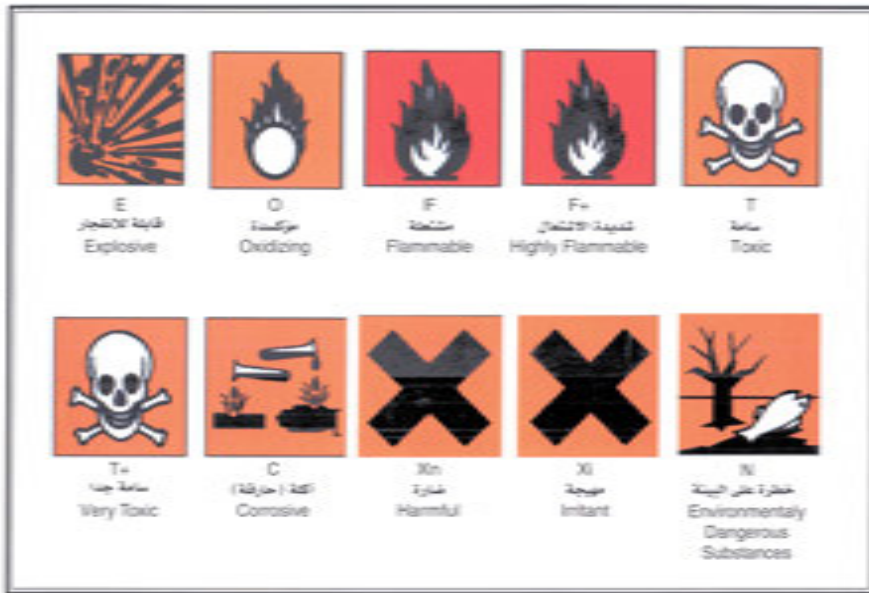
Article (3): Without prejudice to the provisions of Article (13) of the Law on Handling and Use of Chemicals, and in accordance with the provisions stated in Article (4) therein; anyone violating the provisions of these Regulations shall be censured to cease to be allowed to practice his activity.

Article (4): The provisions of these Regulations shall not be applicable to the following:
pharmaceuticals and medical drugs.

- a) explosives as stated in Royal Decree No. (82/77). radioactive materials.

Appendix

Hazardous Chemical Warning Symbols



9. MD 25/2009 issuing the regulation for organization of handling and use of chemicals

Unofficial Translation Ministerial Decision No. (25/2009) Issuing the Regulations for Organization of Handling and Use of Chemicals

Based on Royal Decree No. (77/82) on the Use and Handling of Explosives in the Sultanate,

And the Law of Handling and Use of Chemicals issued by Royal Decree No. (46/95),

And the Law of Conservation of the Environment and Prevention of Pollution issued by Royal Decree No. (114/2001),

And the Regulations for the Registration of Chemical Substances and the Relevant Permits issued by Ministerial Decision No. (248/97),

And the Ministerial Decision No. (316/2001) on the Prohibition of Certain Chemicals,

And the Regulations for the Packing, Packaging and Labeling of Hazardous Chemicals issued by Ministerial Decision No. (317/2001),

And according to the requirements of the public interest.

Has decided:

Article (1): The provisions of the attached Regulations for Organization of Handling and Use of Chemicals shall come into effect.

Article (2): The Ministerial Decision No. (316/2001) referred to shall be cancelled, and all provisions contradicting or contravening the attached regulations shall be cancelled.

Article (3): This Decision shall be published in the Official Gazette and shall come into force from the day following the date of its publication.

Hamoud bin Faisal Al Busaidi
Minister of Environment and Climate Affairs
Issued on: 16 Jumada Al Thani 1430 AH
C. T. : 10 June 2009

Regulations for the Organization of Handling and Use of Chemicals

- Article (1):** The following words and terms shall have the meanings explained herein unless otherwise stated:
- Ministry :** The Ministry of Environment and Climate Affairs.
- Minister :** The Minister of Environment and Climate Affairs.
- Chemical :** Any substance, enlisted, as hazardous material according to the International Classification of Hazardous Material, which affects the public health and the environment. Explosives defined in the referred Royal Decree concerning the Use and Handling of Explosives is excluded.
- User** Any natural or juridical person who has obtained a permit from the Department to handle or use chemicals.
- Handling :** Any deal with chemical between natural or juridical persons, by sale, purchase, distribution, use, manufacture, import, export, re-export, transport, storage or discharge.
- Article (2):** The user of the chemical substance, in the event of storage, shall comply with the following conditions:
- Store chemicals in designated areas away from industrial activities, each type to be separated, and a partition of 10 meter width shall be made between the flammable materials and any source of combustion and they shall be separated from any facility for the production of flammable materials by 3 m.
 - They shall be stored in an orderly and harmonized manner with labeling of each chemical showing its common name, chemical composition and degree of risk, with chemical containers not to be placed on each other in an accumulated manner, and flammable materials to be kept away for a distance of not less than one meter from the warehouse doors.
 - The roofs of the store shall be designed in such a manner that prevents accumulation of smoke which may result from any fire.
 - The store shall have at least two emergency gates for use in emergency cases with emergency signs affixed to the gates.
 - The floor of the store shall be lined with impermeable materials, preventing any shock or electrical short, non-slippery and its walls and structures shall be nonflammable.
 - The store shall have outlets and back-up emergency ducts in case of leakage of rain water.
 - Electrical connections shall not be bare, shall be connected in parallel and maintained to permanently ensure their safety.
 - The store shall be provided with adequate and secure lightening at all times and the operating keys shall be outside the store near its gate.
 - The store shall be far from any source of heat or any flammable source.
 - It shall contain odors, gases and smoke suction and exhaust devices.
 - The store shall be well ventilated with sound insulation to prevent any echo, which may lead to fall or collision accidents.
 - The store shall be provided with security and safety devices to be decided by the competent authorities.
 - The store shall contain guidelines and warning signs of various types of risks.

- The store entrances shall be controlled, monitored and supervised in a safe and sound manner with prohibition of entry to non-authorized staff.
- Review the Material Safety Data Sheets when a chemical substance spills, leaks, or any other emergency incidents.
- No construction, extension or change in the store or any removal works unless after the approval of the Ministry and The Directorate General of Civil Defense, Royal Oman Police.

Article (3): The user of any chemical substance stated in Annex (1) shall submit the academic qualifications of the technical working team supervising its use to the Department; shall be committed not to exceed the quantity specified in the permit issued to him and not to sell it in the local market.

Article (4): Handling and use of any chemical substance stated in Annex (2) is prohibited; and the user is committed to notify the Department of any stock during two months from the date of enforcement of this decision, and to be disposed of in accordance with the conditions and procedures specified by the Ministry.

Article (5): The user of chemical substance shall be committed to prepare a contingency plan to deal with it within and outside the establishment, and shall train the authorized staff within the establishment in the mechanism of its application.

Article (6): It is permissible to the Ministry to issue permits, for experimental use and scientific research only, for any chemical substance listed in Annex (2) to research centers, scientific and educational institutions and labs.

Article (7): The provisions of these Regulations shall not be applicable to the following:
a- Pharmaceutical and medical drugs, b- Explosives as stated in Royal Decree No. (82/77).

Article (8): Offenders of the provisions of these Regulations shall be liable to penalties stated in the referred to Law of Handling and Use of Chemicals.
In the event the violation continued for more than one month from the date of the offense, the Ministry may stop the offender from practicing his activity in accordance to the procedures stated in Article (4) of the referred to Law of Handling and Use of Chemicals, and not to permit him to handle or use chemicals until the removal of the causes and impacts of the violation at his own expense.

Annex (1)

NO.	Common name	CAS Number	| Restricted
1.	Trichlorotrifluoroethane CFC-113(C ₂ F ₃ Cl ₃)	76-13-1	Ozone
2.	Acetochlor	123113-74-6	Agriculture
3.	Aluminum Phosphide	20859-73-8	Agriculture
4.	Bendiocarb	22781-23-3	Agriculture
5.	Brodifacoum	56073-10-0	Agriculture
6.	Bromadiolone	28772-56-7	Agriculture
7.	Bromochlorodifluoromethane Halon-1211 (CF ₂ BrCl)	353-59-3	Ozone
8.	Bromotrifluoromethane Halon-1301 (CF ₃ Br)	75-63-8	Ozone
9.	Cadusafos (Codusafos)	95465-99-9	Agriculture
10.	Carbofuran	1563-66-2	Agriculture
11.	Chloroheptafluoropropane CFC-217 (C ₃ F ₇ Cl)	422-86-6	Ozone
12.	Chlorophacinone	3691-35-8	Agriculture
13.	Chlorotrifluoromethane CFC-13 (CF ₃ Cl)	75-72-9	Ozone
14.	Chlorpyrifos	39475-55-3	Agriculture
15.	Cyhalothrin	91465-08-6	Agriculture
16.	Cypermethrin	97955-44-7	Agriculture
17.	Dibromotetrafluoroethane Halon-2402 (C ₂ F ₄ Br ₂)	124-73-2	Ozone
18.	Dichlorotrifluoroethane HCFC-132(C ₂ H ₂ F ₃ Cl ₂)	1649-08-7	Ozone
19.	Dichlorodifluoromethane CFC-12 (CCLF ₂)	75-71-8	Ozone
20.	Dichlorofluoroethane HCFC-141 (C ₂ H ₃ FCl ₂)	1717-00-6	Ozone
21.	Dichlorofluoromethane HCFC-21 (CHFCl ₂)	75-43-4	Ozone
22.	Dichlorohexafluoropropane CFC-216 (C F Cl)	661-97-2	Ozone
23.	Dichloropentafluoropropane HCFC-225ca(CF ₃ CF ₂ CHCl)	422-56-0	Ozone
24.	Dichloropentafluoropropane HCFC-225cb (CF ₂ ClCF ₂ CHClF C ₃ HF ₅ Cl ₂)	507-55-1	Ozone
25.	Dichlorotetrafluoroethane CFC-114 (C F Cl)	76-14-2	Ozone
26.	Dichlorotetrafluoropropane HCFC-234 (C ₃ H ₂ F ₄ Cl ₂)	425-94-5	Ozone
27.	Dichlorotrifluoroethane HCFC-123 (C ₂ H ₂ F ₃ Cl ₂)	306-83-2	Ozone
28.	Difenacoum	56073-07-5	Agriculture
29.	Diflubenzuron	66594-18-1	Agriculture
30.	Ethoprophos	13194-48-4	Agriculture
31.	Fenamiphos	22224-92-6	Agriculture
32.	Fenthion	55-38-9	Agriculture
33.	Fipronil	120068-37-3	Agriculture
34.	Heptachlorofluoropropane CFC-211 (C ₃ FCl ₇)	422-78-6	Ozone
35.	Hexachlorodifluoropropane CFC-212 (C ₃ F ₂ Cl ₆)	3182-26-1	Ozone
36.	Hexachlorofluoropropane HCFC-221 (C [^] HFCy	422-26-4	Ozone
37.	Imidacloprid	138261-41-3	Agriculture
38.	Lead	7439-92-1	Industrial

39.	Magnesium phosphide	12057-74-8	Agriculture
40.	Mercury	7439-97-6	Industrial
41.	Methomyl	16752-77-5	Agriculture
42.	Methyl Bromide (CH ₃ Br)	74-83-9	Ozone & Agriculture
43.	1-Chloro-1, 1- difluoroethane / Monochlorodi fluoroethane HCFC-142b (CH ₃ CF ₂ Cl/C ₂ H ₃ F ₂ Cl)	75-68-3	Ozone
44.	Chlorodifluoromethane HCFC-22 (CHF ₂ Cl)	75-45-6	Ozone
45.	Monochlorofluoromethane HCFC-31 (CH ₂ FC1)	593-70-4	Ozone
46.	Monochlorohexafluoropropane HCFC-226 (C ₃ HF ₆ Cl)	431-87-8	Ozone
47.	Chloropentafluoroethane CFC-115 (C ₂ F ₅ Cl)	76-15-3	Ozone
48.	Chlorotetrafluoroethane HCFC-124 (C ₂ HF ₄ Cl)	2837-89-0	Ozone
49.	Monochlorotrifluoroethane HCFC-133 (C ₂ HF ₃ Cl)	75-88-7	Ozone
50.	Oxamyl	23135-22-0	Agriculture
51.	Pentachlorodifluoropropane HCFC-222 (C ₃ HF ₂ Cl ₅)	422-49-1	Ozone
52.	Pentachlorofluoroethane CFC-111 (C ₂ FC1 ₅)	354-56-3	Ozone
53.	Pentachlorofluoropropane HCFC-231 (C ₃ H ₂ FC1 ₅)	421-94-3	Ozone
54.	Pentachlorotrifluoropropane CFC-213 (C ₃ F ₃ Cl ₅)	2354-06-5	Ozone
55.	Rotenone	83-79-4	Agriculture
56.	Sodium methylthiocarbamate (Methyl - isothiocyanat)	144-54-7	Agriculture
57.	Starlicide	95-74-9	Agriculture
58.	Sulfuryl Fluoride	2699-79-8	Agriculture
59.	Sulprofos	35400-43-2	Agriculture
60.	Tetrachlorodifluoroethane CFC-112 (C ₂ F ₂ Cl ₄)	76-12-0	Ozone
61.	Tetrachlorofluoroethane HCFC-121 (C ₂ HFC1 ₄)	354-14-3	Ozone
62.	Tergitrol		Agriculture
63.	Tetrachlorodifluoropropane HCFC-232 (C ₃ H ₂ F ₂ Cl ₄)	460-89-9	Ozone
64.	Tetrachlorotetrafluoropropane CFC-214 (C ₃ F ₄ Cl ₄)	29255-31-0	Ozone
65.	Tetrachlorotrifluoropropane HCFC-223 (C ₃ HF ₃ Cl ₄)	422-52-6	Ozone
66.	Thiram	137-26-8	Agriculture
67.	Trichlorodifluoroethane HCFC-122 (C ₂ HF ₂ Cl ₃)	354-21-2	Ozone
68.	Trichlorofluoroethane HCFC-131 (C ₂ H ₂ FC1 ₃)	359-28-4	Ozone
69.	Trichlorofluoromethane CFC-II(CFCB)	75-69-4	Ozone
70.	Trichloropentafluoropropane CFC-215 (C ₃ F ₅ Cl ₃)	4259-43-2	Ozone
71.	Trichlorotetrafluoropropane HCFC-224 (C ₃ HF ₄ Cl ₃)	422-54-8	Ozone
72.	Trichlorotrifluoropropane HCFC-233 (C ₃ H ₂ F ₃ Cl ₃)	7125-84-0	Ozone
73.	Zinc Phosphide	12037-79-5	Agriculture

Annex (2)

NO.	Common name	CAS Number	Restricted
1.	1, 2- Dichloroethane (Ethylenedichloride)	107-06-2	Agriculture
2.	2,4 -Dichlorophenoxy Acetic Acid		Agriculture

3.	1,1,1 -Trichloroethane (Methyl Chloroform) (C ₂ H ₃ Cl ₃)	71-55-6	Ozone
4.	1,2-Dibromoethane (Ethylene Dibromide)	106-93-4	Agriculture
5	1,3 Dichloropropene	26952-23-8	Agriculture
6	Acephate	30560-19-1	Agriculture
7	Acrolein	107-02-8	Agriculture
8	Acrylonitrile	107-13-1	Agriculture
9	Alachlor	15972-60-8	Agriculture
10	Aldicarb	116-06-3	Agriculture
11	Aldrin	309-00-2	Stockholm*
12	Alpha-hexachlorocyclohexane	319-84-6	Stockholm*
13	Amitraz	72-20-8	Agriculture
14	Amitrole (Aminotripole)	61-82-5	Agriculture
15	Aramite	140-57-8	Agriculture
16	Arsenic compounds :- Arsenic Acid Arsenic Pentoxide Arsenic Trioxide Arsenic Trisulfide Sodium Arsenite .etc	7778-39-4 1303-28-2 1327-53-3 1303-33-9 7784-46-5	Agriculture
17	Asbestos :- Actinolite Anthophyllite Amosite Crocidolite Tremolite Chrysotile	77536-66-4 77536-67-5 12172-73-5 12001-28-4 77536-68-6 12001-29-5	Industrial
18	Atrazine	93616-39-8	Agriculture
19	Azinphos-ethyl	2642-71-9	Agriculture
20	Azinphos-methyl	86-50-0	Agriculture
21	Benomyl	17804-35-2	Agriculture
22	Benzen hexachloride		Agriculture
23	Beta-hexachlorocyclohexane	319-85-7	Stockholm*
24	Bifenthrin	9288-07-9	Agriculture
25	Binapacryl	485-31-4	Agriculture
26	Bomyl	122-10-1	Agriculture
27	Bromochloromethane(CH ₂ BrCl)	83847-49-8	Ozone
28	Bromophos - ethyl	2104-96-3	Agriculture
29	Cadmium & Cadmium Compounds:-		Agriculture
30	Calcium Cyanide	592-01-8	Agriculture
31	Camphchlor (Toxaphene)	8022-04-6	Agriculture
32	Captafol	2425-06-1	Agriculture
33	Cap tan	37335-15-2	Agriculture
34	Carbaryl	63-25-2	Agriculture
35	Carbon Bisulphide	75-15-0	Agriculture
36	Carbon Tetrachloride (CCl ₄)	56-23-5	Agriculture & Ozone
37	Chlordane	57-74-9	Stockholm*
38	Chlordecone	143-50-0	Stockholm*
39	Chlordimeform	6164-98-3	Agriculture
40	Chlormephos	24934-91-6	Agriculture
41	Chlorobenzilate	510-15-6	Agriculture

42	Chloroform	67-66-3	Agriculture
43	Chlorophenoxy herbicides (2,4,5-Trichlorophenoxy Acetic Acid)	93-76-5	Agriculture
44	Chloropicrin	76-06-2	Agriculture
45	Chlorothalonil	37223-69-1	Agriculture
46	Chlorthiophos	60238-56-4	Agriculture
47	Commercial octabromodiphenyl Ether (c-octaBDE)	68631-49-2 207122-15-4 446255-22-7 207122-16-5	Stockholm*
48	Commercial pentabromodiphenyl Ether (c-pentaBDE)	40088-47-9 32534-81-9	Stockholm*
49	Crimidine	535-89-7	Agriculture
50	Cyanamide	65931-45-5	Agriculture
51	Cyanazine	21725-46-2	Agriculture
52	Cycloheximide	66-81-9	Agriculture
53	Cyhexatin	13121-70-5	Agriculture
54	DBCP 6-12-8(1,2-dibromo-3 chloropropane)	96-12-8	Agriculture
55	DDT	50-29-3	Stockholm*
56	Demeton	8065-48-3	Agriculture
57	Demeton-S-methyl	919-86-8	Agriculture
58	Dichlorovos	95828-55-0	Agriculture
59	Diclofop-methyl	75045-48-6	Agriculture
60	Dicofol	115-32-2	Agriculture
61	Dicrotophos	141-66-2	Agriculture
62	Dieldrin	60-57-1	Stockholm*
63	Dimefox	115-26-4	Agriculture
64	Dimethoate	79956-18-6	Agriculture
65	Dinitro-ortho-cresol (DNOC) And its Salts (Such as Ammonium salt, potassium salt and sodium salt)	534-52-1 2980-64-5 5787-96-2 2312-76-7	Agriculture
66	Dinoseb and Dinoseb salts	88-85-7	Agriculture
67	Disulfoton	298-04-4	Agriculture
68	Endosulfan	115-29-7	Agriculture
69	Endrin	72-20-8	Stockholm*
70	EPN	2104-64-5	Agriculture
71	Ethylpyrophosphate(tetraethyl - pyrophosphate (TEPP))	13194-48-4	Agriculture
72	Ethylene Oxide	75-21-8	Agriculture
73	Fensulfothion	115-90-2	Agriculture
74	Flourine Compounds:- Fluorine Sodium fluoride	49 41-4	Agriculture

	Fluoracetamide ect..	50 37-1 640-19-7	
75	Flucythrinate	71611-31-9	Agriculture
76	Folpet	52306-33-9	Agriculture
77	Fonofos	944-22-9	Agriculture
78	Fosthietan	21548-32-3	Agriculture
79	Heptachlor	76-44-8	Stockholm*
80	Hexabromobiphenyl	36355-01-8	Stockholm*
81	Hexachlorocyclohexane Isomers(HCH)	27154-44-5	Agriculture
82	Hexachlorobenzene (HCB) (Benzen hexachloride)	118-74-1	Stockholm*
83	Isazophos (Isazofos)	65357-77-9	Agriculture
84	Isobenzan	297-78-9	Agriculture
85	Isodrin (Isomers of eldrine)	465-73-6	Agriculture
86	Kelevan	4234-79-1	Agriculture
87	Lead Compounds:- 67 Lead (II) Nitrate 68 Lead Arsenate 69 Lead Carbonate 70 Lead Chloride 71 Lead chromate etc...	10099-74-8 7645-25-2 598-63-0 7758-95-4 7758-97-6	Agriculture
88	Leptophos	21609-90-5	Agriculture
89	Lindane	608-73-1	Agriculture
90	Lindane (gamma-HCH)	58-89-9	Stockholm*
91	Linuron	56645-87-5	Agriculture
92	Mancozeb	84070-12-2	Agriculture
93	Maneb	301-03-1	Agriculture
94	Mephosfolan	950-10-7	Agriculture
95	Mercuric Compounds:- Mercurous chloride Mercury (II) Acetate Mercury (II) Nitrate Mercury (II) Thiocyanate Mercurous Oxide etc...	7546-30-7 1600- 27-7 10045-94-0 592-85-8 21908-53-2	Agriculture
96	Methamidophos	10265-92-6	Agriculture
97	Methidathion	950-37-8	Agriculture
98	Methiocarb	716-16-5	Agriculture
99	Methoxychlor	72-43-5	Agriculture
100	Mevinphos	7786-34-7	Agriculture
101	Mirex	2385-85-5	Stockholm*
102	Monocrotophos	6923-22-4	Agriculture
103	Morfamquat	7411-47-4	Agriculture

104	Nicotine	65-31-6	Agriculture
105	Nitrofen	1836-75-5	Agriculture
106	Oxydemeton – methyl	301-12-2	Agriculture
107	Oxydeprfos	2674-91-1	Agriculture
108	Paraquat	2074-50-2	Agriculture
109	Parathion – ethyl	8057-70-3	Agriculture
110	Parathion – methyl	63653-66-7	Agriculture
111	Pentachlorobenzene	608-93-5	Stockholm*
112	Pentachlorophenol		Agriculture
113	Pentachlorophenol Sodium		Agriculture
114	Perfluorooctane sulfonic acid, its salts, and perfluorooctane sulfonyl fluoride		Stockholm
115	Permethrin	52645-53-1	Agriculture
116	Phorate n	298-02-2	Agriculture
117	Phosfolat	947-02-4	
118	Phosphamidon	13171-21-6	Agriculture
119	Picloram	1918-02-1	Agriculture
120	Polychlorinated Biphenyls (PCBs)	1336-36-3	Stockholm*
121	Polychlorinated Dibenzo-p- dioxins & dibenzofurans (PCDD/ PCDF) (By products)		Stockholm*
122	Profenofos	61287-51-2	Agriculture
123	Pronamide	66393-62-2	Agriculture
124	Propargite	60098-53-5	Agriculture
125	Propetamphos	31218-83-4	Agriculture
126	Propoxur	114-26-1	Agriculture
127	Prothoate	2275-18-5	Agriculture
128	Quintozene	82-86-8	Agriculture
129	Schradan	152-16-9	Agriculture
130	Simazine	39291-64-0	Agriculture
131	Sodium Cyanides	143-33-9	Agriculture
132	Sodium Fluoroacetate	62-74-8	Agriculture
133	Stroban	8001-50-1	Agriculture
134	Strychnine	6899-112"	Agriculture
135	Sulfotep	8054-28-2	Agriculture
136	TDE	1954-28-5	Agriculture
137	Tebupirimfos	96182-53 5	Agriculture
138	Tefluthrin	93907-48-3	Agriculture
139	Terbufos	13071-79-9	Agriculture
140	Tetradifon	116-29-0	Agriculture
141	Tetraethylpyrophosphate		Agriculture
142	Thalium Sulphate	10031-59-1	Agriculture
135	Thionazin	297-97-2	Agriculture
143	Tributyltin	36643-28-4	Agriculture
144	Tributyltin hydroxide (Fentin hydroxide)	76-87-9	Agriculture
145	Zineb	12122-67-7	Agriculture

10. MD 20/1990 Rules Regulation and Specifying Coastal Setbacks

DECISION NO 20/90

Regarding the Rules Regulating and Specifying Coastal Setbacks.

After perusal of Royal Decree No 27/85 establishing the Supreme Committee for Town Planning and the decision of the Supreme Committee for Town Planning issued in its fifth meeting of 1988 held on 9.11.1988.

It is decided:

- Article (1)** Coastal setbacks shall be defined according to the following:
- A) Verges of construction development along the Omani Coasts.
 - B) Enabling the public to use and benefit from the coasts with the exception of the areas allocated for certain purposes.
- Article (2)** The Ministry of Housing shall undertake coastal setbacks specification in each area in coordination with the Ministry of Environment and the Ministry of Commerce and Industry and in accordance with the planning studies of regions, towns and villages and their different levels, whether regional, structural or local.
- Article (3)** On preparing the planning studies regarding the use of the areas adjacent to Coasts the following shall be considered:
- A) The terms of reference regarding the prevention of coastal erosion decided by the Ministry of Environment.
 - B) The natural factors and conditions of the area.
 - C) The planning studies of the parallel areas.
- Article (4)** Permits for establishing any tourist projects along the coasts are not allowed unless the required planning studies are carried out to ensure the possibility of providing the public utilities necessary for the project, as well as the conservation of environment and aesthetic aspects of the project location.
- Article (5)** Defining setback limits along the coasts shall be horizontally measured from the maximum end of tidemark.
- Article (6)** Defining setback limits in coastal settlement areas shall be according to the following considerations:
- A) For implementing the provisions of this decision coastal settlement areas shall mean the areas in which settlements exist on the level of a town or a village.
 - B) On defining the range of setbacks, the fixed establishments which exist within the traditionally known range of the area facing the sea shall be taken into consideration despite its adjacency to tidemark.
The Ministry of Housing shall determine its specification in coordination with the Ministry of Environment and the other Ministries and concerned agencies.
The owners of the lands existing behind these limits shall be allowed to establish their new buildings or set right the existing buildings after the above mentioned areas being designed and re-planned by the Ministry of Housing.
 - C) Specifications enlisted for coastal setbacks and stated in article (7) of this decision after amendment shall be taken into consideration in cases of constructional extension of such areas in order to agree with the factors and conditions of each area and according to the decision taken by the Ministry of Housing after coordination with the Ministry of Environment.
- Article (7)** Defining the limits of setbacks for open Coastal areas shall be according to the following considerations:
- A) For implementing the provisions of this decision, open coastal areas shall mean the areas where no settlements exist outside the borders of the expected construction extension as decided by the Ministry of Housing.
 - B) Setbacks shall be specified by 300m regarding the natural Coasts characterized by its scenic views including high cliffs and rocky peaks. No project shall be

established - within the limits of these setbacks - unless approved by the Ministry of Environment in coordination with the Ministry of Housing.

- C) Setbacks shall be specified by 150m for sandy beaches and around the khwars.
- D) Setbacks shall be specified by 50m for beaches where the construction developments have limited impact on the environment.

Article (8) The Supreme Committee for Town Planning -after coordination with the Ministry of Housing, the Ministry of Environment and other concerned Ministries and authorities -shall specify the detailed regulating rules for implementing the provisions of this decision.

Article (9) Any provisions contradicting with this decision shall be cancelled.

Article (10) This decision shall be published in the Official Gazette and shall be effective from the date of publication.

Issued on 14 Shawa1. 1410 H, C.T. 9 May, 1990

Qais Bin Abdul Moniem Al Zawawi

Deputy Prime Minister for Financial & Economic Affairs.

Chairman of the Supreme Committee

for Town Planning.

11. MD 200/2000 Crushers Quarries & Transport of Sand

Ministerial Decision No.(200/2000)

Issuing Regulations for Crushers, Quarries and Transport of Sand from Coasts, Beaches and Wadis

- Based on the Law on conservation of the Environment and Prevention of Pollution issued by Royal Decree No.(10/82) and its amendments,
- And the Law Regulating the Regional Municipalities issued by Royal Decree No.(96/2000),
- And Royal Decree No.(18/99) specifying the Responsibilities of the Ministry of Regional Municipalities and Environment and approving its organizational chart,
- And the Ministerial Decisions No.(120,298,300/93) and (209/95),
- And according to the requirements of public interest.

Have decided

Article (1): The provisions of the attached Regulations for Crushers, Quarries and Transport of Sand from Coasts, Beaches and Wadis shall come into force.

Article (2): The Director General of Environmental Affairs, the Director General of Environment - Dhofar Governorate, Directors of Environment Departments and Environment Controllers and inspectors - each within the scope of his authority - shall have the legal powers in implementing the provisions of the attached regulations.

Article (3): The Ministerial Decision (No. 120, 298/93) and all other provisions contradicting or contravening this decision shall be considered void.

Article (4): This decision shall be published in the Official Gazette and shall come into effect on the date of its publication.

Dr. Khamis bin Mubarak bin Essa Al- Alawi
Minister of Regional Municipalities and Environment
Issued on :28 Ramadan/1421
C. to: 24 December /2000

**Regulation for
Crushers, Quarries and Transport of Sand from
Coasts, Beaches and Wadis**

**Part One
General Provisions**

- Article (1): In the application of the provisions of these regulations, the words and phrases shall have the following meanings unless stipulated otherwise:
Ministry: The Ministry of Regional Municipalities & Environment.
Quarry: The place where raw materials are extracted from the earth to a depth not exceeding one and a half meter.
Crusher: The equipment used in crushing raw materials.
Screen: The *equipment separating extracted raw materials*.
Coast: *The shore* area extending one kilometre from the high tide point towards the mainland.
Beach: The area falling between low and high level of the seawater.

**Part Two
Crushers and Quarries**

- Article (2) It is prohibited to use crushers or quarries' sites without obtaining an environmental permit to ensure that the project requesting a permit is sound from an environmental point of view and according to the approved standards. The permit shall be issued by the Ministry after application is made on the prescribed form and required documents enclosed and approvals issued by the competent authorities, particularly the following:
- a) The Ministry of Commerce and Industry approval for establishment of the project together with site coordinates shown on the map
 - b) Environmental impact study to projects requiring such.
 - c) Relevant project's plans, drawings and production processes flow diagrams.
- Article (3): The location of the proposed crushers and quarries' sites shall be far from populated areas, archaeological, tourism and agricultural areas, main graded and tarmac roads, nature reserves, areas of recharge dams, water and wadi's courses. In addition, the following environmental conditions must be considered:
- a) The topography and hydrology of the area
 - b) Climate conditions.
 - c) The local conditions, residential plans, roads and economic activities.
 - d) The conditions and operation specifications of the establishment, and concession duration.
 - e) Precautionary and mitigation measures.
- An environmental permit may be granted to use sites adjacent to the aforementioned areas after an environmental impact assessment study prepared by an approved consultant and accepted by the Ministry is submitted by the project owner who, in this case, shall be responsible for any disparities between the study and the operation outcome.
- Article (4): It is not permitted to use radioactive or chemical sources or equipment containing radioactive sources unless after obtaining the prescribed permit from the Ministry.
- Article (5): The environmental permit shall be valid for one renewable year and the application for renewal shall be submitted at least two months prior to the permit expiry date.
- Article (6): Owners of crushers and quarries shall pay attention to the various environmental conditions particularly the ones related to minimization and control of dust emissions during crushing operations according to the following:
- a) Control of dust emitted from loading and transport of earth and stones.
 - b) The use of bag filters and water sprays or a combination of both to control dust emitted from crushing operations.
 - c) Enclosure of hoppers on all sides except material entry side with the use of water spray to control dust emitted during loading of raw materials in the hoppers.
 - d) Enclosure of transfer belts with the use of water sprays at drop off points and spray of crusher floors.

Article (7): The project owner following expiry of the permit shall level the site and remove spoils and waste as required by the Ministry in this respect. The project owner shall deposit a bank guarantee of an amount of R.O.“5000” (Five Thousands Omani Rials) payable to the account of the Ministry of Regional Municipalities and Environment, issued by a bank approved by the Sultanate and valid for (4) months after the expiry date of the permit; this guarantee shall be renewed in the event of renewal of the permit.

Part Three
Conservation of Coasts, Beaches and Wadis

Article (8): It is not permitted to make any excavations or remove sand from coasts, beaches or wadis other than places determined by the Ministry. In addition, it is not permitted to excavate any part of a hill without obtaining the necessary permit issued by the concerned authority.

Article (9): Every municipality shall install fixed boards along its coasts, beaches and wadis stating, in both Arabic and English languages, this prohibition.

Article (10): Everyone permitted to excavate or transport sand from coasts, beaches and wadis shall adhere to the following conditions:

- a) Not to change wadis and gorges' courses and not to deepen excavation other than the depth stated in the permit.
- b) Not to cut down trees and maintenance of a distance of not less than five (5) meters around trees from the trees growing within the excavation area.
- c) The excavated quarry sites and wadi's courses following expiry of the permit should be reinstated and the profile of the site shall be reestablished as required by the Ministry.

Article (11): Without prejudice to any strict penalty stipulated in the rules and regulations in force in the Sultanate, everyone violating the provisions of these Regulations shall be subject to a fine not less than R.O.(50) and not exceeding R.O.(300) with removal of violation at the expense of the offender. In addition:

- a) A fine not less than R.O (50) and not exceeding R.O.(100) in case of the first or second violation.
- b) A fine not less than R.O (200) and not exceeding R.O.(300) in case of commitment of the same violation for the third time.
- c) A daily fine of R.O.(50) for every day of continuous violation for a period not exceeding three weeks after which the offender should be referred to the penal court.
- d) The offender, in any case, shall reinstate the site to the required environmental status or the Ministry shall undertake the same at the expense of the offender.

Article (12): The Crusher or quarry operation shall be suspended in the event of the following:

- a) If the Environmental Permit was not obtained.
- b) If the environmental conditions of the permit were not adhered to.
- c) If the Environmental Permit was not renewed.
- d) If the bank guarantee was not renewed.
- e) If the boundaries of the site are not clearly marked by pegs.
- f) If the company operates outside the area allocated for the crusher or the quarry

12. MD 187/2001 Issuance of Environmental approvals and final Environmental Permit

MD 187/2001 Organizing Issuance of Environmental approvals and final Environmental Permit

Ministerial Decision

No. (187/2001)

Issuing the Regulations for Organizing the Issuance of Environmental Approvals and the Final Environmental Permit

- Based on the law on Conservation Of The Environment And Prevention Of Pollution issued by Royal Decree No (10/82) and its amendments,
- And the Ministerial Decision No (300/93) regulating the issuance of environmental permits,
- And the approval of the Ministry of Finance,
- And according to the requirements of public interest.

Have decided

- Article (1): The provisions of the attached Regulations for Organizing the Issuance of Environmental Approvals and the Final Environmental Permit shall come into force.
- Article (2): The aforementioned Ministerial Decision No.(300/93) and all other provisions contradicting or contravening this decision shall be considered void.
- Article (3): This decision shall be published in the Official Gazette and shall come into effect from 1/August/2001.

Dr. Khamis bin Mubarak bin Essa Al- Alawi
Minister of Regional Municipalities, Environment and Water Resources

Issued on : 24/Rabi Alawal/1422
E. to :16/June/2001

**Regulations of Organizing the Issuance of
Environmental Approvals and the Final
Environmental Permit**

- Article (1): In application of the provisions of these regulations, the words and phrases shall have the following meanings unless stipulated otherwise:
Environmental approval shall include:
- a) Preliminary Environmental Approval: To be granted to the establishment to commence the construction process and the approval shall include specifications environmental conditions to be fulfilled prior to starting operation and shall be valid for one year renewable for a similar period.
 - b) Temporary Environmental Approval: To be granted to industrial establishments located outside industrial areas specified by the competent authorities and to projects complementary to the infrastructure ones.
The approval, in all cases, shall be valid for one year renewable for similar periods until the existence of an industrial area or completion of the infrastructure project as appropriate.
 - c) Environmental Permit to Infrastructure Projects: To be granted to infrastructure projects not requiring follow-up after completion of construction. The approval shall be valid for one renewable year for similar periods until completion of the project.
 - d) Final Environment permit: To be granted to the establishment after fulfilment of the conditions stated in the preliminary environmental approval and shall be valid for two years and renewable for a similar period or other specified periods.
- Article (2): The establishments, subject to the provisions of these regulations, shall be classified into categories according to the materials used in production, production capacity and the degree of their impact on the adjacent environment as indicated in the attached annex. Every category stated in the said annex shall have its own environmental conditions according to the level of environmental impact arising from its construction and operation.
- Article (3): The owner of an establishment shall apply to the Ministry on the form approved by the Ministry and in addition enclose an environmental impact study prepared by a consulting office approved by the Sultanate, if required by the Ministry.
- Article (4): The Ministry official shall as a preliminary step toward issuance of the environmental approval inspect the proposed sites to determine the environmental conditions that must be fulfilled.
- Article (5): The owner of the establishment shall be bound to implement the required conditions and shall inform the Ministry of the same and after ensuring that all conditions were implemented prior to issuance of environmental approval or final Environmental Permit.
- Article (6): Fees against the issuance of the environmental approval and the final environmental permit as per the attached table shall be collected.
- Article (7): The establishments mentioned in the attached annex if the nature of their activities so require - as evaluated by the Ministry- shall be bound to conduct an Environmental Audit (EA) by specialized companies approved by the Sultanate according to the requirements of the (ISO14000 series for environmental management system) every two years from the date of receiving their final environmental permits.
- Article (8): Without prejudice to the penalties stipulated by the mentioned Law On Conservation Of The Environment And Prevention Of Pollution, the Ministry may close down the establishment if it practiced its activity without environmental approval or final environmental permit or after their expiry dates.

Annex Dividing the Establishments into Categories

Category One

1	Small block Factories (Less than ten thousand tonnes)	9	
2	Carpentry, blacksmith and aluminium workshops	10	Bakeries and Sweets manufacturing (less than thousand tonnes)
3	Flour and spice mills	11	Ice plants (Less than five thousand tonnes)
4	Readymade clothes factories	12	Gas cylinder storage and sale.
5	Tissue paper industry	13	Car wash and oil change workshops
6	Foodstuff and coffee packaging (Less than 500 tonnes)	14	Small poultry farms
7	Tissue paper factories (cutting-up to 2 million packets).	15	Small printing press
8	Water filtration and distilled water (Less than 10 million litters)		

Category Two

1	Chemicals plants	10	Petrochemicals plants
2	Pharmaceutical manufactories	11	Aluminum factories
3	Detergents manufactories	12	Chalks plants
4	Marble, tiles and ceramic plants	13	Water purification and desalination stations
5	Oil and gas projects Power stations projects	14	Organic fertilizers
6	Textile and Spinning manufactories	15	Tanning projects and leather industries
7	Quarries	16	Crushers and screens
8	Plaster production	17	Mining
9	Perfumes and air fresheners factories.	18	Large block factories (ten thousand tonnes and more)
		19	large scale printing press(3 thousand tonnes & more)

Category Three

1	Poultry farms	11	Agriculture production and animal fodder
2	Water Treatment Stations	12	Fisheries packaging
3	Slaughter houses	13	Commercial and fishing ports
4	Dairy production	14	Fish farming
5	Marine clubs, harbours and bridges	15	Roads
6	Artificial lakes	16	Commercial and residential complexes.
7	Water supply networks	17	Hospitals and health centers
8	Storage and recharge dams	18	Permanent and temporary workers' camps
9	Electricity and telephone lines	19	Petrol stations
10	Livestock sheds		

Table
Issuance of Environmental Approvals and the Final Environmental Permit Fees

N0.	Type of Activity	Fees in R.O.
1	Preliminary Environmental Approval: Category One Category Two Category Three	3 5 7
2	Temporary Environmental Approval: Category One Category Two Category Three	3 5 15
3	Environmental Permit for Infrastructure Projects	25
4	Final Environmental Permit Category One Category Two Category Three	5 10 30

Ministerial Decision No. 39/2004

Sultanate of Oman

Ministry of Regional Municipalities,

Environment & Water Resources

Minister's Office'

Pursuant to royal decree No. 66/2001 setting the jurisdictions and organizational structure of the Ministry of Regional Municipalities, Environment & Water Resources, The Environment Protection and Pollution Control Law. promulgated by royal decree No. 114/2001, Approval from the Ministry of Finance and For the public interest:

It was decided

Article (1): The enclosed bylaws for the marine environment management permit shall be implemented.

Article (2): This decision shall be published in the Official Gazette and implemented as from the date of publishing.

Dr. Khamis bin Mubarak bin Issa Al Alawi

Minister of Regional Municipalities,

Environment & Water Resources

Issued: 23 Muharam 1425 AH.

Corresponding to: 15 March 2004

Marine Environment Management Bylaws

Chapter one

Definitions and general provisions

Article (1): In implementing these bylaws, the following expressions shall have the definition assigned, unless otherwise stipulated:

Liquids: Liquids other than natural untreated water

Diving: The action of a qualified diver using special equipment enabling him to stay underwater for a long time

Article (2): No sinking, liquid transportation between marine installations or diving activity may be performed unless after obtaining permission required in accordance with the regulations stipulated by the ministry

Article (3): Permits to sink solid materials in marine environment or transportation of liquids between marine installations shall be issued for three months. Permit holder should inform the ministry of the date for the sinking or transportation process. Diving permits shall be issued for one year for individuals and diving clubs. Permit for one day may be issued.

Article (4): Permit fees are set as follows:

Permit type	Validity	Amount
Sinking of solid materials	3 months	200 Baisa/ton
Liquid transport between installations	3 months	RO 100
Diving permits outside natural reserves	a) One year for diving clubs	RO 100
	b) One year for individuals	RO 25
	c) One day for individuals	RO 2

Article (5): Government authorities are exempted from the fees stipulated in the preceding article if performing by itself any of the works stipulated in the bylaws.

Exempted from the fees also the authorities and individuals performing any of these works for research or scientific purposes.

Article (6): Owners should facilitate the officials' assignment and allow them to enter the project site to implement their assignments.

Chapter two

Permit to sink solid materials in the marine environment

Article (7): Permits to perform any sinking works for solid materials in the marine environment may be obtained in accordance with the following conditions:

- a) Submission of documents maps and charts indicating the water depth and longitudes and latitudes of the area intended to sink in.
- b) Marine environmental impact study on the sinking area and the project's foreseen environmental impact.
- c) List of quality and quantity of solid materials to be sunk.
- d) Materials to be sunk should not contain any radioactive or hazardous materials that may lead to marine environmental damage.

Article (8): Quantities specified for sinking should not exceed the permitted quantity . Permit holder may not change the materials to be sunk or the location.

Chapter three

Permit to transport liquids between marine installations

- Article (9): Permit to transport liquids between marine installations may be issued against
- a) Approval from the authority concerned, as specified by the directorate of environmental inspection & control, for the specifications of the marine installations and its qualification
 - b) Insurance against damages resulting from liquid leaking into the marine environment.
 - c) Special emergency plan for the transport operation in accordance with the rules and regulations stipulated by the ministry
 - d) Documents and charts for the areas where the transportation is taking place, together with list of materials quantities and duration required for transportation.

Article (10): The permit holder undertakes to inform the ministry immediately in the event of any leakage into the marine environment.

Chapter four

Diving permits outside natural reserves

Article (11): Diving permit provides that the applicant should be member with diving clubs in Oman, or holding a diving certificate issued by an authorized authority.

Article (12): Diving clubs should be registered with the directorate of environmental inspection and audit in order to obtain diving permit.

Article (13): Diving is not permitted without the presence of a diver from the diving club. Exempted from this are diving operations for research or scientific purposes, or marine surveys, provided that there is an approval from this ministry.

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Chapter five

Penalties

Article (14): Without prejudice to any harsher penalty stipulated by the said Environment Protection and Pollution Control Law, or any other law, any person diving without permit, or diving in restricted areas, shall be penalized by RO 100 (one hundred Rial Omani) for the violation, increased to RO 200 (two hundred Rial Omani) if the violation is repeated more than once.

14. MD 159/2005 Discharge liquid effluent in Marine Environment

MD 159/2005 Bylaws to discharge liquid effluent in Marine Environment

Ministerial Decree No. 159/2005

Issuing the Regulations for the Discharge of Liquid Effluents to the Marine Environment.

Sultanate of Oman

**Ministry of Regional Municipalities,
Environment and Water Resources**

Based on the Marine Pollution control law issued by the Royal Decree No.34/74 and the conservation of the environment and pollution prevention law issued by the Royal Decree No.114/2001 and the Decision No.7/84 issued by the Environment Protection and Pollution Prevention Council regarding the regulations and criterions for discharging liquid effluents to the Marine environment, and the approval of the Ministry of Finance, as per the public interest requirements .

It has been decided:

Article (1): The rules of the enclosed regulations shall be applied for discharging the liquid effluents to the marine environment.

Article (2): The above mentioned decision No. 7/84 shall be cancelled and so is everything that opposes the enclosed regulations or contradicts their rules.

Article (3): This decision shall be published in the official gazette and become effective from the date of publication.

Abdullah Bin Salim Bin Amour Al Rawas
Minister of Regional Municipalities,
Environment and Water Resources.
Issued on 12 Jumada Al Oula 1426 Hijri
i.e. 19 June 2005.

Chapter One

Definitions and General Rules

- Article (1): For applying the rules of these regulations, the words and expressions mentioned in these rules shall have the same meaning prescribed in the above noted conservation of the environment and pollution prevention law and the following words and expressions shall have the corresponding meaning unless it is otherwise prescribed.
- Directorate: The Directorate General of Environment Affairs in the Ministry.
- Department: Inspection and Environment Control Department in the Ministry.
- Liquid Effluents: Any aqueous liquid which contain environmental pollutants to be discharged to the marine environment from land or sea based sources.
- Marine Environment: The coastal area extending from the highest high tide seaward to the Sultanate's territorial sea border which involve the special area and its flora and fauna attached to it or living on the sea bed including the pearls and coral reefs.
- Benthic Marine Life: Any marine flora or fauna attached to or living on the sea bed.
- Marine Pollution: The introduction directly or indirectly, by human activity of wastes or other materials into the sea which results or likely to result in harmful effects to the living resources and marine ecosystems or hazards to the marine activities including fishing and other legitimate uses of the sea and impairment of quality for use of seawater or reduction in its amenity.
- Discharge: Throwing or leaking or emitting or pumping or pouring out or releasing or sinking any pollutant in the marine environment whether directly or indirectly.
- Special Area: A sea area where for recognized technical reasons in relation to its oceanographic and ecological condition and its navigation traffic nature the adoption of special mandatory methods for the prevention of sea pollution is required.
- Permit: The approval issued by the inspection and environment control department which include the permission for discharging the liquid effluents to the marine environment.
- Article (2): Any concerned person may submit a claim to the Minister in relation to any decision or action taken by the Ministry or Directorate within one month from the date of his notification or definite acknowledgement. The Minister shall retain the right to withdraw or amend or suspend such decision or action.
- Article (3): The government authorities shall be exempted from the payment of the permit fees. The entities and individuals who carry out the discharge for research or scientific purposes shall also be exempted from the payment of such fees.
- Article (4): The concerned environment inspectors shall have the right to attend and inspect and monitor any discharge of liquid effluents while performing their duties.

Chapter Two

The procedures of discharging the liquid effluents to the marine environment.

- Article (5): It shall be prohibited to discharge any liquid effluents to the marine environment either directly or indirectly without obtaining the required permit.
- Article (6): The permit shall be issued against the payment of annual fees as follows:
R.O (15) – Riyal Omani Fifteen if the quantity is less than 100 m³.

R.O (50) – Riyal Omani Fifty if the quantity is more than 100 m³.

R.O (75) – Riyal Omani Seventy Five if the quantity is more than 1000 m³.

If a valid permit has not been obtained, a fine equivalent to the above mentioned fees shall be collected.

Article (7): The permit applicant shall be committed to reuse or recycle the liquid effluents or eliminate or reduce the harmful contents of such effluents through the application of proper environmental treatments.

The Ministry may refuse to issue the permit if it determines that appropriate opportunities exist to reuse, recycle or treat the effluent without undue risks to human health or environment.

Article (8): A detailed description and characterization of the effluent shall be essential precondition for considering the issuance of a permit to discharge. The primary assessment of the effluent shall include all relevant parameters which are likely to arise at anytime and such assessment shall be carried out on coastal waters.

Article (9): The quantity of the liquid effluent shall be within the indicated limits in Annex No.(1) .

Article (10): For issuing the permit the following details in respect of the discharge site shall be provided:

- (a) The physical, chemical and biological characteristics of the water column and sea bed within a (2) kilometre radius of the discharge point. Special attention shall be given to the location of algal beds sea grass beds and coral reefs.
- (b) The recreation locations and other uses of the marine area under consideration.
- (c) An assessment of the components of the liquid effluents being discharged in the area with special attention to the flux of phosphate and nitrate as appropriate.

Article (11): The owner of the permit shall be committed to the following:

- (1) The discharge end of the effluent discharge pipe shall be placed at a minimum depth of 1 meter below the lowest low tide level.
- (2) The temperature of the liquid effluents at the discharge point shall not exceed 10 degrees Celsius above the inlet intake temperature. The Ministry may require the submission of continuous monitoring of intake and outfall seawater temperatures in monthly report forms. In addition, spot checks should be made from time to time to check that the intake temperature is equivalent to ambient temperatures.
- (3) The end of the outfall pipe shall be placed on a site such that the effluent does not impinge on coral reefs, algal beds and sea grass beds.
- (4) The private facilities and equipment shall be maintained through sampling of the sea water and effluents according to the Ministry's requirements and conditions.
- (5) Determination of a 300 meter radius from the point of effluent discharge as the initial zone of dilution so that the disposed effluent in this area shall not result in the following:
 - (a) An increase in the ambient water temperature of more than
 - (b) 1⁰C (weekly average).

- (c) A depression of the dissolved oxygen values of more than 10 % (weekly average).
- (d) Changes in ambient pH of more than 0.2 units.
- (e) An increase or decrease in the salinity greater than 2 practical salinity units from ambient daily values.

Article (12): The discharge shall be three dimensionally modelled for a period covering one year monsoonal and tidal cycles. This modelling shall be undertaken for the worst conditions for initial dilution that is the lowest wind speed coinciding with a neap tide and the lowest current speed recorded at the site and tidal reversal under these conditions unless the Ministry determines otherwise.

Article (13): The modelling mentioned in the previous article shall include the following details:

- (a) Meteorological measurements: Wind speed and direction for a minimum of one month during the southwest and northeast monsoons (i.e. winter and summer)
- (b) Sea currents: Tidal and wind driven sea currents at the surface mid – water and the bottom water covering an area of 1 km towards the sea.
- (c) Bottom topography: Depth contours covering an area of 1km on either side of the discharge site and 1km towards the sea.
- (d) Multi-port diffusers shall be used at the end of the pipeline and they shall be of the staged diffuser type to assist in preventing effluent being returned to the near shore area. The ministry shall have the right to determine the required modelling for the discharge dimensions.

Article (14): It shall be prohibited to destroy the benthic marine life within the 300meter radius outfall regulated zone of initial dilution.

Article (15): Facilities and equipment shall be provided and maintained according to the requirements of the Ministry for sampling and seawater and effluent analysis. Other authorities may carry out such analysis after the Ministry endorses their laboratories.

Article (16): The discharge of liquid effluents from the ships or fixed and floating drilling rigs and other platforms shall be according to the international maritime organization convention and its protocols and annexes within the indicated limits in the attached annexes (2 – 7).

Chapter Three

Penalties

Article (17): Without prejudice to any severer penalty stipulated by other law any one who violates the rules of these regulations shall be subject to the penalties prescribed in the above mentioned conservation of the environment and prevention of pollution law.

Annex No. (1)

Discharge of Liquid Effluents to the Marine Environment Maximum Quality Limits. (mg/L except where otherwise stated)

PARAMETER	STANDARD
Temperature	Not greater than 10 degrees Celsius above ambient receiving seawater temperature.
Biochemical oxygen demand (BOD) (5d@ 20 degrees centigrade)	20.0
Chemical oxygen demand (COD)	200.0
Total Suspended Solids	30.0
Aluminum	5.0
Arsenic	0.100
Barium	2.0
Beryllium	0.300
Boron	1.0
Cadmium	0.010
Chromium	0.050
Cobalt	0.050
Copper	0.200
Cyanide	0.100
Fluoride	2.0
Iron	1.5
Lead	0.08
Lithium	0.070
Mercury	0.001
Molybdenum	0.05
Nickel	0.100
Nitrogen: Ammonia cal	1.0
Nitrogen : Nitrate	15.0
Nitrogen : Organic (Kjeldahl)	5.0
Total – Nitrogen	15.0
Oil & Grease	10.0
Phenols (total)	0.002
Phosphorus	2.0
Selenium	0.020
Silver	0.010
Sophie	0.100
Total chlorine	0.4
Vanadium	0.100
Zinc	1.0
Faecal Coliform Bacteria (per litre)	1,000
Viable Nematode Ova (per litre)	< 1
Organo halogens	< 0.001
Pesticides or their by – products	< 0.001
Organosilicon compounds	< 0.001
Organocopper compounds	
Organotin compounds	0.00002

Annex No. (2)

Criteria of discharge of oil from cargo tank areas of oil tankers

Sea Area	Discharge criteria
Within 50 nautical miles from land	No discharge except clean or segregated ballast
Outside a Special Area or more than 50 nautical miles from land	<p>No discharge except either:</p> <p>(a) clean or segregated ballast or</p> <p>(b) when:</p> <p>(1) The tanker is en route and</p> <p>(2) The instantaneous rate of discharge of oil does not exceed 30 litres per nautical mile and</p> <p>(3) The total quantity of oil discharge does not exceed 1/15,000 (for existing tankers) or 1/30,000 (for new tankers) of the total quantity of the particular cargo of which the residue formed a part and</p> <p>(4) The tanker has in operation an oil discharge and monitoring control system and slop tank arrangement as required by Regulation 15 of Annex 1 of MARPOL.</p>
Within a Special Area	No discharge except clean or segregated ballast.

Criteria of discharge of oil from machinery spaces of all ships.

Sea Area	Ship type and size	Discharge criteria
Anywhere outside a Special Area.	Oil tankers of all sizes and other ships of 400 grt and above.	<p>No discharge except when:</p> <ul style="list-style-type: none"> (1) the ship is proceeding en route and (2) the oil content of the effluent is 15 ppm or less and (3) the ship has in operation an oil discharge monitoring and control system oily water separating or filtering equipment or other installation as required by Regulation 16 of Annex 1 of MARPOL and (4) on oil tankers the bilge water does not originate from cargo pump – room bilges or is not mixed with oil cargo residue.
Anywhere	Fixed and floating drilling rigs and other platforms.	<p>No discharge except when :</p> <ul style="list-style-type: none"> (1) The oil content of the effluent is 15 ppm or less and (2) The drilling rig/platform has in operation an oil discharge monitoring and control system, oily water separating or filtering equipment or other installation as required by Regulation 16 of Annex 1 of MARPOL and (3) A record is kept of all oily water operations and (4) The drilling rig / platform is equipped with tanks for oil residues as per regulation 17 (1) of Annex 1 of MARPOL. (5) Residues are returned to shore for treatment.

Annex (4)

Criteria of discharge of oil from machinery spaces of all ships within a Special Area.

Sea Area	Ship type and size	Discharge criteria
Anywhere within a Special Area	Oil tankers of all sizes and other ships of 400 grt and above.	No discharge except when: <ol style="list-style-type: none"> (1) The ship is proceeding en route and (2) The oil content of the effluent without dilution does not exceed 15ppm and (3) The ship has in operation oil filtering equipment with alarm and automatic >15ppm stopping device and (4) For oil tankers, the bilge – water does not originate from cargo pump–room bilges or is not mixed with oil cargo residue.
	Ships of less than 400grt other than oil tankers.	No discharge except when the oil content of the effluent without dilution <15ppm.

Discharge conditions for effluents containing noxious liquid substances outside a Special Area.

Noxious liquid substances carried in bulk which pose a threat to the marine environment are divided into four categories (A, B, C and D) and are listed by category in appendix II to Annex II of MARPOL .

Conditions	Category A	Category B	Category C	Category D
Maximum concentration at time of discharge	Nil	1 ppm in wake of ship	10 ppm in wake of ship	1 part of substance in 10 parts of water in discharge mixture
Maximum quantity of cargo discharged from each tank.	Nil. Tank washings transferred to reception facility.	1 m ³ or 1/3000 th of tank capacity	3 m ³ or 1/1000 th of tank capacity	No limit
Discharge of effluent	None	Below the waterline.	Below the Waterline	No limit
Minimum depth of water	.....	25 meters	25 meters	No minimum Depth
Minimum distance from land	.....	12 nautical miles	12 nautical miles	12 nautical miles
Minimum speed of ship	.....	7 knots	7 knots	7 knots

Annex .No. (6)

Discharge conditions for effluents containing noxious liquid substances in a Special Area.

Conditions	Category A	Category B	Category C	Category D
Maximum concentration at time of discharge	Nil	Nil	10 ppm in wake of ship	1 part of substance in 10 parts of water in discharge mixture.
Maximum quantity of cargo discharged from each tank	Nil. Tank washings transferred to reception facility	Nil .Tank washings transferred to reception facility	1m ³ or 1/3000 of tank capacity	No limit
Discharge of effluent	.....	.....	Below the waterline	No limit
Minimum depth of water	.....	.....	25 meters	No minimum depth
Minimum distance from land	.....	.....	12 nautical miles	12 nautical miles
Minimum speed of ship	.....	.....	7 knots	7 knots

Annex No. (7)

Discharge conditions for sewage from ships.

These rules apply to all ships of more than 200 grt or carrying more than 10 persons.

Sea Area	Discharge criteria
Within 4 nautical miles from land	No discharge except from approved sewage treatment plant.
Between 4 and 12 nautical miles from land	No discharge except from: (a) Approved sewage treatment plant or (b) An approved system for commencing and disinfecting sewage.
More than 12 nautical miles from land	Discharge from above systems or sewage which is not commented or disinfected so long as the ship is en route and proceeding at a speed not less than 4 knots.




RED SEA AREA: SPECIAL AREA
MARPOL 73/78 ANNEX I & V

GARBAGE TYPE	OUTSIDE SPECIAL AREAS	INSIDE SPECIAL AREAS
ALL PLASTICS, INCLUDING BUT NOT LIMITED TO FISHING NETS, SYNTHETIC ROPES, PLASTIC GARBAGE BAGS AND INCINERATOR ASHES FROM PLASTIC PRODUCTS	PROHIBITED	PROHIBITED
FLOATING DUNNAGE, LUMBER AND PACKING MATERIALS	PROHIBITED LESS THAN 25 NM FROM LAND	PROHIBITED
FOOD WASTE, PAPER BAGS, GLASS, METAL, BOTTLES, CROCKERY AND SOLID REFUSE	PROHIBITED LESS THAN 12 NM FROM LAND	PROHIBITED
FOOD WASTE COMMINUTED OR GROUND	PROHIBITED LESS THAN 100M FROM THE NEAREST LAND	PROHIBITED LESS THAN 12 NM FROM THE NEAREST LAND

DISPOSAL OF GARBAGE FROM SHIPS ACCORDING TO MARPOL - THIS APPLIES TO ALL SHIPS REGARDLESS OF TONS

SPECIAL AREA FOR THE GULF IN THE AREA NORTH-WEST OF A DASHED LINE BETWEEN RAJ-AH-REKOD AND RAS AL-FAYDI (SULLUKATE OF OMAN)

IT IS PROHIBITED TO DISCHARGE ANY GARBAGE INTO THE SEA EXCEPT FOR FOOD WASTE WHEN THE SHIP IS MORE THAN 12 NM FROM THE NEAREST LAND - THIS APPLIES TO ALL SHIPS AND OFFSHORE PLATFORMS REGARDLESS OF TONS



Any violation observed is to be reported directly to the nearest State Authorities or MEDAC

Mediterranean Emergency Medical Aid Centre (MEDAC) Tel: +90 312 276524 Fax: +90 312 276522 e-mail: www@medac.com.tr



Control of Discharge of Oil (Machinery Space of all Ships)	Outside Special Area	In Special Area
Ships of 400 GT and above	<p>Prohibited to discharge oil or oily mixture into the Sea except when all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> - The ship is proceeding en route; - The oily mixture is processed through an Oil Filtering Equipment (Any ships of 400 GT and above but less than 10,000 GT Oil Filtering Equipment) (Any ships of 10,000 GT and above Oil Filtering Equipment with the alarm arrangements and automatic stopping device) - The oil content of the effluent without dilution does not exceed 15 ppm - The oily mixture does not originate from cargo Pump- room bilges on Oil Tankers - The oily mixture, in case of Oil Tankers, is not mixed with Oil Cargo residues 	<p>Prohibited to discharge oil or oily mixture into the Sea except when the following conditions are satisfied:</p> <ul style="list-style-type: none"> - The ship is proceeding en route; - The oily mixture is processed through an Oil Filtering Equipment with alarm arrangements and automatic stopping device - The oil content of the effluent without dilution does not exceed 15 ppm - The oily mixture does not originate from cargo pump-rooms bilges on oil tankers - The oily mixtures, in case of Oil Tankers, is not mixed with Cargo residues
Ships of less than 400 GT	<p>Oil and all oily mixtures shall either retain on board for subsequent discharge to reception facilities or discharge into sea in accordance with the following provisions:</p> <ul style="list-style-type: none"> - The ship is proceeding en route - The ship has in operation equipment of a design approved by the Administration that ensures that the oil content of the effluent without dilution does not exceed 15 ppm - The oily mixture does not originate from cargo Pump- room bilges on Oil Tankers - The oily mixture, in case of Oil Tankers, is not mixed with Oil Cargo residues 	<p>Oil and all oily mixtures shall either be retained on board for subsequent discharge to reception facilities or discharge into sea in accordance with the following provisions:</p> <ul style="list-style-type: none"> - The ship is proceeding en route - The ship has in operation equipment of a design approved by Administration that ensures that the oil content of the effluent without dilution does not exceed 15 ppm - The Oily mixture does not originate from cargo Pump-rooms bilges on Oil Tankers - The oily mixture, in case of Oil Tankers, is not mixed with Cargo residues
Oil Tankers of 150 GT and above	<p>Prohibited to discharge oil or oily mixture into the Sea except when all of the following conditions are satisfied:</p> <ul style="list-style-type: none"> - The Tanker is not within a Special Area - The Tanker is more than 50 nm (Nautical miles) from the nearest land - The Tanker is proceeding en route - The instantaneous rate of discharge of oil content does not exceed 30 litres per nm - The total quantity of oil discharged into the sea does not exceed 1/15,000 of the total quantity of the particular cargo of which the residue formed a part for the Tankers delivered on or before 31 December 1979 and 1/30,000 for the Tankers delivered after 31 December 1979 - The Tanker has in operation an oil discharge monitoring and control system and a stop-tank arrangement 	<p>Prohibited to discharge any oil or oily mixture from the Cargo area</p>
Oil Tankers of less than 150 GT	<ul style="list-style-type: none"> - Retention of oil on board with subsequent discharge of all contaminated washing to reception facilities 	<ul style="list-style-type: none"> - Same as outside Special Area

15. MD 79/1994 Noise pollution control in Public Environment

MINISTERIAL DECISION 79/94 ISSUING REGULATIONS FOR NOISE POLLUTION CONTROL IN PUBLIC ENVIRONMENT

According to the Law for the Conservation of Environment and Prevention of Pollution issued by the Royal Decree No.1 0/82 and its amendments.

And according to the requirements of public interest.

Have decided :

Article (1): The provisions of the attached Regulations entitled "Noise Pollution Control in Public Environment" shall be effective.

Article (2): All laws that contradict with the provisions of the attached Regulations shall be cancelled.

Article (3): This decision shall be published in the official Gazette and come into force with effect from the date of issue.

Amer Bin Shuwain Al Hosni
Minister of Regional Municipalities and Environment.

Issued on: 8th Shawal 1414 H
C.T.: 20th March 1994

REGULATIONS FOR NOISE POLLUTION CONTROL IN PUBLIC ENVIRONMENT

Article (1): The terms used in these Regulations shall have the following meanings:

The Minister: The Minister of Regional Municipalities and Environment.

Public Noise: Sounds generated from external sources and affecting the quality of the life of people in their daily life.

Tonal Noise: Non-nuisance sounds which are accepted by some people.

Impulse Noise: Nuisance sound which are released for short periods if the level of sound is high.

Decibel: A unit for measuring the volume of sound pressure perceived by the human ear.

Decibel (A): A unit for measuring the volume of normal sound pressure.

Equivalent (A): Sound filter for measuring normal sound level.

Micropascal : A unit for measuring sound pressure.

Equivalent Continuous A Weighted Sound Level:

A sound pressure level representing the same energy as that of a fluctuating noise considered over a period of time symbol $L_{eq, T}$, Unit dB re. 20 micropascal.

Sound Level by day and at night:

A weighted average of $L_{eq, T}$ over a specified time period of day, evening and night expressed in decibel re. 20 micropascal.

Article (2): External Noise Sources are:

- a) **Industrial plants and public works:** Include factories, similar commercial facilities, and the like as well as the works of assembling, dismantling and repair. It will also include public works, power plants and installation for extraction, pumping and refining of water, oil, gas, sewage treatment etc.
- b) **Road traffic:** Include motorized traffic in cities, on motorways and local ways etc.
- c) **Airports:** Include ground operations on airports dealing with commercial and general aviation such as transport operations, which include vehicles serving and testing aircraft, equipment and installations as well as the equipment of workshops, test beds, fuel stations etc.
- d) **Airborne operations of commercial and general aviation:** Any operation of brake release immediately before takes off to turn away from run-way after landing.

Article (3): Public noise shall be described in terms of emission values expressed by the equivalent continuous A -weighted sound pressure level over relevant time intervals, in decibels relative to 20 micropascal.

Article (4): For noise of tonal or impulse character, an adjustment shall be made to the measured or calculated value of the equivalent continuous A- Weighted sound pressure level of the noise. This shall be as follows:

- a) For tonal noise, the adjustment shall be 5 dB (A).
- b) For impulse noise, the adjustment shall be 5dB (A).

- c) For the noise of combined tonal and impulse character the adjustment shall be 7 dB (A).

Article (5): Noise limits shall be specified, according to the type, purpose and use of the district to which they apply, by the Ministry.

Article (6): For noise from sounds described in items a, b, and c of Article (2), the time limits of noise occurring in specific parts of the day and night for working days versus holidays shall be as follows:

- a) Workdays -daytime (A) : After seven a.m. up to six p.m. LMT
 b) Workdays- Evenings (8) : After six. p.m. up to eleven p.m. LMT
 c) Holidays and Nights (C) : After eleven p.m. up to seven a.m. LMT

Article (7): The limits of noise generated from the sources enlisted in item (a) of Article (2), in terms of equivalent continuous A-weighted sound pressure level over each particular time period A, B, C as defined in Article (6) shall be:

Type of District	Leq, T, dB (A)		
	Over Time Period		
	A	B	C
Rural residential recreational	45	40	35
Suburban residential	50	45	40
Urban residential	55	50	45
Urban residential with some workshops or business; city hub.	60	55	50
Industrial and commercial	70	70	70

Article (8): The limits of noise generated from the sources enlisted in item (b) of Article (2), in terms of equivalent Continuous A-Weighted sound pressure level over each particular time period A, B, C of Article (6) shall be:

Type of District	Leq, T, dB (A)		
	Over Time Period		
	A	B	C
Rural residential recreational	60	55	50
Suburban residential	65	60	55
Urban residential	65	60	55
Urban residential with some workshops or business; city hub.	65	60	55
Industrial and commercial	70	65	60

Article (9): The limits of noise generated from the sources enlisted in item (c) of Article (2), in terms of equivalent continuous A - weighted sound pressure level over each particular time period A, B, C of Article (6). shall be :

Type of District	Leq, T, dB (A)		
	Over Time Period		
	A	B	C
Rural residential recreational	45	40	35
Suburban residential	50	45	40
Urban residential	55	50	45
Urban residential with some workshops or business; city hub.	60	55	50
Industrial and commercial	70	70	70

Article (10): The limits of noise generated from the sources enlisted in item (d) of Article (2), in terms of day, evening and night levels, level of day, evening and night averaged over one year shall be :

Type of District	$L_{DEN} T$, dB (A) Over Time Period
Rural residential recreational	50
Suburban residential	55
Urban residential	55
Urban residential with some workshops or business; city hub.	55
Industrial and commercial	60

Article (11): The previous limits shall apply to new and planned buildings, plants, engineering works, roads, airports and others.

Article (12): The Ministry shall assign the persons or agencies who will carry out the measurements and calculations related to monitoring the compliance with noise limits, and draft reports, after making sure that, they are properly qualified, and provided with the required equipment.

Article (13): For such measurements, the instrumentation and their calibration shall comply with the requirements of International Standards ISO 1996-1. All relevant information of applied instruments such as make, type, serial number, calibration, calculation and methods in use shall be reported.

Article (14): Sound level measurements shall generally be taken at positions outside buildings where people are affected by public noise.

Article (15): Meteorological conditions, such as wind velocity, wind direction, temperature and relative humidity shall be taken into consideration while making measurements.

Article (16): If measurements prove that noise limits exceeded the limits stipulated for the sources, place and time in the Regulations, additional measures proposed by the Ministry for the attenuation of noise shall be adhered to.

16. MD 80/1994 Noise Pollution control in Working Environment

MINISTERIAL DECISION 80/94 ISSUING REGULATIONS FOR NOISE POLLUTION CONTROL IN WORKING ENVIRONMENT

According to the Royal Decree No. (10/82) issuing the Law for The Conservation of Environment and Prevention of Pollution and its amendments.

And according to the requirements of public interest.

Have decided :

Article (1): The provisions of the attached Regulations for "Noise Pollution Control in working Environment" shall come into force.

Article (2): Work stations shall be given a period of grace to rectify their status, according to the attached Regulations, and the Ministry officials shall define a suitable grace period for each station which shall not exceed one year from the date of enforcement of the Regulations.

Article (3): The Environmental Permits, which are issued by this Ministry to new industrial projects, shall include noise abatement measures in accordance with the attached Regulations.

Article (4): The Minister may exempt the Armed Forces and Visiting Forces from the Provisions imposed by the attached Regulations for a limited period, and the risk of health for persons to whom the exemption relates, shall be assessed.

Article (5): All Laws that contradict with the provisions of the attached Regulations shall be cancelled.

Article (6): This decision shall come into force with effect from the date of issuance and shall be published in the Official Gazette.

Amer Bin Shuwain AI Hosni
Minister of Regional Municipalities and Environment.

Issued on: 8th Shawal1414 H
C.T. : 20th March 1994

REGULATIONS FOR NOISE POLLUTION CONTROL

IN WORKING ENVIRONMENT

Article (1): The terms used in these Regulations shall have the following meanings:

The Minister: The Minister of Regional Municipalities and Environment.

The Ministry: The Ministry of Regional Municipalities and Environment.

Decibel (dB): A unit for measuring the volume of sound pressure perceived by the human ear.

Decibel (A): A unit for measuring the volume of normal sound pressure.

Decibel (C): A unit for measuring the volume of high sound pressure.

Equivalent (A): A sound filter for measuring normal sounds level.

Equivalent (C): A sound filter for measuring high sound level.

Micropascal : A unit for measuring sound pressure.

Noise in Working Environment:

Noises resulting from internal sources within the working area which adversely affect the employees quality of life.

Noise Level:

The level of continuous sound pressure at the Work place over a period of (10) minutes minimum time in dB (A) with a reference sound pressure of 20 micropascal.

Employee:

A self employed person or employed in one of the industrial projects but excluding persons working on board air-crafts and sea-going vessels.

Employee Daily Noise Exposure:

The level of eight-hour daily noise exposure of an employee, taking into account the effects of ear protectors.

Sound Power level:

The quantity indicating the total emission of sound power in all directions.

Workshop:

Any working environment or part thereof irrespective of specific machines, equipment, installations or processes used.

Sound Pressure level in Workstations:

The quantity designating sound emission produced by machines.

Article (2): The employer, when acquiring new machines, equipment or any noise generating installation which may increase the risk of hearing damage, shall check the following:

- a) Noise emission of the machine due to its operation and installation conditions, as well as the measurement method used for the monitoring of noise levels.
- b) Noise level of operator's position.
- c) Sound power level.

Article (3): The employer shall notify the Ministry of the information mentioned in the previous article to ensure compliance with the provisions of these Regulations.

Article (4): The noise level which an employee working in a workshop is exposed to, shall be 85 dB (A).

Article (5): The employer shall provide the employee exposed to noise level 85 dB (A) during normal working conditions with suitable means of noise abatement.

Ear protectors shall be provided by the employer to an employee exposed to a noise level exceeding 85 dB (A). The attenuation of such protectors shall be at least equal to the amount by which the noise level exceeds 80 dB (A).

Article (6): The employer, in case of an employee is likely to be exposed to a noise level of 90 dB (A) or above, shall reduce the exposure of that employee by means to be defined by the Ministry aside from ear protectors.

Article (7): These Regulations are complied with, if the sound level during 24 hours exceeds 85 dB (A) and the employer through special means has reduced the daily noise exposure of an employee to a level less than 85 dB (A).

Article (8): The employer shall provide suitable means for personal hearing protection and ensure that they are used by workers during the working period if it is impossible to reduce noise level below 90 dB (A) at all times.

Article (9): The employer, according to the Ministry request, must provide a competent person to carry out a qualified noise assessment and to substantiate that the Regulations are complied with.

Article (10): The employer must ensure that the noise levels during working hours are kept as low as reasonably practicable, using state-of-the-art technology to minimize noise nuisance. This applies to any type of noise harmful or annoying to employees.

Article (11): Machines must be designed and constructed in such a way that risks resulting from the emission of airborne noise are reduced to the lowest level possible using state-of-the-art technology and available means particularly at noise source. The Ministry may consider the provisions of these Regulations are complied with if the A -Weighted sound pressure level at work stations is not exceeding 85 dB (A).

Article (12): Manufacturers' instructions must give requirements concerning installations and assembly for reducing noise level such as use of dampers.

Article (13): The technical literature, including instruction manuals, must give the following information concerning airborne noise emission by machines:

- a) Equivalent continuous A -Weighted sound pressure at workstation, where this exceeds 70 dB (A) and where the level does not exceeds 70 dB (A), this fact must be indicated.
- b) Peak C-Weighted instantaneous sound pressure value at work stations, where this exceeds 130 dB (C).
- c) A-Weighted sound level, in dB re 1 pw, emitted by machines for which the equivalent continuous A-Weighted sound pressure level at workstations exceeds 85 dB (A).

Article (14): The employer must report the operating conditions of the machine during noise measurements and the methods used for measurements. Sound levels must be measured over at least one representative work cycle if the operation conditions of the machine are cyclic.

Article (15): Where the work station is undefined or cannot be defined, sound pressure levels must be measured in four positions around the machine, each at a distance of one meter from the surface of the machine, by placing the four microphones opposite to the vertical center line of the machine surfaces, at a height of 1.6 meter above the floor or access platform.

17. MD 281/2003 control and management of radioactive materials
SULTANATE OF OMAN

**MINISTRY OF REGIONAL MUNICIPALITY ENVIRONMENT AND
WATER RESOURCES**

**REGULATIONS FOR THE CONTROL AND MANAGEMENT OF
RADIOACTIVE MATERIALS**

ISSUED BY: MD (249/97) DATED 6 JULY 1997 AMENDED BY: MD (281/2003)
DATED 31 DECEMBER

- Article (1):** The terms used in these regulations shall have the following meanings:
1. ***The Ministry*** : Ministry of Regional Municipalities, Environment and Water Resources.
 2. ***The Minister***: Minister of Regional Municipalities, Environment and Water Resources.
 3. ***Permit***: The approval granted to an organization to import, transport, use, store or dispose of radioactive materials.
 4. ***Approved work Plan***: A plan defining working procedures and the limits of exposure dose to a person working in an area containing radioactive materials.
 5. ***Classified worker***: A Person working in a controlled area which ensures that the person will not receive an annual dose exceeding 10 mSv.
 6. ***Technical Guidelines for the control and management of radioactive materials***: The guidelines set by the Ministry to provide acceptable methods to meet requirements of this regulation.
 7. ***Consignment*** : Radioactive materials packages being transported under one shipment.
 8. ***Contamination*** : The presence of uncontained radioactive materials in a body or on a surface where it is undesirable and could prove to be harmful.

9. Contractor / Subcontractor : **The person(s) or** organisation performing operations on behalf of another organisation in compliance with their rules.
10. Controlled Area : An area where immediate dose rates can exceed 7.5 μSv (0.75 mrem)/h.
11. Supervised Area: An area where the immediate dose rates exceed 2.5 μSv (0.25 mrem)/h but does not exceed 7.5 μSv (0.75 mrem)/h. The area might be subjected to exposure conditions that need to be kept under review.
12. Dose: The Quantity of Energy imparted to matter by ionising radiation per unit mass of matter.
13. Excepted package : Packages containing radioactive materials in limited quantities as given in the technical guidelines, set by the Ministry, or radioactivity in the instruments used.
14. The Organisation : Any Government or Private body involved in the import, transport, storage, usage or disposal of radioactive materials.
15. Packaging : Material used to protect the radioactive material and the public from radiation during transport.
16. Radioactive materials : Any material with an activity concentration greater than 100 KBq/kg or 100 Bq/g
17. Radioactive waste : Unwanted radioactive material that contains concentrations greater than the levels given above in item (16).
18. Shippers certificate : A document that accompanies a shipper, consignee, material and quantity being transported and the type of packing used.
19. Sealed Source : Radioactive material that is permanently encapsulated in a solid form so as to maintain leak tightness in all conditions.
20. Unsealed Source : Source that does not meet the definition of sealed source, usually a liquid or solution.
21. Transport Index : Equals 0.1 multiplied by the value of the dose rate measured by $\mu\text{Sv/h}$ at one meter distance from the surface of the radioactive material package (the internationally accepted index for classification of packages and how they can be grouped for storage and transport).
22. Packages (Type A & Type B) : An internationally accepted classification of packages to allow the safe transport of Radioactive materials.
23. Transport: The Controlled movement of radioactive materials from one location to another.
24. Becquerel (Bq) : The System International (SI) Unit for measurement of radioactivity (one Bq = 1 Nuclear disintegration/sec).
25. Contingency Plan: A set of procedures to be implemented in the event of radioactive emergency.
26. Curie (Ci) : The traditional unit for measurement of radioactivity (1 Ci = 37 GBq).
27. Dose Rate: Absorbed dose measured per unit of time.
28. Gray (Gy): The unit absorbed or organ dose (1 Gy = 1 J/kg).
29. Monitoring : The measurement of exposure, dose rate or contamination for assessment and control of exposure of persons and the environment to radioactive materials.
30. Rad : Traditional unit of absorbed dose (1 Rad = 0.01 Gy).
31. Radiation Monitoring Devices : Detection Device used by classified worker for monitoring ionising Radiation.
32. Shielding : Material used to reduce emission of radiation.
33. Test Certificate : Issued by the manufacturer of a sealed source certifying that the source has been satisfactorily tested in accordance with the recognised international standards.
34. Concerned Department : Environmental Inspection and Control Department

Article (2): It is not permissible to any person to import, transport, store or use radioactive materials, or equipment containing radioactive materials unless the required permit is obtained. In

order to obtain the permit, it is conditional for the person to submit the duly filled prescribed application form to the concerned department with the supporting documents. The permit shall be valid for one renewable year and shall not contain more than four radioactive sources. The permit for the consumable markers (Marker, Tracers, Bullets) shall not contain more than four boxes.

The permit for use shall be renewed within a maximum period of one month from the date of expiry and in the event of radioactive materials use after the expiry of this period, a fine of R.O. 200 shall be imposed and shall be doubled every three months provided that it shall not exceed in total R.O. 1000.

- Article (3):** The Organisation shall, after the Ministry's approval, provide qualified persons to monitor and control radioactive materials and ensure that the provisions of these regulations are complied with.
- Article (4):** The Organisation shall be responsible for providing the Ministry, Royal Oman Police (Directorate General of Civil Defence) and other concerned authorities with information, maps and plans indicating locations of using and storage of radioactive materials.
- Article (5):** The Organisation shall identify the "Controlled" and "Supervised" areas within which dose levels as indicated in the permit or as per the terms of the Guidelines are complied with.
- Article (6):** A person under the age of 18 is not allowed to be a classified worker. Female workers shall be subject to additional restraints in accordance with the terms and guidelines set by the Ministry.
- Article (7):** The organisation shall notify the Ministry in the following cases :
- a) Before the import and use of radioactive materials, or any other relevant work in the Sultanate.
 - b) If there is any release of radioactive materials in excess of that specified in the permit.
 - c) If anyone or worker has received a radiation dose in excess of the level indicated in the permit.
- Article (8):** Any organisation dealing with radioactive materials shall establish an internal management system including; staff structure with well defined responsibilities, written procedures of work, quality assurance procedures, staff training and emergency procedures so as to meet the Ministry's requirements
- Article (9):** The internal rules of the organisation shall be written and made available to all workers in the "Controlled" and "Supervised" areas and users of radioactive materials covering the working procedures and practices that shall be followed by workers in the area, including :
- a) A full description of the controlled and supervised area and any associated restrictions.
 - b) Ordering and receipt of radioactive material.
 - c) Dealing with radioactive material.
 - d) Disposal of radioactive material.
 - e) Record keeping.
 - f) Procedures for contractor and visitors.
 - g) Actions to be taken in the event of accidents and emergencies. H - Training.
- Article (10):** All classified workers must receive adequate training on their field of work, before dealing with radioactive materials. This shall be suitably recorded.
- Article (11):** Worker in the controlled areas are prohibited from eating, drinking, smoking, using cosmetics, licking glued labels and using mouth pipettes or personal handkerchiefs.
- Article (10):** Packaging of all types of radioactive materials shall be in accordance with the current regulations issued by the international atomic energy agency concerning safe transport of radioactive materials and, the requirements and Guidelines issued by the Ministry. In cases where packaging of radioactive materials is made by the supplier, the organisation must obtain copies of the approval certificates for that packaging to be submitted to the Ministry. But, in cases where these materials have not been packed by the supplier, approval of the Ministry must be obtained before use.

- Article (13):** The international classification and radiation dose limitation on type A and type B excepted packages shall conform to maximum surface dose rate of 2 mSv/h and transport index of 10 for each package.
- Article (14):** Packages of radioactive materials must be labelled in accordance with the current regulations issued by the international atomic energy agency for the safe transportation of radioactive materials.
- Article (15):** Transportation of radioactive materials into or out of the Sultanate of Oman shall be carried out in accordance with the International Atomic Energy Agency regulations for the safe transport of radioactive materials. All imports of radioactive material shall be accompanied by the appropriate shipping certificates.
- Article (16):** It is not permissible for radioactive materials or equipment containing them to enter the Sultanate unless by air and also it is not permissible to transport radioactive materials within the Sultanate unless by land.
- Article (17):** Vehicles used for the transport of radioactive materials within the Sultanate of Oman must obtain approval of the Directorate General of Civil Defence (Royal Oman Police) before being used.
- Article (18):** The limitations for the transport of radioactive materials shall be as follows :
- A - The maximum dose rate at any point on the outer surface of any vehicle loaded with radioactive material shall be 2 mSv/h.
 - B - The maximum dose rate at one meter distance from the outer surface of any vehicle carrying radioactive material shall be 0.1 mSv/h.
 - C - The maximum dose rate at the driver's seat shall be 2.5 μ Sv/h. unless he is classified, taking into account the time required for the trip.
 - D - Any radioactive packages must be placed in a tightly sealed containers that securely fixed on the vehicle's floor. The container must be placed in a manner that minimises the dose rate at the driver's seat and, should not be close to the rear of the vehicle
 - E - No radioactive material shall be kept in the driver's compartment of any vehicle.
 - F - Nobody is allowed to travel with any radioactive consignment other than the driver and those authorized to do so.
 - G - Agricultural products, livestock, flammable materials or explosives shall not be transported as part of radioactive materials consignment.
- Article (19):** Vehicles carrying radioactive materials shall be labeled on both sides and the rear with labels indicating that radioactive materials are being carried. The labels shall be written in Arabic and English languages, as per the Ministry's requirements. These labels shall be removed when the vehicle is not carrying radioactive materials.
- Article (20):** Each consignment of radioactive materials being transported shall be accompanied by Shipper's certificate. Any movement of the materials shall be recorded in a special record as per requirements of the Ministry.
- Article (21):** Radioactive materials shall be transported with a minimum stop-overs enroute to its destination. Vehicle shall stop only at places specified in the permission. Each driver of vehicles carrying radioactive materials shall not drive for more than "4" hours without a break and the working hours shall not exceed "10" per day.
- Article (22):** Permanent storage of radioactive materials shall be permitted only at locations approved by the Ministry. The Organisation using these locations should have written procedures of operation, security facilities, dose rate limitations, notices and labels as per the enclosed design model.

A prior approval from the Ministry must be obtained for any proposed temporary locations for storing radioactive material for a period not exceeding 24 hours.

Article (23): The storage locations must fulfil the following:

A - Should be away from populated areas.

B - All radioactive materials shall be adequately shielded, labeled and kept in locked and secure places to protect them from theft, damage or use by unauthorised persons.

C - Special procedures shall be established for control of the storage facilities keys.

D - Clearly label "Radioactive Materials" both in Arabic and English on each store containing radioactive materials as per instructions of the Ministry.

E - The dose rate outside the storage facility shall not exceed 2.5 $\mu\text{Sv/h}$.

Regular measurement of dose rates should be conducted on the boundaries of storage location and results of measurement shall be recorded. The dose figures shall be compiled and recorded for a trial period at the beginning of any period of work. All sealed source storage facilities shall be regularly wipe-tested and the results to be communicated to the Ministry.

Article (24): The sealed sources shall be returned to the manufacturer for disposal. While solid radioactive waste shall be stored until their radiation levels become low to the extent that they are considered inactive. In all cases, the Ministry shall be notified thereof.

Before storing any liquid radioactive material it should be transformed to solid or absorbed in accordance with the conditions set by the Ministry.

Article (25): Liquid radioactive waste shall be disposed of in drain in accordance with the Ministry's regulatory conditions.

Article (26): Importation of radioactive waste for final disposal in the Sultanate of Oman is absolutely prohibited.

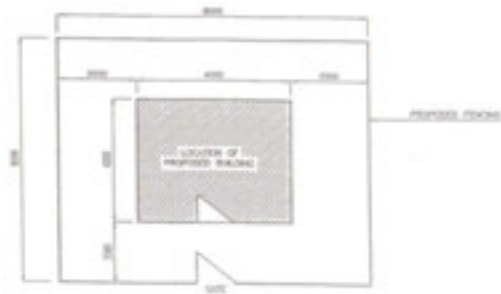
Article (27): The Ministry shall issue the technical guidelines for control and management of radioactive materials.

Article (28): Without prejudice to the penalties stipulated in the mentioned Law for Conservation of Environment and prevention of Pollution, anyone violating the provisions of this regulations shall be subject to a fine not exceeding R.O. 3000. In the event of repeating the same violation or a serious risk to the public health or environmental damage, the Ministry may close down the establishment until the rectification of the causes of violation provided that the closure should not exceed one month and this may be extended to another period in

A) EXTERNAL STRUCTURE



ELEVATION
SCALE 1:50

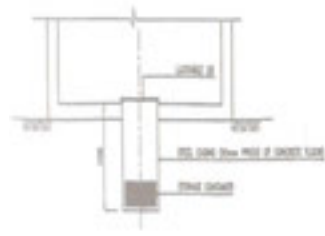


SETTING OUT PLAN
SCALE 1:500

B) STORAGE PIT

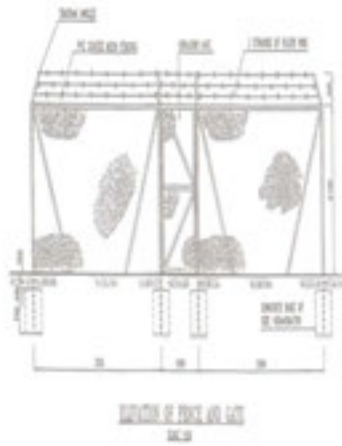


PLAN OF STORAGE PIT
SCALE



SECTION A-A
SCALE

C) FENCING AND LABELING



SECTION OF PIT, AS SHOWN
SCALE



SIGN PIT

18. MD 37/2001 control and management of Ozone depleting substances

UNOFFICIAL TRANSLATION.

SULTANATE OF OMAN

MINISTRY OF REGIONAL MUNICIPALITIES

AND

ENVIRONMENT

MINISTERIAL DECISION NO: 37/2001.

REGULATIONS FOR THE CONTROL
AND MANAGEMENT OF OZONE DEPLETING
SUBSTANCES (ODS).

FEBRUARY, 2001.

MINISTERIAL DECISION
NO(37/2001)
Issuing The Regulations for

The Control and Management of Ozone Depleting Substances (ODS).

Based on the Law of Conservation of Environment and Prevention of Pollution issued by Royal Decree No.(10/82) and its amendments,

And Royal Decree No. (73/98) approving the ratification by the Sultanate of Oman to Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol concerning the Ozone Depleting Substances, and according to the requirements of Public interest.

It is decided

Article (1): The provisions of the attached Regulations for the Control and Management of Ozone Depleting Substances shall be effective.

Article (2): All laws or regulations that violate or contradict with the provisions of the attached regulations shall be cancelled.

Article (3): This decision shall be published in the Official Gazette and shall be effective from the date of its publication.

Dr. Khamis Bin Mubarak Bin Essa Al Alawi
Minister of Regional Municipalities and Environment.

Issued on: 30 Dhu Al Qa'da 1421.
C.T.: 24 February 2001

Regulation for the control and management of Ozone Depleting Substances (ODS).

Article (1): During the implementation of the provisions of this Regulations the following words and expressions shall have the meanings set against each of them unless otherwise stated:

The Ministry: Ministry of Regional Municipalities and Environment.

Permit: An approval issued by the Ministry's concerned section including conditions permitting agencies and companies to import and distribute, the Ozone Depleting Substances (ODS) in the Sultanate of Oman.

Montreal Protocol: The protocol adopted in 1987 at Montreal city, Canada concerning the Ozone Depleting Substances.

Ozone Layer: A layer of atmosphere situated in the stratosphere containing high density of Ozone gas molecules and protecting the earth from the exposure of ultra violet rays.

ODS: Substances controlled by virtue of Montreal Protocol and its amendments listed in Annexes (A), (B), (C) and (D) attached to the protocol and its amendments.

ODP tons: A metric ton of an Ozone Depleting Substance multiplied by its ozone Depletion Potential.

Countries: Countries with an annual consumption of ODS less than 0.3kg/capita and have the right of an extra grace period to stop production and handling of such substance in addition to their technical and financial support from the multilateral Fund.

CFC's: Ozone Depleting Substances listed in Annexes (A) and (B) of Montreal Protocol and its amendments.

ODS Mixture: Chemicals which contain two or more ODS or one or more ODS mixed with non-depleting ozone chemicals.

Recycled Substances: ODS recovered from a certain unit for reuse after purification (through filtration, drying or chemical treatment).

Alternative Substances: Chemicals which are free from chlorine and Bromine and as such they are ozone friendly or substances with least Ozone depleting potential (ODP).

SMSE: Small and Medium Scale Enterprises dealing with servicing and maintenance of refrigeration / Air Conditioning equipment.State Parties to the

Montreal Protocol: States which ratified the Montreal Protocol on Ozone Depleting Substances.

MAC: Mobile Air Conditioning Unit containing Ozone Depleting refrigerants.

Ministry's Concerned Section
Air and Noise Pollution Control Section of the Ministry.

Article (2): The Ministry, in coordination with the Ministry of Commerce and Industry and ROP Directorate General of Customs, shall implement the provisions of these Regulations.

Article (3): ODS shall be subject to the phase-out in accordance with the provisions of Montreal Protocol as follows.

- (a) Chlorofluoro carbons (CFC's) Compounds:
 - CFC-11
 - CFC-12
 - CFC-113
 - CFC-114

- (b) Halon's group:
Halon-1211
Halon-1301
Halon-2402
- (c) Fully halogenated CFC's compounds:
CFC-13
CFC-111
CFC-112
CFC-211
CFC-212
CFC-213
CFC-214
CFC-215
CFC-216
CFC-217
- (d) Carbon Tetrachloride (CCl₄).
- (e) 1,1,1-trichloroethane also known as Methyl Chloroform (C₂ H₃ Cl₃). It does not include the Isomer 1,1, 2- trichloroethane.
- (f) HBFC's.
- (g) HCFC's
- (h) Methyl Bromide (CH₃Br).

The above substances whether in pure form, or mixtures or their products re-purified/ recycled may be re-exported to the State's parties to the Montreal Protocol after obtaining a prior permit from the Ministry's Concerned Section.

- Article(3):** above (including mixed substances). The importers shall submit information related to their present and future requirements for such substances according to the phase-out schedule (attached to these Regulations) which may be amended in the future in accordance with Montreal Protocol. The aforementioned shall be provided in the format prepared by the Ministry for this purpose.
Imports of ODS from States non-parties to the Montreal Protocol are prohibited
- Article (4):** A Permit shall be obtained from the Ministry's Concerned Section for the import of any ODS listed in
- Article (5):** The Ministry, according to an application with justified reasons from the body concerned, may permit the use of ODS in cases of urgent needs such as the use of metered dose inhalers for treatment of bronchial asthma patients, laboratory reagents, critical defence uses and Methyl Bromide uses in quarantine and pre-shipment applications.
- Article (6):** All importers and distributors of ODS shall keep records of their sales and the Ministry may review the said records prior to further imports of such substances.
- Article (7):** All importers, distributors, wholesale and retail dealers of ODS shall register themselves with the Ministry according to the format prepared for this purpose.
- Article (8):** Clearance of ODS at all ports of entry (Air, Sea or land) shall be according to the clearing format prepared by the Ministry for this purpose.
- Article (9):** Emissions of ODS shall be controlled by good equipment design and regular maintenance and use of proper recovery system during service.
- Article (10):** Skills of technicians dealing with servicing and maintenance of refrigeration, air conditioning and fire protection equipment or skills of those dealing with recovery/recycling of ODS shall be approved by the Ministry.

- Article (11):** The units for recording ODS shall be in kilogram only.
- Article (12):** Required reduction in importers' quotas shall be calculated on basis of ODP of chemicals in accordance with the phase-out schedule of Montreal Protocol attached to this Regulations and the information given in the format prepared by the Ministry for this purpose. Importers shall be informed regarding their quotas by the end of each year.
- Article (13):** The consumption of ODS shall be calculated on basis of imported quantity plus production minus export.
- Article (14):** Transfer of ODS quantities permitted to be imported from one importer to another is possible after the Ministry approval and subject to presentation of the import permit issued by the Ministry and submission of necessary documents; however the transferred quantity shall be deducted from the quota of the original importer.
- Article (15):** Trade names, quantities, data of import and country of origin of ODS together with the information of end users shall be provided to the Ministry by each importer every three months.
- Article (16):** The importer of re-manufactured/recovered ODS, appliances / equipment / machines in which such substances are used, as well as those using the said substances or the establishment of any enterprises to produce the same is prohibited with the exception of HCFC's groups to be phased-out according to the schedule attached to this Regulations.
- Article (17):** Destruction or disposal of currently used ODS or appliances /equipment / machines containing these substances shall be carried out after obtaining prior approval from the Ministry.

19. MD 243/2005 regulation for the control & management of ozone depleting substances

Ministry of Regional Municipalities, Environment And Water Resources Ministerial Decision No. (243/2005) Regulations For The Control & Management Of Ozone Depleting Substances

Based on Royal Decree No. (7398) concerning the ratification of the Sultanate of Oman to the Vienna Convention for the Protection of the Ozone Layer. And Montreal Protocol concerning the Ozone Depleting Substances And the Law for Conservation of the Environment and Prevention of Pollution issued by Royal Decree No. (114/2001) And the Ministerial Decision No. (37/2001) issuing the Regulations for the Control and Management of Ozone Depleting Substances. And the Ministry of Finance approval to in pose fees for the issue of permits to import ozone depleting substances according to its correspondence No. Finance -T (6688)/m t d/6702 dated 22/5/2005.

And according to the requirements of public interest.

IT IS DECIDED

Article (1): The provisions of the attached Regulations for the Control and Management of the Ozone Depleting Substances shall be effective.

Article (2): The mentioned Ministerial Decision No (37/2001) and all laws or regulations that violate or contradict with the provisions of this regulations shall be cancelled.

Article (4): This decision shall be published in the Official Gazette and shall be effective from the date of its publication.

Abdullah bin Salem bin Amer Al Rawas

Minister of Regional Municipalities, Environment and Water

Resources

Issued on: 13/Ramadan/1426 C.T. : 17/October/ 2005

Regulations For The Control And Management Of Ozone Depleting Substances (ODS)

Article (1): In compliance with the provisions of this regulation, the words and terms used herein shall have the same meanings stated in the Law for Conservation of the Environment and Prevention of Pollution and the following expressions shall have the meanings stated against each of them unless otherwise stated

The Department: Environmental Inspection and Control Department.

The Concerned Section : Air and Noise Pollution Section

License: An approval issued by the Ministry's concerned Section including conditions permitting agencies and companies to import and (distribute the controlled Substances (ODS) in The Sultanate of Oman)

Montreal Protocol: The protocol adopted in 1987 at Montreal city. Canada concerning the Ozone Depleting Substances

Ozone Layer: Situated in the stratosphere containing high density of Ozone gas molecules and protecting the earth from the exposure to the harmful ultraviolet rays

ODS : Substances having the characteristic of chemical stability in the lower atmosphere, comprising one or more chlorine or bromine atom or both and beginning a series of reactions in the "stratosphere* Layer causing depletion of the ozone.

Controlled Substances: ODS listed in Appendix* (1) {Annexes A, B, C, and E) to Montreal Protocol Montreal and its amendments and in Appendix (1) of this regulations whether existing alone or in a mixture in any proportion.

Appliances and Equipment: Appliances, equipment and products containing or depending in operation on ODS listed in Annex (D) of Appendix (1) of this Regulations

Recovered Substances: Controlled substances that have been collected from machinery, equipment and containment vessels during servicing or prior to disposal.

Recycled Substances: Controlled substances recovered from a certain unit for reuse after purification through filtration and drying

Extracted Substances: Controlled substances that have been processed to a certain level through filtering, drying, distillation or chemical treatment

State Parties: States, which ninety days have passed since they deposited their instrument of ratification, acceptance, approval or accession to the Vienna Convention for The Protection of the Ozone Layer of 1985 and Montreal Protocol on Substances that Deplete the Ozone Layer of 1987.

Essential Uses: Uses where the controlled substances are either necessary for health, safety or for the functioning of society and no acceptable alternative is available.

Substances destroyed: Controlled substances destroyed through approved destruction technologies

Article (2): All ministries, agencies and other concerned authorities shall coordinate with the Ministry in implementation of the provisions of this Regulation.

Article (3): The import or export of controlled substances including mixed, recovered, extracted or recycled substances is prohibited unless after obtaining a license from the Concerned Section.

Article (4): An application for a license shall be submitted by the concerned person including the following information:

- a) Substance (s) chemical commercial name
- b) Substance state.
- c) Quantity in kilogram.
- d) Production date
- e) Port of entry.

An original purchase invoice together with an authenticated certificate of the country of origin and a permit from the exporting State shall be attached

Article (5): Fee against the license as per Appendix No.(3) of this Regulations shall be collected and the license shall be valid for one time import only

Article (6): The import or export of controlled substances from and to non-parties to the Montreal Protocol and imports for re export is prohibited.

Article (7): Controlled substances listed in Montreal Protocol and its amendments shall be phased-out in accordance with the phase-out schedule in Appendix No (2) of this Regulations.

Article (8): The import of a l types of new or used equipment and appliances stated in Annex (D) of Appendix No (1) of this Regulations containing controlled substances are prohibited.

Article (9): A license shall be obtained from the Ministry's Concerned Section prior to release of any consignment containing domestic, commercial and industrial refrigeration and air conditioning equipment, vehicles and buses air conditioning including their compressors and condensation units, portable and stationary extinguishing equipment and systems and aerosols (except medical ones).

Article (10): The concerned person shall submit an application for release including the following information

- Type of gas used in the appliance
- Country of origin.
- Port of entry

The following documents shall be attached:

- a) Customs inspection report.
- b) Original purchase invoice
- c) imported equipment and appliances catalogue
- d) Authenticated certificate of origin.

Article (11): The import of controlled substances to the establishments and agencies already registered with the Ministry is permissible

Article (12): Actions for customs clearance of controlled substances at all custom ports of entry shall be according to the format prepared by the Ministry for this purpose.

Article (13): Emissions of the controlled substances shall be controlled by regular maintenance of appliances and use of proper recovery system during service.

Article (14): Establishments for repair and maintenance of refrigerators contain controlled substances shall be bound to provide gas recovery and re-cycle equipment.

Article (15): Technicians dealing with servicing and maintenance of refrigerators, air conditioning and fire protect on equipment or those dealing with recovery/re-cycling of controlled substances shall take a technical test to be conducted by the concerned authority prior to practicing their profession.

Article (16): The recording unit used in import/export applications or for reporting controlled substances imported or exported quantities shall be the kilogram

Article (17): Reduction h importer's quotas of controlled substances shall be in accordance with the phase-out schedule in Appendix No (2) of this Regulations. Importers shall be informed regarding their quotas prior to the end of each year

Article (18): Transfer of controlled substance's quantities permitted for import from one importer to another is possible after the Ministry approval, however the transferred quantity shall be deducted from the quota of the original importer

Article (19): A report indicating the names, types, quantities and dales of imported substances together with information of end users during the previous year and all prove documents attached to the report shall be provided to the Ministry by each importer of controlled substances not later than the end of January each year

Article (20): Importers and distributors of controlled substances shall keep records of all their sales. The Ministry's inspectors shall have the right to enter the premises of all establishments dealing with controlled substances any time to inspect and review their records.

Article (21): Establishments using controlled substances shall be bound by the percentage of phasing-out of such substances in accordance with the phase-out schedule attached to the Montreal Protocol.

Article (22): Destruction or disposal of controlled substances or equipment, appliances and products containing such substances is prohibited unless obtaining prior approval from the Ministry.

Article (23): Importers of controlled substance's cylinders and containers shall label them with labels indicating clearly and accurately type, quantity, state and name of the substance country of origin, provided that each consignment shall be accompanied by all documents confirming such data labels and slickers shall also be placed on all imported refrigerants, aerosols and other imported products stating that they are free of controlled substances and contain ozone friendly substances.

Article (24): Standard specifications related to all imported equipment and appliances shall be identified in accordance with the provisions of these Regulations.

Article (25): Controlled substances transport companies prior to passage of the Sultanate is entry ports and entry of its territory or territorial waters shall submit an application indicating type, quantity and state of transported substance together with the exporting agency and duration of stay within the territory of the Sultanate and its territorial and shall be attached to it a certificate of the country of origin and a permit to import from the importing country.

Article (26): The Ministry and ROP Directorate General of Customs shall register controlled substances consumed quantities, and the Ministry, in coordination with the Directorate General of Customs, shall review and check periodically or utmost every six months the release data of these consignments.

Article (27): All workers dealing with the controlled substances are prohibited from committing any of the following actions:

- Providing false or misleading information to the Ministry
- Smuggling or assist in smuggling of controlled substances or equipment, appliances and products harmful to the ozone layer.
- Replacing types of gases used in refrigerants and air conditioning with gases other than those designated by the manufacturing company.

Article (28): The importer shall return the imported consignment or quantity in access to the importing agency at his own expense in the event of importing without a prior license or importing quantities greater than those permitted to import.

Article (29): Without prejudice to any severe penalty stipulated in the said Law on Conservation of the Environment and Prevention of Pollution issued by Royal Decree No.(114/2001) or any other law any offender to the provisions of this Regulations shall be fined an amount not exceeding R.O =/300.

Annex A: Controlled substances

Group	Substance	Ozone-Depleting Potential*
Group I		
	CFCl ₃	(CFC-11) 1.0
	CF ₂ Cl ₂	(CFC-12) 1.0
	C ₂ F ₃ Cl ₃	(CFC-113) 0.8
	C ₂ F ₄ Cl ₂	(CFC-114) 1.0
	C ₂ F ₅ Cl	(CFC-115) 0.6

Group II

	CF ₂ BrCl	(halon-1211) 3.0
	CF ₃ Br	(halon-1301) 10.0
	C ₂ F ₄ Br ₂	(halon-2402) 6.0

*** These ozone depleting potentials are estimates based on existing knowledge and will be reviewed and revised periodically.**

Annex B: Controlled substances

Group	Substance	Ozone-Depleting Potential
Group I		
	CF ₃ Cl	(CFC-13) 1.0
	C ₂ FCl ₅	(CFC-111) 1.0
	C ₂ F ₂ Cl ₄	(CFC-112) 1.0
	C ₃ FCl ₇	(CFC-211) 1.0
	C ₃ F ₂ Cl ₆	(CFC-212) 1.0
	C ₃ F ₃ Cl ₅	(CFC-213) 1.0
	C ₃ F ₄ Cl ₄	(CFC-214) 1.0
	C ₃ F ₅ Cl ₃	(CFC-215) 1.0
	C ₃ F ₆ Cl ₂	(CFC-216) 1.0
	C ₃ F ₇ Cl	(CFC-217) 1.0

Group II

	CCl ₄	carbon tetrachloride 1.1
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Group III

	C ₂ H ₃ Cl ₃ *	1,1,1-trichloroethane* (methyl chloroform) 0.1
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*** This formula does not refer to 1,1,2-trichloroethane.**

Annex C: Controlled substances

Group	Substance	Number of isomers	Ozone-Depleting Potential*
<i>Group I</i>			
	CHFCl ₂ (HCFC-21)**	1	0.04
	CHF ₂ Cl (-22)**	1	0.055
	CH ₂ FCI (HCFC-31)	1	0.02
	C ₂ HFCl ₄ (HCFC-121)	2	0.01-0.04
	C ₂ HF ₂ Cl ₃ (HCFC-122)	3	0.02-0.08
	C ₂ HF ₃ Cl ₂ (HCFC-123)	3	0.02-0.06
	CHCl ₂ CF ₃ (HCFC-123)**	-	0.02
	C ₂ HF ₄ Cl (HCFC-124)	2	0.02-0.04
	CHFClCF ₃ (HCFC-124)**	-	0.022
	C ₂ H ₂ FCI ₃ (HCFC-131)	3	0.007-0.05
	C ₂ H ₂ F ₂ Cl ₂ (HCFC-132)	4	0.008-0.05
	C ₂ H ₂ F ₃ Cl (HCFC-133)	3	0.02-0.06
	C ₂ H ₃ FCI ₂ (HCFC-141)	3	0.005-0.07
	CH ₃ CFCl ₂ (HCFC-141b)**	-	0.11
	C ₂ H ₃ F ₂ Cl (HCFC-142)	3	0.008-0.07
	CH ₃ CF ₂ Cl (HCFC-142b)**	-	0.065
	C ₂ H ₄ FCI (HCFC-151)	2	0.003-0.005
	C ₃ HFCl ₆ (HCFC-221)	5	0.015-0.07
	C ₃ HF ₂ Cl ₅ (HCFC-222)	9	0.01-0.09
	C ₃ HF ₃ Cl ₄ (HCFC-223)	12	0.01-0.08
	C ₃ HF ₄ Cl ₃ (HCFC-224)	12	0.01-0.09
	C ₃ HF ₅ Cl ₂ (HCFC-225)	9	0.02-0.07
	CF ₃ CF ₂ CHCl ₂ (HCFC-225ca)**	-	0.025
	CF ₂ CICF ₂ CHCIF (HCFC-225cb)**	-	0.033
	C ₃ HF ₆ Cl (HCFC-226)	5	0.02-0.10
	C ₃ H ₂ FCI ₅ (HCFC-231)	9	0.05-0.09
	C ₃ H ₂ F ₂ Cl ₄ (HCFC-232)	16	0.008-0.10
	C ₃ H ₂ F ₃ Cl ₃ (HCFC-233)	18	0.007-0.23
	C ₃ H ₂ F ₄ Cl ₂ (HCFC-234)	16	0.01-0.28
	C ₃ H ₂ F ₅ Cl (HCFC-235)	9	0.03-0.52
	C ₃ H ₃ FCI ₄ (HCFC-241)	12	0.004-0.09
	C ₃ H ₃ F ₂ Cl ₃ (HCFC-242)	18	0.005-0.13
	C ₃ H ₃ F ₃ Cl ₂ (HCFC-243)	18	0.007-0.12
	C ₃ H ₃ F ₄ Cl (HCFC-244)	12	0.009-0.14
	C ₃ H ₄ FCI ₃ (HCFC-251)	12	0.001-0.01
	C ₃ H ₄ F ₂ Cl ₂ (HCFC-252)	16	0.005-0.04
	C ₃ H ₄ F ₃ Cl (HCFC-253)	12	0.003-0.03

$C_3H_5FCl_2$	(HCFC-261)	9	0.002-0.02
$C_3H_5F_2Cl$	(HCFC-262)	9	0.002-0.02
C_3H_6FCl	(HCFC-271)	5	0.001-0.03
Group II			
CH_2FBr_2		1	1.00
CHF_2Br	(HBFC-22B1)	1	0.74
CH_2FBr		1	0.73
C_2HFBr_4		2	0.3-0.8
$C_2HF_2Br_3$		3	0.5-1.8
$C_2HF_3Br_2$		3	0.4-1.6
C_2HF_4Br		2	0.7-1.2
$C_2H_2FBr_3$		3	0.1-1.1
$C_2H_2F_2Br_2$		4	0.2-1.5
$C_2H_2F_3Br$		3	0.7-1.6
$C_2H_3FBr_2$		3	0.1-1.7
$C_2H_3F_2Br$		3	0.2-1.1
C_2H_4FBr		2	0.07-0.1
C_3HFBr_6		5	0.3-1.5
$C_3HF_2Br_5$		9	0.2-1.9
$C_3HF_3Br_4$		12	0.3-1.8
$C_3HF_4Br_3$		12	0.5-2.2
$C_3HF_5Br_2$		9	0.9-2.0
C_3HF_6Br		5	0.7-3.3
$C_3H_2FBr_5$		9	0.1-1.9
$C_3H_2F_2Br_4$		16	0.2-2.1
$C_3H_2F_3Br_3$		18	0.2-5.6
$C_3H_2F_4Br_2$		16	0.3-7.5
$C_3H_2F_5Br$		8	0.9-14.0
$C_3H_3FBr_4$		12	0.08-1.9
$C_3H_3F_2Br_3$		18	0.1-3.1
$C_3H_3F_3Br_2$		18	0.1-2.5
$C_3H_3F_4Br$		12	0.3-4.4
$C_3H_4FBr_3$		12	0.03-0.3
$C_3H_4F_2Br_2$		16	0.1-1.0
$C_3H_4F_3Br$		12	0.07-0.8
$C_3H_5FBr_2$		9	0.04-0.4
$C_3H_5F_2Br$		9	0.07-0.8
C_3H_6FBr		5	0.02-0.7

Where a range of OOPs is indicated, the highest value in that range shall be used for the purposes of the Protocol. The ODPs listed as a single value have been determined from calculations based on laboratory measurements. Those listed as a range are based on estimates and are less certain. The range pertains to an isomeric group. The upper value is the estimate of the ODP of the isomer with the highest ODP, and the lower value is the estimate of the ODP of the isomer with the lowest ODP. Identifies the most commercially viable substances with ODP values listed against them to be used for the purposes of Uie Protocol.

Annex D*: A list of products containing controlled substances specified in Annex A**

- | Customs code | Products number |
|---------------------|---|
| | 1. Automobile and truck air conditioning units (whether incorporated in vehicles or not) |
| | 2. Domestic and commercial refrigeration and air conditioning pump equipment" e g Refrigerators, Freezers, Dehumidifiers, Water coolers Ice machines, air conditioning and heat pump units. |
| | 3. Aerosol products, except medical aerosols |
| | 4. Portable fire extinguisher . |
| | 5 Insulation boards, panels and pipe covers |
| 6 | Pre-polymers |

This Annex was adopted by the Third Meeting of the Parties in Nairobi, 21 June 1991 as required by paragraph 3 of Article 4 of the Protocol

** Though not when transported in consignments of personal or household effects or in similar noncommercial situations normally exempted from customs attention

*** When containing controlled substances in Annex A as a refrigerant and/or in insulating material of this product

Annex E: Controlled substance

Group	Substance	Ozone-Depleting Potential,
Group I		
CH ₃ Br	Methyl bromide	0.6

Appendix (2)

PHASE –OUT SCHEDULE OF ODS UNDER MONTREAL
PROTOCOL ARTICLE (5) COUNTRIES

Annex	ODS	Reduction Schedule
Annex A	CFC-11, CFC-12, CFC-113, CFC-114, CFC-115	a. Freeze: July 1999 (Note to exceed base level of 1995- 97) b. 50 Percent: January 01,2005 c. 85 Percent: January 01, 2007 d. 100 Percent : January 01, 2010
	Halones (Group-II): Halones 1211 Halones 1301 Halones 2402	a. Freeze: January 01, 2002 b. 50 Percent: January 01,2005 c. 100 Percent : January 01, 2010
Annex B	CFC's (Group-I): CFC13,CFC111, CFC112, CFC 211 CFC212, CFC213, CFC214, CFC215, CFC216 and CFC217	a. 20 Percent: January 01,2003 b. 85 Percent: January 01, 2007 c. 100 Percent : January 01, 2010
	Carbon Tetrachloride (Group-II):	a. 85 Percent: January 01, 2005 b. 100 Percent : January 01, 2010
	1,1,1 Trichloroethene : (Methyl Chloroform) Group- III):	a. Freeze: January 01, 2003 (Note to exceed base level of 1998- 2000) b. 30 Percent: January 01,2005 c. 70 Percent: January 01, 2010 d. 100 Percent : January 01, 2015
Annex C	HCFC's (Group-I):	a. Freeze: January 01, 2016 b. 100 Percent : January 01, 2040
	HBFC's (Group-II): Bromochloromethane (Group-III):	100 Percent : January 01, 1996 100 Percent : January 01, 2002
Annex E	Methyl Bromide	a. Freeze: January 01, 2002 b. 20 Percent : January 01, 2005 c. 100 Percent : January 01, 2015

Appendix (3)
ODS Import License Fees

QUANTITY	OMANI RIAL
Up tot 500 kilograms	25
More than 500 kg – 1000 kg	50
More than 1000 kg – 5000 kg	100
More than 5000 kg – 10000 kg	150
More than 10000 kg	200

20. MD 05/86 1998 REGULATIONS FOR EXTERNAL BUILDING DRAINAGE

MINISTERIAL DECISION 5/86 DATED 17TH MAY, 1998 REGULATIONS FOR EXTERNAL BUILDING DRAINAGE

MINISTRY OF ENVIRONMENT AND WATER RESOURCES P.O. Box 323,
MUSCAT TEL: 696444 REGULATIONS FOR EXTERNAL BUILDING DRAINAGE

SECTION 1 -GENERAL RULES

Article (1): In compliance with the Law on the Conservation of the Environment and Prevention of Pollution issued by Royal Decree 10/82 and its amendments and in order to provide the greatest possible health and social welfare for the Nation and citizens, these Regulations concerning External Building Drainage have been effected

Article 2

The terms used in these Regulations shall be as defined in Royal Decree 10/82 with the following additions:-

Drain: Means any pipe or channel including chambers and manholes thereon not vested in the Municipality for the Area and which is used for the foul and/or surface water drainage of a building and any buildings or yards appurtenant there to and laid externally to those buildings.

Foul Drain: Means any drain to convey sewage from a building to a sewer or other point of disposal.

Foul Drain Connection: Means that portion of a foul drain that lies between the boundary of private property and its junction with a. public sewer or where the connection is to be made to a public sewer on private property, it shall mean the last 2 metres of the foul drain measured horizontally.

Gully Trap: Means a water sealed trap to prevent the passing of air and gases from the drain and to receive the sullage from waste pipes, and from the roofs and yards.

Chamber: Means a small concrete or brick chamber existing on a length of drain and provided with a cover. The depth of which does not exceed 600mm and is large enough to permit sewer rods to be used without difficulty.

Manhole: Means a chamber provided in the length of a drain, designed to enable a man to descend into it and move about comfortably and safely for the purpose of inspection, testing or clearing an obstruction.
Means a sewer for surface water "drainage, constructed and maintained at the expense of the owner

Public Channel: Means a channel for surface water drainage which is vested in and main- tained by the Municipality for the Area.

Private Sewer: Means any sewer vested in and maintained by the Municipality for the Area

Septic Tank: Means any structure designed to treat biodegradable wastewater by settlement and anaerobic biological degradation

Sewer: Means any pipe or channel together with associated manholes designed to convey sewage from two or more buildings and any buildings or yards appurtenant thereto
Means the discharge from soil fitments.

Soil Fitment: Means a w.c. or urinal or water basin or any similar fitments.

Soil Pipe: Means a pipe used to convey soil from a soil fitment to a foul drain

Sullage: Means the discharge of liquid wastes from the kitchen.

Surface Water Drain: Means any channel or pipe used to convey surface water from any part of a building and from the surface of the ground and any paved area to a public channel or other point of disposal.

Liquid Trade Wastes: Means any liquid, with or without suspended solid matter, resulting from any trade or manufacturing process or any cleaning operation associated there- with.

Trap: Means a device incorporating a water seal built into a pipe or fitment to prevent gas passing upstream of the trap.

Ventilation Pipe: Means any pipe used for ventilating any foul drain or sewer.

Waste Fitment: Means a bath, shower, wash-basin, and floor gully or sink.

Waste Water: Means soil, sullage and liquid trade wastes,

Waste-Seal: Means the water normally retained in a trap without which air or gases would have free passage through the trap.

SECTION 2: Drainage system

CHAPTER 1:

Surface Water Drainage System

Article (3):

- (a) Every building will be provided with pipes or channels as are necessary to effectively divert all surface water away from the building in such a manner as to minimise incidents of flooding.
- (b) All surface water shall be either conveyed to a public surface water channel or drain, or shall be disposed of in such other manner as the Municipality for the Area may direct.
- (c) No surface water shall be discharged to any foul drain or public sewer unless specifically permitted by the Municipality for the Area under the terms of Article 4.
- (d) All surface water drains shall be supplied, installed and maintained by the owners

Article (4): The Municipality for the Area may, at its discretion, permit any yard attached to or forming part of a stable or a cattle shed, or an abattoir, or any paved yard of any shop, house or other development used for the preparation of food or the washing of clothes or utensils, or any paved yard subject to spillage from road vehicles, or any other paved area potentially subject to pollution to drain to a foul drain or sewer. Such permission shall only be given if the paved area is drained to the foul drain or sewer via a trapped gully. The level of such trapped gully must be higher than the highest known flood level or the paved area must be fully protected from any flood waters.

Article (5): No solid refuse of any kind shall be deposited in any surface water drain or channel.

Article (6): No trade wastes of any kind shall be discharged to any surface water drain or channel except as provided for under Article 27.

Article(7): No pipes or channels provided for the carriage of surface water shall discharge across the surface of any foot-path in a street. Carriage shall be through cast iron conductors beneath the footpath or by such other means that shall be approved by the Municipality for the Area.

Article (8): Channels provided for the carriage of surface water shall be of adequate size, constructed of approved impervious material, finished off smooth, and laid to a gradient of not less than 1 in 100.

Article (9): Channels shall be provided with grilles to prevent any debris from entering any public channel, watercourse or wadi and, where directed by the Municipality for the Area, a suitable and approved silt trap shall also be provided.

Article (10): Pipes provided for the carriage of surface water shall comply with the requirements of Article 16 to 22 and shall have a minimum internal diameter of 150mm.

CHAPTER 2

Private Foul Drains and Sewers

Article (11): Every house or property connecting to an external drainage system shall be provided with soil and waste fitments generally complying with the requirements of British Standard Code of practice CP 305, or any equivalent standard, approved by the Municipality for the Area.

Article (12): Soil and waste pipe systems shall generally comply with the requirements of British Standard 5572, or any equivalent standard, approved by the Municipality for the Area.

Article (13): The whole of the sanitary installation of a building shall be constructed so that all fittings, pipes and joints are properly made and watertight.

- Article (14):**
- (a) Every building shall be provided with a foul drain to effectively convey sewage from the building to a sewer or other approved point of disposal.
 - (b) Foul drains and private sewers shall be connected to a public sewer where one is available at a suitable level, and in a suitable position within 30m of the boundary of the relevant premises. Should an owner fail to carry out the work necessary within a period specified to the owner by the Municipality for the Area, in writing, the Municipality may carry out the work and recover the whole of the costs from the owner.
 - (c) Where there is a no suitable public sewer, the Municipality for the Area has to require the provision of a septic tank or any other proper means of treatment.
 - (d) Such foul drains and private sewers shall be supplied, installed, maintained and operated by the owners concerned at their own cost, and as approved by the Municipality for the Area.

Article (15): Foul drains, pipes should be free from defects and constructed as follows :-
Asbestos-cement pipes conforming to ISO 391, ISO 392, ISO 881 or ISO 4488, or approved equivalent standard;
Vitrified clay pipes conforming to 8SS 65 or DIN 1230 or approved equivalent standard;
Cast iron pipes conforming to ISO 2531, ISO 49 or BSS 437, BSS 1211 (Class B) or BSS 78, or approved equivalent standard;
Concrete pipes conforming to BSS 556 or approved equivalent standard;
UPVG pipes conforming to BSS 4460, or approved equivalent standard, or
Such other material approved by the Municipality for the Area.

Article (16): All pipes shall be of adequate size and shall be not less than 150mm internal diameter where used for drains or not less than 200mm internal diameter where used for sewers.

Article (17): Every foul drain or private sewer shall be laid to gradients within the following limits :

	150mm dia	200mm dia	225mm dia
Flattest Gradient	1 in 60	1 in 90	1 in 100

Steepest 1 in 1 in 1 in

Gradient 8

13 14

except where compliance can only be achieved by recourse to pumping; then the Municipality for the Area may permit flatter gradients, but in no case will gradients flatter than the following be allowed :

150mm dia 200mm dia 225mm dia

1 in 100 1 in 175 1 in 200

- Article (18):**
- (a) Pipes other than cast iron that lie within 15 metres of any building, or lie under any road, or are laid under buildings, or have less than 1250mm cover shall be completely surrounded by concrete not less than 150mm thick.
 - (b) Notwithstanding the requirements stated in the previous paragraph, and regardless of the type of pipe used, the Municipality for the Area may direct that added measures be taken against corrosion at its discretion.
 - (c) Pipes shall be supported along the full length, and not only at their joints.
 - (d) Where any pipe is laid in soft and yielding ground, the material of the pipe and the method of its support shall be as directed by the Municipality for the Area.
 - (e) Where any pipe is laid above ground, it shall be of cast iron and shall be supported by concrete piers at each joint, and at such intermediate points as the Municipality for the Area may direct.

- Article (19):**
- (a) Laying any part of any drain under any building shall be avoided as far as possible.
 - (b) Where part of a drain is laid under a building, that part shall be laid in a straight line and shall be provided with means of access for its whole length.

(c) No building shall be erected over any existing sewer or drain without the written consent of the Municipality for the Area, and subject to the conditions of the Municipality and at its discretion.

Article (20): No trees shall be planted within 1800mm, measured in plan of any sewer or drain.

Article (21): Where a drain passes directly under wall flexible joints shall be provided in the pipe on either side of the wall at distances equal to the pipe diameter.

Article (22): (a) Every inlet to every drain, except for a soil pipe or a ventilating pipe, shall be properly trapped between the sewer and the sanitary fitting. The trap shall be formed and fixed to ensure a permanent water-seal of not less than 75mm. The water-seal gully shall be provided with a grating above the level of the water-seal and above all openings discharging to this. (The gully shall be protected from the ingress of flood waters to the highest known flood level).

(b) No inlet to any foul drain shall be made except - The connections of sanitary fittings. Yard gullies, but only if the Municipality for the Area judges that the surface water from the yard is sufficiently polluted to preclude direct discharge to the environment. Trade effluent connections, but only with the prior approval and consent of the Municipality for the Area, as required under Regulations and Standards for Discharge of Trade Effluents issued by the Council Decision No.7 /84.

Article (23): (a) Every branch drain shall be straight throughout its length and shall join any other foul drain or sewer obliquely so that flow in the branch is travelling in a similar direction to the flow in the main drain, or sewer. Where it joins the other drain, an inspection chamber or manhole shall be provided.

(b) Where a junction is made directly to a sewer, the sewer shall be properly rejoined and made watertight.

(c) If a junction between a foul drain and a sewer is not made at a manhole on the sewer, then a manhole shall be provided on the foul drain within 12 metres of the sewer.

(d) Every such manhole shall comply with the requirements set out in Article 26.

Article (24): Every joint in a drain or sewer shall be properly made so as to prevent water leakage and able to resist a pressure of 1.5 metres head of water, and no material forming such a joint shall project into the interior of the pipe.

Article (25): (a) Every foul drain shall be ventilated by means of a ventilating pipe which shall be carried to a height not less than 1 metre above the roof of the building to which it is fixed or above the eaves of such a building, if the building has a pitched roof.

(b) No ventilating pipe shall be fixed so as to allow the escape of foul air into any building.

(c) The internal diameter of every ventilating pipe, or any other pipe acting as a ventilating pipe, shall be not less than 100mm or the diameter of the drain it serves, whichever is the greater .

(d) The open end of every ventilating pipe shall be provided with a suitable wirenetting to prevent the access of adventitious matter whilst not impeding air flow.

(e) Ventilating pipes shall not be used for carrying rain water.

(1) Ventilating pipes shall be straight except where this is unavoidable, in this case the approval of the Municipality for the Area must be obtained.

(g) Air or gases from the public sewers shall be allowed to flow through the foul drains and to escape into the free air by means of the ventilating pipes, and no interceptor trap shall be provided in any foul drain unless specifically required by the Municipality for the Area.

(h) Ventilation covers shall not be used on any manholes.

Article (26): (a) A manhole or inspection chamber shall be provided at every point at which a foul drain or sewer changes either its direction or its gradient and elsewhere so as to ensure that the maximum distance between manholes or chambers does not exceed 60 metres.

(b) A manhole or inspection chamber shall be of a size sufficient to allow access to the drain or sewer for rodding. An inspection chamber shall not be less than 800 mm long and

600mm wide or, if circular, shall have an internal diameter not less than 800mm. A manhole shall be not less than 1200mm long and 900mm wide or have an internal diameter not less than 1000mm, when it is circular.

(c) A manhole or inspection chamber shall be constructed of concrete brickwork, in situ concrete or precast concrete sections in such a manner as to exclude all subsoil water and surface water. For walls deeper than 600mm below ground level concrete blocks shall not be used and internal rendering shall not be permitted. The concrete brickwork, in situ concrete or concrete sections shall be carried up to ground or floor level and shall be provided with a sealed manhole cover of suitable duty to BSS 497, or approved equivalent standard. Covers for inspection chambers and shallow manholes shall have a clear opening of not less than 600mm by 450mm. Covers for deeper manholes shall have a clear opening of not less than 600mm by 500mm. The minimum thickness of concrete brickwork shall be 225mm. The minimum thickness of concrete shall be 150mm. Where ordinary portland cement concrete is liable to attack, special precautions shall be taken after approval by the Municipality for the Area.

(d) Benching shall be formed above the level of every drainage channel in a manhole or inspection chamber and fall towards the channel at a gradient of 1 in 2.

(e) The benchings of every manhole or inspection chamber shall be rendered with cement mortar to provide a smooth and impervious surface.

(f) Every drainage channel in a manhole or inspection chamber shall have a diameter not less than that of the largest drainage inlet into, and not more than that of the outlet from manhole or inspection chamber.

(g) Every drainage inlet into a manhole or inspection chamber shall discharge into the drainage channel therein with properly made bends constructed within the benching of the manhole or inspection chamber, such that the flow travels in a similar direction to that in the channel.

CHAPTER 3

Liquid Trade Wastes

Article.(27): No trade wastes shall be discharged into any surface water channel or drain connected with any public channel or any foul drain connected with any public sewer without the prior consent of the Municipality for the Area. Such consent may be granted but only with conditions that the Municipality may consider necessary for the protection of the drain, sewer or public channel, and so as not to interfere with the full flow of its contents nor to affect prejudicially the treatment or disposal of its contents.

Article (28):

(a) Every drain intended solely for the conveyance of trade waste shall be constructed of pipes free from defects made of suitable materials and shall be properly supported and protected. They have to be laid at a proper gradient and provided with leak proof joints.

(b) Every such drain shall be ventilated as provided for in Article 25.

(c) Every such drain shall have a manhole provided with an intercepting trap as near to the public sewer as possible, but within the curtilage of the owner's property. The trap shall be on the side of the manhole nearest to the public sewer.

(d) Such intercepting trap shall be formed and fixed so as to have a water seal of not less than 75mm and shall have a metal arm fitted with a stopper and accessible from ground level. When the fall allows, there should be a drop of 75mm from the invert of the manhole to the water level in the intercepting trap.

Article (29): Where large quantities of grease and oil are discharged into drains as from canteens and kitchens, grease traps of a design approved by the Municipality for the Area shall be installed.

Article (30): Petrol and oil traps of a design approved by the Municipality for the Area shall be provided at all garages and at all other places where petrol and oil may reach the drain or sewer.

CHAPTER 4

Testing

Article (31): All sewers and drains shall be tested for imperviousness to a pressure of at least 1.5m head of water, or as required by the Municipality for the Area. The test should be carried out before the pipes are haunched or surrounded with con-crete or covered in and it shall be repeated after all backfilling is complete. After standing full of water for 30 minutes the water level should be topped up as necessary and then if in the following 60 minutes the loss of water shall exceed 7.5 litres per metre diameter of pipe per 30m length of pipeline the test will not be considered as satisfactory.

CHAPTER 5

Foul Drain Connections

Article (22): Every foul drain connection shall be made by the Municipality for the Area who may, at their discretion, recover the cost thereof from the owner.

Article 33

The Municipality for the Area shall not make any such connection until fully satisfied that the drainage work or the private sewer has been carried out in accordance with the provisions of these Regulations.

CHAPTER 6

Declaration of Public

Article (34): If any sewer, not being a public sewer is constructed to the satisfaction of the Municipality for the Area, it may at its discretion, whether at the request of the owners or otherwise, by writing under its hand, declare that after the expiration of one month from the date thereof the said sewer shall become a public sewer.

Article (35): At the expiration of the said period, unless the owner shall have objected by notice to the Municipality for the Area, the said sewer shall become a public sewer and shall be vested in the Municipality who shall thereafter maintain it. An objection by the owner shall not prevent the declaration of a public sewer if this is deemed to be in the public interest.

CHAPTER 7

Submitting Application for Permits

Article (36): Every person who intends to layout or alter any drain, sewer or pipe shall comply with the following requirements:-

- (a) Submit a written application, in triplicate, on the form prepared for that purpose to the Municipality for the Area before commencing any such work.
- (b) Together with such notice he shall deposit in triplicate plans and sections showing thereon the whole of the intended surface water drains, foul drains, and private sewers together with their proposed sizes and gradients. The level of the ground surface and the depths of the proposed drains shall also be shown together with the position of every building, gully, soil pipe, water pipe, ventilating pipe, trap or other fittings. Such plans shall also show how the building is to be connected with any other drains, sewers or public channels. The scale to which any plan is drawn shall also be shown.
- (c) Such plans shall be drawn to not less than the following scales:-
 - Building plans and section Site plans
 - Drainage sections: Horizontal Vertical
 - 1: 100 -1: 500
 - 1: 100 -1: 30
- (d) The proposed new drains shall be shown in red and existing buildings and drains in black.

- Article (37):**
- (a) After deposit of the notice, plans and sections required under Article 36 the approval or disapproval of the Municipality for the Area shall be conveyed in writing to the person who gave notice. Such approval or disapproval will show such person the required alterations to his proposals and he has to alter the plans and sections accordingly.
 - (b) When such plans and sections have been approved by the Municipality for the Area, one copy, appropriately endorsed, shall be returned to such person.
 - (c) Such person may then proceed with the work excepting final connection with any public sewer, provided that if the work is not commenced within six months from the date of the notice of approval, such approval may be cancelled.
 - (d) No person shall commence any such work until the plans and sections have been approved.

Article (38): Every person who constructs or alters any surface water drain, foul drain or private sewer, or other ancillary works shall, before proceeding to cover the foundations or drains or surrounding any pipe with concrete, give the Municipality of the Area four days notice in writing.

Article (39): (a) Every person who constructs or alters any surface water drain, foul drain or private sewer, or other ancillary works shall give the Municipality for the Area four days notice in writing specifying the date on which such drains or works will be ready for final inspection and testing before connecting to any existing drain or sewer

- (b) Such person shall, if required by the Municipality for the Area, deposit such sum of money as the Municipality may demand to meet the cost of the connection with any sewer before such connection is commenced.

Article (40): Every person who neglects to notify the Municipality or covers up such foundations or drains prior to inspection shall be required by the Municipality for the Area to remove as much of the work as prevents the Municipality from ascertaining whether he has followed the required conditions.

Any person who:

- (a) Commences or resumes drainage operations in contravention of these Regulations.
- (b) Changes plans or specifications approved by the Municipality for the Area without prior written permission from the Municipality for the Area for such change.
- (c) Executes any drainage operation in contravention of any of the provisions of these Regulations.
- (d) Fails to comply with any lawful order or written directions of the Municipality for the Area, or with any terms or conditions attached by the Municipality, any modification or waiver of any of the requirements of these Regulations
- (e) Commits any other breach of these Regulations:
Shall be liable to a fine not exceeding R.O. 500 and to a daily fine not exceeding R.O. 100 for every day on which the offence is continued. Furthermore, the Municipality for the Area shall have the right to enter upon the land of the person concerned and to take action it considers necessary to prevent the breach of these Regulations where a hazard to public health exists, and to charge the cost of this action to the householder.

21. MD 17/1993 Management of Solid non-hazardous waste

MINISTERIAL DECISION No. (17/93) REGULATIONS FOR THE MANAGEMENT OF SOLID NON-HAZARDOUS WASTE

After perusal of Royal Decree No. 26/75 issuing the Law Regulating the Administrative Structure of the State and amendments.

And the Royal Decree No. 10/82 issuing the Law for Conservation of Environment and Prevention of Pollution and amendments.

And according to the requirements of public interest.

Have decided:

Article (1): The provisions of the Regulations for the Management of Solid Non-hazardous Waste arising locally within the Sultanate boundaries shall come into force.

Article (2): This Decision shall be published in the Official Gazette and shall come into force with effect from the 1st day of the month following its date of publication.

Amer Bin Shawany Al-Hasni
Minster of Regulation
Minister & Environment
Issued on: 10 Shaaban 1413 H
C.T. : 02 February 1993

REGULATIONS FOR THE MANAGEMENT OF SOLID NON-HAZARDOUS WASTE

Article 1: The terms used in these Regulations shall have the following meanings:

The Minister: The Minister of Regional Municipalities and Environment.

The Ministry: The Ministry of Regional Municipalities and Environment.

Concerned Authority: The Authority responsible for the day-to-day operation and management of the collection and disposal of solid non-hazardous waste.

Solid Non-hazardous Waste: Any solid material or semi solid which does not have any danger to the environment or to the human health, if it is dealt with in a safe scientific way, they are:

- Household waste
- Solid materials or semi solid discarded or produced from residential, commercial, industrial, agricultural and other activities.
- Construction and demolition debris.
- Metal scrap including discarded motor vehicles.
- Dewatered sludge from domestic, industrial or agricultural wastewater treatment always providing that such sludge contains no toxic constituents in concentrations in excess of those acceptable within the terms of the wastewater regulations.
- Slag and ashes from incineration processes always provided that these materials have an available toxic content within the criteria applied to the characterization of dewatered sludge from wastewater treatment.

Household Waste: The solid non-hazardous materials generated from domestic activities.

Treatment of Solid Non-hazardous Waste: Any natural, physical, chemical or biological process applied to solid non-hazardous waste which changes its properties in any way that prevents or reduces its adverse effects on the environment or renders it more suitable for re-use, in part or in whole.

Treatment Facility: Any sites established for the treatment of solid non-hazardous waste.

Sanitary Landfill: The site licensed by the Ministry for the disposal of non-hazardous solid waste.

Recycling: The selective, controlled and beneficial separation of specific components of solid non-hazardous waste at or after the point of its generation.

Dumping Sites: The sites used for the uncontrolled dumping of waste.

Article (2) Occupants of premises used for residential, commercial, industrial, agricultural or other purposes shall store and dispose solid non-hazardous waste in accordance with the provisions of these Regulations and the decision of the Concerned Authority to this effect, such that there is no nuisance or hazard to the public health.

Article 3 The Concerned Authority shall establish a suitable system for the collection, storage and transport of all solid non-hazardous waste arising within its specialized area towards all residential complexes, other than residential complexes of less than 500 inhabitants which can be excluded by a decision from the Minister, provided that no nuisance or hazard to the public health is risked thereby.

Article 4 Occupants or users of residential sites shall deliver all the waste produced from the use of this site to the system established for the collection of such waste.

Article 5 The user of commercial, industrial, agricultural or any other sites that produce solid non-hazardous waste except domestic waste, shall collect these waste and transport it in a safe manner to a site designated by the Concerned Authority for this purpose, unless this Authority decides else Article 4 is followed.

Article 6 In areas where collection systems have been established the Concerned Authority shall provide the necessary number of waste containers and points shall be allocated for the collection of this waste. It is not permitted for any person to dispose of solid non-hazardous waste in places other than these places.

- Article 7** The Ministry, according to an application, shall issue a licence for establishing solid non-hazardous waste treatment facilities and sanitary landfills.
- Article 8** The Concerned Authority shall investigate that waste treatment facilities and sanitary landfill sites are designed, established and operated in a proper manner to ensure the environmental protection.
- Article 9** The Concerned Authority has the right for that to get assistance of others to carry out feasibility studies to see the possibility of re-use of the components of solid non-hazardous waste.
- Article 10** Operators of solid non-hazardous waste treatment facilities and sanitary landfills shall keep such records of daily operation as may be directed by the Ministry. These records shall be subject to the Ministry control in accordance with the conditions laid down in the licence.
- Article 11** The Concerned Authority shall ensure that treatment and disposal of solid non-hazardous waste within its area of responsibility are carried out without creating any health or environmental hazard.
- Article 12** The Concerned Authority shall register all existing systems of solid non-hazardous waste management, all sanitary landfills and dumping sites within its area of responsibility whether or not they are operational. The registration shall be carried out in accordance with the relevant Order issued by the Minister. The Concerned Authority shall submit their registration to the Ministry within one year from the date when these Regulations come into force.
- Article 13** No solid non-hazardous waste should be mixed with any category of hazardous waste at any time.
- Article 14** The Concerned Authority shall prepare an Environmental Impact Statement for each sanitary landfill or dumping site as designated by the Ministry. The Environmental Impact Statement shall be produced taking into account the "Guidelines for Location, Design, and Operation of Sanitary Landfills for Solid Non hazardous Waste" as mentioned in the permit. And if it deemed to-the Concerned Authority that any sanitary landfill or dumping site is not suitable it shall inform the Ministry to prepare an Immediate Improvements Plan for the upgrading of the site. In case it was not possible the site shall be closed. The Concerned Authority should apply to the Ministry for obtaining licence for sites which are to continue operation in accordance with the Immediate Improvements Plan. In case of closing any sanitary landfill or dumping sites necessary measures shall be taken to restore the sites to a state of environmental acceptability and not polluting it. The requirements of the Immediate Improvements Plan shall be completed within two years of the date of its approval.
- Article 15** The Concerned Authority shall prepare a comprehensive Master Plan for the collection, storage, transport, treatment and disposal of solid non-hazardous waste to cover a 15-year period. The Master Plan shall be summarized in a standard format issued by a Ministerial Decision and the Plan may be amended as necessary.
- Article 16** The Master Plan and its Summary shall be submitted to the Ministry within three years from the date when these Regulations come into force. The Ministry shall evaluate and comment on the Master Plan within six months of its submission. The Concerned Authority shall respond to the Ministry's comments within six months of their receipt. The Ministry shall, within six months of receiving any response from the Concerned Authority, issue its approved form of the Master Plan Summary.
- Article 17** The Concerned Authority shall review all of the Master Plans for which it is responsible every five years and shall submit Review Reports relevant to the standard summary format to the Ministry for approval.
- Article 18** Import of solid non-hazardous waste to the Sultanate is prohibited except with the approval of the Minister.
- Article 19** Before issuing any Permit from the Ministry, according to these Regulations, regarding all projects involving the collection, storage, handling, transport and disposal of solid non-hazardous waste, it is required to obtain the approval of the Ministry of Health.

22. MD 18/1993 Management of hazardous waste

MINISTERIAL DECISION No. (18/93) REGULATIONS FOR THE MANAGEMENT OF HAZARDOUS WASTE

After perusal of Royal Decree No. 26/75 issuing the Law Regulating the Administrative Organization of the State and its amendments.

And in accordance with the Law of Conservation of Environment and Prevention of Pollution and its Amendments, issued by Royal Decree No.10/82.

And in accordance with the requirements of public interest.

The following was decided

Article (1): The following Regulations regarding the Management of Hazardous Waste are to be in force.

Article (2): This Decision shall be published in the Official Gazette and shall come into force from the beginning of the following month of publication.

Amer Bin Shawany Al-Hosni
Minster of Regional
Municipalation & Environmental
Issued on: 10 Shaaban, 1413 H
C.T.02 February, 1993

Article (1) The terms used in these Regulations shall have the following meanings:

The Minister: The Minister of Regional Municipalities and Environment.

The Ministry: The Ministry of Regional Municipalities and Environment.

Hazardous Waste: Any waste arising from commercial, industrial, agricultural or any other activities which, due to its nature, composition, quantity or any other reason is: hazardous or potentially hazardous to human health, to plants or animals, to air, soil or water. This includes explosive, radio-active or flammable substances; which may cause disease as well as those issued by a decision from the Minister.

Recycling: The selective, controlled and beneficial separation of specific components of hazardous waste at or after the point of its generation.

Transporter: A person who has been licensed by the Ministry to transport hazardous waste.

Hazardous Waste Generator:

The owner (and/or his agent) of any land or premises of any type where hazardous waste is generated. Any person (and/or his agent) trading in hazardous materials having hazardous residues of any kind or from any source.

Consignment Note:

A document listing the category and quantity of hazardous waste in accordance with the relevant order issued by the Minister.

Storage Facility:

The site that has been licensed by the Ministry for the reception and interim storage of hazardous waste.

Pre-treatment: Any physical, chemical or biological treatment or process, including deposition other than as a means of ultimate disposal by which hazardous waste is rendered less noxious or innocuous.

Pre-treatment Facility: The site for the pre-treatment of hazardous waste that has been licensed by the Ministry .

Hazardous Waste Landfill Site: A landfill site licensed by the Ministry where hazardous waste are permitted to be disposed of .

Final Disposal: The ultimate disposal of a hazardous waste, after any pre-treatment, without risk to health or the environment.

Article (2): The application submitted for a Hazardous Waste Licence shall be according to the standard format developed by the Ministry and the applicant shall explain and describe how the waste generator will apply the best available technology relevant to his production and operational practices to minimize the generation of hazardous waste, including the application of any practicable recycling procedures covered by Article (7) of these Regulations.

Article (3): Every holder of NEO or licence previously issued according to the Law of Conservation of Environment and Prevention of Pollution is committed to submit an application to the Ministry to obtain Hazardous Waste Licence within three months of the date when these Regulations came into force. The Ministry shall reach a decision within three months of receipt of the application.

Article (4): No hazardous waste shall be mixed with any other category of waste nor shall it be discharged to a common or other internal or external sewerage or other drainage system without a licence from the Ministry.

Article (5): Every hazardous waste generator shall complete a Consignment Note for each category of hazardous waste before the hazardous waste leaves his land or premises.

- Article (6):** All hazardous waste shall be labelled and packed according to the Ministerial Decision issued in this respect.
- Article (7):** A hazardous waste or any components of a hazardous waste may be recycled at the point of generation or elsewhere only within the conditions of these Regulations. In case recycling is limited only to the point of generation, hazardous waste generator shall not be committed to complete a consignment note.
- Article (8):** Every hazardous waste generator shall store hazardous waste in approved storage facilities on his land or at his premises until its removal in accordance with the terms of the licence issued by the Ministry.
- Article (9):** Hazardous waste shall be transported by transporters licensed by the Ministry to collect, handle, store and dispose hazardous waste outside the waste generator's premises. This licence will be issued with conditions after the approval of Royal Oman Police.
- Article (10):** Every owner of any site where hazardous waste is to be stored, shall apply for a licence from the Ministry and shall operate the site only in accordance with the terms of the issued licence which shall include a requirement that all hazardous waste received at the site shall be accompanied by appropriate Consignment Note(s) in accordance with Article (5).
- Article (11):** Every owner of a storage facility shall only release hazardous waste from that if it is accompanied by a Consignment Note in accordance with Article (5).
- Article (12):** The owner of any site for the pre-treatment of hazardous waste shall apply to the Ministry for a licence for the site prior to starting his activities. He shall not receive any hazardous waste other than the conditions included in the issued licence which is accompanied by the Consignment Note(s).
- Article (13):** The owner of any hazardous waste landfill site shall apply to the Ministry to obtain the necessary licence. No owner of any hazardous waste landfill site shall receive any hazardous waste which is not accompanied by the Consignment Note(s).
- Article (14):** The staff, determined by a Decision from the Minister, shall inspect any process generating hazardous waste, any activities related to such generation, undertake any tests or inquiries necessary and proper for the implementation of these Regulations, without giving prior notice.
- Article (15):** No hazardous waste whatsoever shall be imported into or exported from the Sultanate without a permit from the Minister. This permit shall be issued after seeking the approval of the concerned Government Agencies according to the Law of Conservation of Environment and Prevention of Pollution.
- Article (16):** Before the issuance of a licence from the Ministry and in accordance with these Regulations the approval of the Ministry of Health shall be obtained for all projects involving the collection, transport, storage, pre-treatment and disposal of hazardous waste.

23. MD 421/1998 Regulation for septic tank, soakaway pits holding tanks

Sultanate of Oman

Ministry of Regional Municipalities and Environment

Ministerial Decision Number 421 / 98 Dated 30th November 1998

Regulations for Septic Tanks,
Soakaway Pits and Holding Tanks

According to the “Law on Conservation of Environment and Prevention of Pollution” issued by Royal Decree Number 10/82 and its Amendments;

and Ministerial Decision Number 5/86 “Regulations for Septic Tanks and Holding Tanks”;

and in the requirements of the public interest.

Has Decided that

Article (1): The provisions of the following Regulations concerning Septic Tanks, Soakaway Pits and Holding Tanks shall come into effect.

Article (2): The “Regulations for Septic Tanks and Holding Tanks” issued by previous Ministerial Decision Number 5/86 and all those contradicting with this Decision or contravening its provisions shall be considered void.

Article (3): This Decision shall be published in the Official Gazette and shall come into force with effect from the Date of Publication.

His Excellency, Dr. Khamis bin Mubarak bin Essa Al-Alawi
Minister of Regional Municipalities and Environment

Issued on this 11th day of Sha’aban 1419 H.
(Corresponding to 30th November 1998)

Regulation for Septic Tanks, Soakaway Pits and Holding Tanks

Objective:

Article (1): In compliance with the Law on the Conservation of Environment and Prevention of Pollution issued by Royal Decree Number 10/82 and its Amendments, and in order to protect the land and water resources from pollution, and to achieve proper health standards, these Regulations concerning Septic Tanks, Soakaway Pits and Holding Tanks have been affected.

Definitions

Article (2): The terms used in these Regulations shall be as defined by the Law on the Conservation of the Environment and Prevention of Pollution and its Amendments, with the following additions:

Septic Tank: Means any structure designed to treat domestic wastewater by compartmentalised sedimentation and anaerobic biological degradation.

Holding Tank: Means any structure to hold the wastewater without any leak, seepage or overflow into the surrounding environment.

Soakaway Pit: Means any pit or any other underground construction designed for seepage of the treated wastewater into the ground by infiltration or percolation.

Domestic Wastewater: Means the effluent, including settleable materials (sludge) and scum discharged from water closets, ablutions, kitchens...etc, of houses and institutions.

Institutions: Means public or private premises such as schools, colleges and offices and excluding industrial buildings or hospitals.

Population Equivalent: The estimated number of a population that would discharge domestic wastewater of total organic load equivalent to that of a particular non-domestic wastewater effluent discharge. For design purposes, the population equivalent shall be calculated by dividing the daily BOD load (in grams) by 60; or the daily volume thereof (in liters) by 180 and it shall be taken that the population equivalent is the larger of the two figures so calculated.

Daily Biochemical Oxygen Load (BOD): Means the oxygen demand imposed by organic carbonaceous and nitrogenous materials in the wastewater. This is taken as being 60 grams per capita per day.

Provisions for Septic Tanks

Article (3): Septic Tanks shall only be allowed in institutions and accommodations which discharge solely domestic wastewater from population equivalents not greater than 150. Any larger institutions must be served by sewage treatment plants subject to the "Regulations for Wastewater Re-use and Discharge" of Ministerial Decision Number 145 / 93.

Article (4): Septic Tanks may only be installed with the prior approval and consent of the concerned Municipality and that shall only be given in case of lack of a public sewer system for such discharges.

Article (5): Septic Tank capacity must be calculated according to the procedures set out in Annex A of these Regulations and must be designed according to the criteria given in Annex B of these Regulations.

Article (6): Soakaway Pit systems must be designed and based on ground percolation tests carried out by the owner at his own expense under the supervision of the concerned Municipality as described in Annex C of these Regulations. If the ground nature, hydrogeological conditions, percolation tests and population density so allow, the wastewater from the septic tanks may be discharged into appropriately designed and constructed soakaway pits or to a permeable underground construction approved by the concerned authorities. If such conditions are not suitable, then the wastewater from septic tanks must be discharged into holding tanks which must be constructed and installed according to Annex D of these Regulations

Article (7): Septic tanks must be constructed in such manner, and using appropriate materials, as to ensure that they remain watertight at all times.

Article (8): Septic Tanks must always be maintained in a fully functional condition.

Article (9): Sludge accumulated in septic tanks must be periodically removed whenever necessary. Disposal must be in a manner approved by the concerned Municipality and relevant authorities.

Article (10): Septic Tanks and Soakaway Pits must comply with the following conditions:

- a) Always be constructed on land within the legal control of the owner of the premises, or on land designated by the concerned Municipality in coordination with other relevant authorities.
- b) Be located at least 100 meters away from any public water supply sources, wells and aflaj and at least 30 meters away from private wells. The concerned Municipality, in coordination and consultation with the relevant authorities, and depending on local conditions, may vary these distances.
- c) Be located at least 3 meters away from any wall of an occupied building, water pipe or mature trees. The concerned Municipality, in coordination with the relevant authorities, may determine any variation to this distance with the condition that it shall not be less than two meters.
- d) The uppermost water level of the septic tank shall not exceed the levels of any nearby well heads and also be such that the pollutants cannot reach those wells. Septic tanks must also be sited in an appropriate position so as to facilitate future connection when a public sewer becomes available.
- e) Be sited in a position where they can be accessed and served by wastewater tanker vehicles, in any event not at a distance greater than 20 meters from the nearest available service point.
- f) Be located at least 30 meters from excavation and filling sites.

Provisions for Holding Tanks

Article (11): Holding tanks shall only be installed with the approval of the concerned Municipality and must be designed according to the criteria given in Annex D of these Regulations

Article (12): The wastewater from holding tanks must be transported by wastewater tankers to a place approved by the concerned Municipality and relevant authorities at such intervals as will ensure there is no overflow of wastewater at any time from the holding tanks.

Article (13): Holding tanks must be constructed in such manner, using appropriate materials, as to ensure that they remain watertight and also comply with the following conditions:

- a) Always be constructed on land within the legal control of the owner of the premises, or on land designated by the concerned Municipality in coordination with other relevant authorities.
- b) Be located at least 15 meters away from any water source and in such position that any wastewater overflow or spillage cannot reach such water source.
- c) Be located at least 1.5 meters away from any wall of an occupied building.
- d) Their uppermost water level shall not exceed the levels of any nearby well heads and also be such that the pollutants cannot reach those wells. Holding tanks must also be sited in an appropriate position so as to facilitate future connection when a public sewer becomes available.
- e) Be sited in a position where they can be accessed and served by wastewater tanker vehicles, and in any event not at a distance greater than 20 meters from the nearest service point.

Article (14): In application of the provisions of these Regulations in difficult terrain, local conditions such as mountainous areas and rocky or hard ground may be considered and the concerned Municipality shall then handle such cases as necessary, on an individual basis only, in coordination with other concerned authorities.

ANNEX A

Calculation of Septic Tank Capacity

The capacity of a septic tank is defined as, and based on, the volume of the wastewater (including sludge and scum) it is capable of retaining during its normal, operating mode and conditions.

For houses:- The septic tank capacity is calculated on the basis that it shall provide a minimum of 240 liters capacity per person with the condition that the total capacity of the septic tank shall not be less than 2000 liters.

For institutions: The septic tank capacity is calculated in the same manner to the calculation of that for houses. The number of persons shall be calculated from the population equivalent of the institution with the condition that the larger of the two derived figures must be used (see definitions) and that the total capacity must also not be less than 2000 liters.

ANNEX (B)

Septic Tank Design and Measurements Criteria

The capacity shall be calculated according to Annex A of these Regulations.

The septic tank will normally be rectangular and the length of the tank must not be less than three times, and not more than four times, its width. The water depth of the tank shall not be less than 1.2 meters for tanks serving up to 10 persons, and not less than 1.5 meters for tanks serving more than 10 persons. In special circumstances alternative shapes of tank may be accepted at the discretion of the concerned Municipality.

- The septic tank must have at least two compartments. The compartment into which the wastewater feeds must have twice the capacity of that from which the septic tank effluent discharges. Alternative designs may be acceptable at the discretion of the concerned Municipality.

- Compartments must be interconnected by means of circular holes of 150mm nominal diameter or by square or rectangular slot(s) of 100mm height; the tops of all connections must not be less than 300mm below the top water level. The horizontal distance between all connections must be 300mm center to center.

- There must be two tanks operating in parallel when the contributing population equivalent exceeds 100 persons. Each tank must be capable of operating in isolation from the other. Each tank must have not less than half of the capacity calculated according to Annex A of these Regulations.

- The tank floor may be flat but for larger tanks a floor slope of 1 in 4 is preferable.

- The inlet to the tank must consist of a single “T” shaped dip pipe for tanks not wider than 1.2 meters. For tanks wider than 1.2 meters there must be two such inlets set at a distance of one quarter the tank width from their adjacent side walls.

- The inlet pipe(s) diameter must not be less than the diameter of the incoming sewer. The upper limb must rise 150mm above the top water level and the bottom limb must extend 450mm below the top water level.

- The outlet of a tank less than 1.2 meters wide must consist of a single “T” shaped dip pipe of 100mm nominal internal diameter set at a level 25mm below the tank inlet level.

- For tanks wider than 1.2 meters, a full width outlet weir must be provided and be fitted with a full width steel weir plate set at a distance of 200mm in front of the weir to hold scum within the tank. The apex of the weir must be 150mm above the top water level and the bottom 600mm below the top water level. The weir plate must be corrosion proofed.
- In septic tanks fitted with such a weir, a full width, corrosion proofed deflector of 200mm thickness must be fitted on the internal wall 150mm below the bottom of the weir to hold back suspended solids.
- Drawings of typical septic tanks are given in Annexes E and F of these Regulations..
- Septic tanks must be constructed from reinforced concrete or of such other materials in accordance with Article 7 of these Regulations. Septic tank construction and installation must be strong enough to withstand heavy loads such as cars and trucks.
- Septic tanks must be provided with openings not less than 600mm in dimension to permit easy access to tank inlet, connecting holes, sludge and scum boards, and must be provided with sealed covers of heavy duty type so as not to allow the escape of air. The openings and covers must also be approved by the concerned Municipality.
- Septic tanks must be provided with a ventilation pipe of 100mm nominal diameter to a height not less than one meter above the roof of adjoining buildings, or the eaves where such buildings have pitched roofs on condition that:
 - a) No ventilation pipe may be fixed or located so as to prevent the escape of any foul air into the building.
 - b) The open end of any ventilation pipe must be provided with suitable mesh cover so as to prevent entry of adventitious matter whilst also not impeding air flow.
 - c) Ventilating pipes shall be straight except where this unavoidable and specially approved by the concerned Municipality.
 - d) Ventilation pipes shall not be used for carrying rain water drainage.

ANNEX C

Procedure for Percolation Test and Soakaway Pit Design

Percolation Test

To determine the area of land required for the Soakaway Pit, the following test must be carried out:-

Level the ground and then excavate a hole measuring 300 x 300 millimeters and 600 millimeters deep. Fill it with water and allow all the water to seep away. Refill the hole with water to a depth of at least 300 millimeters and measure the time in minutes for this water to again seep away completely.

Divide the time in minutes by the depth in millimeters of water placed in the hole on the second occasion. The result is the average time taken for the water depth to drop one millimeter. The effective absorption / soakaway area can then be calculated from the following table.

Absorption Areas Required for Soakaway

Time for Test Water To fall 25mm (minutes)	Effective Absorption / Soakaway Area Required (square meters) per person	
	Houses	Institutions
2 (or less)	1.8	0.5
3	1.2	0.6
4	2.4	0.7
5	2.8	0.8
10	3.7	0.9
15	4.6	1.2

30	6.3	1.7
60	8.4	2.2

The above figures give the net absorption / soakaway area required measured as peripheral wall and base area of the soakaway pit.

- NOTE: a) Carry out the test at least three times and take the average figure
c) The soakaway pit should consist of an excavation filled with brickbats or other large pieces of special material, or unfilled but lined with dry laid brickwork or pre-cast concrete (porous or perforated) rings, from which the effluent may percolate into the surrounding ground. The pit should be covered by a slab with manhole. A drawing of a typical soakaway pit is given in Annex G) of these Regulations

ANNEX (D)

Holding Tanks Design and Measurements Criteria

- 1.** In any event, holding tanks capacity must provide a minimum of three days storage with the condition that the capacity shall not be less than 3000 liters. In calculations for capacity, 240 liters of tank volume must be allowed for each person contributing to the sewage discharging to the holding tank.
- 2.** The holding tank shall normally be rectangular. In special circumstances alternative shapes may be acceptable at the discretion of the concerned Municipality.
- 3.** The nominal water depth of the tank must not be less than 1.5 meters and not more than 2.0 meters.
- 4.** There must be two tanks operating in parallel when the contributing population exceeds 100 persons. Each tank must be capable of isolation from the other. Each such tank must also have at least half the capacity calculated according to item 1 of this Annex.
- 5.** The tank floor must have a slope of 1 in 4 down to the suction side and have a sump 600 x 600 x 300mm deep under the opening provided for installing the suction pipe so as to facilitate complete emptying of the tank contents.
- 6.** Holding tanks must be of reinforced concrete or other materials in accordance with the requirements Article 13 of these Regulations and should be strong enough to withstand heavy loads such as cars and trucks.
- 7.** The openings to the tank must not be less than 600 x 600 millimeters in dimension and must be provided with sealed covers of heavy duty type so as not to allow the escape of odours and must be approved by the concerned Municipality.
- 8.** Ventilation:- All holding tanks must be provided with a ventilation pipe in accordance with the measurements set forth in Item 15 of Annex B of these Regulations. A drawing of a typical holding tank is given in Annex H.

24. MD 145/1993 Regulation for waste water re-uses and discharge

MINISTERIAL DECISION 145/93 DATED 13 JUNE 1993

Ministry of Regional Municipalities and Environment
Sultanate of Oman

Regulation for waste water re-uses and discharge

In compliance with the law on the Conservation of the Environment and Prevention of Pollution issued by Royal Decree 10/82 and its amendments, and in order to provide the greatest possible health and social welfare for the Nation and citizens and to protect the land and water resources, these Regulations concerning wastewater re-use and discharge have been affected.

Article (1): The terms used in these Regulations shall be as defined in Royal Decree No. 10/82 and its amendments, with definitions as follows :

1. **Discharge :**
The emission of any wastewater or sludge to places or areas as determined by the Ministry.
2. **Wastewater :**
Any liquid containing environmental pollutants discharged from any source.
3. **Sludge :**
Any semi-liquid, semi-solid or solid arising from any waste water treatment.
4. **Sacrificial Discharge :**
The discharge of wastewater or sludge in such a way that no direct benefit results.
5. **Re -Use :**
The utilization of wastewater or sludge.
6. **Sanitary Landfill :**
A site used for the disposal of solid wastes licensed by the Ministry.
7. **Wastewater Treatment Plant :**
A single unit or an integrated combination of units for the treatment of wastewater.
8. **Septic Tank :**
Any structure designed to treat wastewater by integrated settlement and anaerobic biological degradation.
9. **Radioactive Matter :**
Any matter having a specific radioactivity in excess of 70 Bq/g.
10. **Irrigation :**
The approved application of wastewater to land by aerial spraying, complete or partial flooding, drip-feeding, or any other means, as in table (3).
11. **Aquifer :**
Any geological unit capable of yielding usable quantities of ground water to wells, springs or aflaj.

Article (2): The discharge to the environment of any waste water or sludge in whatever form or condition is prohibited without a Permit to Discharge issued by the Ministry .The Permit to Discharge may be amended by the Ministry at any time after giving reasonable notice of any change to the owner.

Article (3): Details of wastewater and sludge re-use practices shall be in accordance with Tables (2) and (3), and, in any case, shall be approved by the Ministry and shall be defined under the terms of any Permit to Discharge that may be issued by the Ministry.

Article (4): The final point(s) of discharge of wastewater to the environment shall only be at the point(s) marked on the drawing(s) listed in the Permit to Discharge.

Article (5): Wastewater quality shall at all times be within the limits that are set out in Table (1) as they relate to the permitted method of discharge or as may be modified and supplemented by any other limits that might be included in any specific Permit to Discharge.

Article (6): The soil on which sludge may be applied shall be tested by the owner for the metals listed in Table (2), and for pH value, prior to any initial application; and the sludge quality and application constraints shall at all times be within the limits that are set out in Table (2) as they relate to the permitted method of sludge re-use, or as may be modified and supplemented by any other limits that might be included in any specific Permit to Discharge.

Article (7): Any sludge having concentrations of metals greater than the limits prescribed in Table (2) shall be disposed of in sanitary landfills or to other facilities but only with the prior approval of the Ministry .

Article (8): Facilities and equipment shall be provided and maintained by the owner to the requirements and satisfaction of the Ministry for sampling, measuring and recording the quantity and rate of discharge of the wastewater and for determining its characteristics.

Article (9): Samples and readings shall be taken by the owner at intervals stated in the Permit to Discharge, or as required by the Ministry. All data shall be recorded and submitted at the end of each month to the Ministry in an approved format.

Article (10): Wastewater or sludge shall not be discharged sacrificially except in an exceptional circumstance where no form of wastewater re-use is possible.

Article (11): No wastewater or sludge shall be transported from the site of its origin without the prior approval of the Ministry. Approval shall be subject to conditions that will include the obligation for all transport movements to be recorded in a manner defined in the approval.

Article (12): The Ministry shall have the absolute right to inspect and/or monitor any wastewater treatment plant and to take samples of any wastewater, sludge or soil at any time and place.

Article (13): These Regulations shall not apply to discharges from septic tanks or to discharges of wastewater to the marine environment, or discharges of wastewater or sludge which contain radioactive matter, which are subject to separate legislation.

TABLE 1.

Waste water maximum quality limits (mg/L except where otherwise stated)

PARAMETER	STANDARDS (See Table 3)	
	A	B
Biochemical Oxygen Demand (BOD) (5d@20°C)	15	20
Chemical Oxygen Demand (COD)	150	200
Suspended Solids (SS)	15	30
Total Dissolved Solids (TDS)	1500	2000
Electrical Conductivity (E C) (micro S. / cm)	2000	2700
Sodium Absorption Ratio (SAR) <i>(The effect of Sodium on soil absorption)</i>	10	10
pH (within range)	6-9	6-9
Aluminum (as Al)	5	5
Arsenic (as As)	0.100	0.100
Barium (as Ba)	1	2
Beryllium (as Be)	0.100	0.300
Boron (as B)	0.500	1
Cadmium (as Cd)	0.010	0.010
Chloride (as Cl)	650	650
Chromium (total as Cr)	0.050	0.050
Cobalt (as Co)	0.050	0.050
Copper (as Cu)	0.500	1
Cyanide (total as CN)	0.050	0.100
Fluoride (as F)	1	2
Iron (total as Fe)	1	5
Lead (as Pb)	0.100	0.200
Lithium (as Li)	0.070	0.070
Magnesium (as Mg)	150	150
Manganese (as Mn)	0.100	0.500
Mercury (as Hg)	0.001	0.001
Molybdenum (as Mo)	0.010	0.050
Nickel (as Ni)	0.100	0.100
Nitrogen: Ammoniacal (as N)	5	10
: Nitrate (as NO ₃)	50	50
: Organic (Kjeldahl) (as N)	5	10
Oil and Grease (total extractable)	0500	0.500
Phenols (total)	0.001	0.002
Phosphorus (total as P)	30	30
Selenium (as Se)	0.020	0.020
Silver (as Ag)	0.010	0.010
Sodium (as Na)	200	300
Sulfate (as SO ₄)	400	400
Sulfide (total as S)	0.100	0.100
Vanadium (as V)	0.100	0.100
Zinc (as Zn)	5	5
Fecal Coliform Bacteria (per 100ml)	200	1000
Viable Nematode Ova (per litre)	<1	<1

TABLE 2.

Re-use of sludge in agriculture conditions

METAL	Maximum Concentration (mg/kg of dry Solids)	Maximum Application Rate (kg/ha/yr)*	Maximum Permitted Concentration In Soil (mg/kg of dry solids)
Cadmium	20	0.150	3
Chromium	1000	10	400
Copper	1000	10	150
Lead	1000	15	30
Mercury	10	0.100	1
Molybdenum	20	0.100	3
Nickel Selenium Zinc	300	3	75
	50	0.150	5
	3000	15	300
After the spreading of sludge there must be a minimum period of three weeks before grazing or harvesting of forage crops.			
Sludge use is prohibited: -on soils whilst fruit or vegetable crops, other than fruit trees, are growing or being harvested. -for six months preceding the harvesting of fruit or vegetables which grow in contact with the soil and which are normally eaten raw. -on soils with a pH < 7.0.			

* Based on a 10 -year average and a soil pH > 7.0.

TABLE 3.

Wast water re-use areas of application of standard A and B (Table 1)

	A	B
	(See Table 1)	
CROPS	Vegetables likely to be eaten raw. Fruit likely to be eaten raw and within 2 weeks of any irrigation.	Vegetables to be cooked or processed Fruit if no irrigation within 2 weeks of cropping fodder, cereal and seed crops
GRASS and ORNAMENTAL AREAS	Public parks, Hotel Lawns Recreational areas. Areas with public access. Lakes with public contact. (except places which may be used for praying and hand washing)	Pastures. Areas with no public access.
AQUIFER RECHARGE	All controlled aquifer recharge	
METHOD OF IRRIGATION	Spray or any other method of aerial irrigation not permitted in areas with public access unless with timing control	
ANY OTHER RE-USE APPLICATIONS	Subject to the approval of the Ministry	

25. MD 342/1997 Regulation organizing the use of desalination units on wells

Ministerial Decision No 342/97 Issuing Regulations organizing the use of Desalination Units on Wells

On the basis of Royal Decree No 82/88 considering water stock as national wealth.

And to the Royal Decree No 100/89, promulgating the establishing of Ministry of Water Resources and specifying its responsibilities.

And to the Ministerial Decision No 13/95, promulgating the issue of regulations Organizing wells and aflajs.

And in accordance with the public interest.

It is decided

Article (1): Regulations of Organizing the use of Desalination Units on Wells, are to be in force.

Article (2): This decision is to be published in the official gazette and implemented from the date of publication.

Issued on.23-6-14184
C.T. 25-10-1997
Hamed bin Said Al-Ofe
Minister of Water Resources.

Contents

Part one:	General provisions.
Part Two:	Registration procedures of Desalination Unit on Wells.
Part Three:	New desalination Units Installation permits procedures.
Part Four:	Penalties.

Chapter (1)

Regulations of Organizing the use of Desalination Units on Wells

Article (1): Unless the context otherwise requires, the following words and expressions shall have the meaning assigned to each of them:-

- 1- The Ministry: The Ministry of Water Resources
- 2- Minister: Minister of Water Resources.
- 3- Administration: Water Resources Administration in the region.
- 4- Desalination Units: Device used to isolate dissolved salt in the water in order to transfer it to fresh water.

- 5- Brine: Substances resulted from Desalination process and harmful to water resources.
- 6- Permit: Permit to install, operate or replace desalination Unit on existing or new well or to dry well to dispose brine.
- 7- Applicant: Any person, group, establishment, company, national or government establishment, apply for permit to install, operate or replace desalination Unit on well or digging a new well for dispose brine.
- 8- Registration Certificate: Document issued by administration to the owner of the unit or well of disposal brine, to register new or existing desalination unit or well of disposal brine.
- 9- Registration Board: Board issued by the administration should the registration number or any other details.

Article (2): From the date of the regulation no, installation, operation or replacement of desalination units on wells or digging of disposal wells, is allowed unless a permit is obtained from the administration.

Article (3): According to this regulations, registration of existing or new wells should be on registered wells and according to mentioned regulation of organizing wells and Falejs.

Article (4): Those who own desalination unit or brine disposal wells which are registered in accordance with these regulations, are to request from the administration to register them under their name within a period of 3 months.

Article (5): The administration has the right to determine production capacity of the permitted desalination unit and its use and to require from the owner to install water meter to the unit.

Chapter (2)

Registration procedures of wells Desalination Units

Article (6): Registration request for wells desalination Units must be forwarded to the administration form the date of the regulation using a prepared from within a 6 months from this date. Method of disposal of brine and chemical substances used in desalination must be cleared.

Article (7): The administration after carrying the required observation and ensuring the proper disposal of brine and chemical substances used in desertification according to the laid technical terms, is to issue unit

Chapter (3)

New Desalination Units Installation Permit Procedures.

Article (8): Permit request for installing, operating or replacing new desalination Unit's to be forwarded to the administration on the prepared form.

Article (9): The applicant permit to install, operate or replace new desalination unit 's to deposit on amount of R.O. 250 to administration as an insurance to carryout authorised works according to the permit. Governmental establishments are exempted from paying this insurance.

Article (10): The applicant has a period of 15 days from the date of the completion of the required works to register the desalination unit with the administration.
The administration after insuring the completion of works according to the permit is to refund the insurance and issue a unit registration certificate and registration board.

Article (11): It is not permitted to install, operate or replace desalination unit in regions which have public water supply wells and falejs and dams setbacks.

Article (12): The permit should include specifically validity Unit location, type and technique used.

Chapter (4)

Permit procedures for brine dumping wells.

Article (13): permit request for digging brine dumping wells is forwarded to the administration on the prepared form.

Article (14): The applicant who obtained a permit to dig a brine dumping well, is to deposit an amount of R.O.250/= as an insurance to fulfil conditions and specifications tested in the permit. Governmental establishments are exempted from paying this insurance.

Article (15):

- a) The applicant has a period of 15 days from the date of completion of the work, to register the brine dumping well with administration. The administration after insuring the completion of works according to the conditions and specifications enlisted in the in the permit, is to refund the insurance and issue well registration certificate and registration board.
- b) It is prohibited to use the permitted brine dumping well before obtaining registration certificate.

Chapter (5)

Penalties

Article (17): Without violating any other penalties, offender of articles 2, 4, 5, 15 B of this regulations is to be punished according to article (312) of Oman penalty law No 7/74 the Ministry is to remove the violation administratively on the expenses of the offender.

26. MECA Guidelines for Obtaining Environmental Permits

Introduction:

Since the dawn of the blessed renaissance, the Sultanate witnessed a distinguished boom in social, economic and other fields. This was accompanied by a rise in the national efforts exerted towards environment protection and conservation of natural resources. The issuance of Royal Decree No 10/82, and its amendments entitled Law on Conservation of the Environment and Prevention of Pollution, and the following relevant Regulations and decisions were the outcome of these efforts.

It is the intention of the Ministry of Regional Municipalities and Environment to strive to continually preserve and improve quality of the environment.

Optimizing the use of national resources and their conservation demands full consideration, review and implementation of :

- a) The legal framework to protect the Environment,
- b) Its administration and organization, and
- c) Sustainable Development Policies.

This handbook is one of many initiatives that are undertaken by the Ministry within the framework of the Ministry's general approach aimed at keeping pace with the progress made in the fields of development and investment, and within the context of globalization and its new systems such as the global economic order and ISO 14000 which require high levels of competence and flexible procedures without affecting the accuracy of evaluation and application.

In order to simplify permitting procedures, this handbook classifies projects into eight groups according to the technical aspects of their construction and operation phase.

Group one	=	Industrial projects.
Group two	=	Mining projects
Group three	=	Agricultural projects
Group four	=	Food projects
Group five	=	Service projects
Group six	=	Marine and coastal projects
Group seven	=	Tourism projects
Group eight	=	Light Industries.

These groups are further subdivided into a number of subgroups according to the industries commonly encountered in the Sultanate. For each group the Ministry specifies a list of general requirements that apply to all the projects within the group and a list of technical requirements that apply to specific subgroups. These requirements should be fulfilled in order to obtain an Environmental Permit. Furthermore, these requirements may become a part of the permit.

The Ministry has the pleasure of presenting this Handbook to investors and project owners to familiarize them with the requirements for obtaining an environmental permit, hoping that it will accelerate the economic development process which is of special concern to His Majesty Sultan Qaboos Bin Said.

GROUP ONE: INDUSTRIAL PROJECTS

This group includes the following projects:

- (a) Chemical and petrochemical projects,
- (b) Oil and gas projects,
- (c) Water purification and desalination plants,
- (d) Power generation stations,
- (e) Organic fertilizers,
- (f) Textile projects,
- (g) Tanning and leather manufacturing projects,
- (h) Metal smelting and refining, and
- (i) Other projects as determined by the Ministry.

2.1.1 General requirements that apply to all the projects listed within this group:

1. The applicant should submit a completed application form for the environmental permit and if necessary attach an Environmental Impact Assessment study (EIA).
2. The applicant should attach documents describing the location of the project such as Krooki and maps, and technical information specifying production process such as machinery catalogues, floor plans and production processes flow diagrams.
3. The applicant should attach a deed or lease agreement, and copies of all other permits and licenses issued by the concerned government authorities.
4. The applicant is fully financially and legally responsible for any environmental damage resulting from the project and restoration of the environment.
5. *The development must be in conformity with the various Regulations/Ministerial Decisions, some of which require sub-permits/licences. The applicant is responsible for obtaining these documents.*
6. If applicable, the applicant should apply to Air and Noise Pollution Section of the Ministry for a permit to use radioactive materials or equipment containing radioactive materials.
7. The applicant should ensure that noise levels do not exceed the levels determined in the Ministry's noise pollution control regulations.
8. The applicant must not commence construction before obtaining the necessary approvals.
9. If necessary, the applicant should apply to Chemicals Department in this Ministry for a permit for dealing with chemicals (import, production, processing, sale, purchase, distribution, storage and disposal).
10. The applicant must ensure full compliance with the health, security and safety requirements at the construction and operation stages of the project.
11. The applicant must ensure that no waste materials will be disposed of into the surrounding environment without a written permit from the Ministry.
12. The applicant should submit to the Ministry an Environmental Management Plan.
13. The applicant should provide the designated Ministry's staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
14. The applicant/owner is fully legally and financially responsible for environmental impacts during construction, operation and post-closure phase of the project, including cost of mitigation measures, created by the actions or lack of action of its employees, contractors, subcontractors, payment of compensation, settlement of claims, etc.
15. The applicant should provide a list of all chemical substances used in the project including their quantities and copies of Material Safety Data Sheet (MSDS) for each material.
16. The applicant should provide a copy of permit to store chemicals issued by Directorate General or of Civil Defense.
17. Based on the nature of the project and its location the Ministry may have additional requirements.

2.1.2. Technical Conditions

(a) Chemical and Petrochemical Projects

1. The company shall provide adequate training to personnel handling hazardous chemicals.
2. The company shall monitor gaseous emissions resulting from the project and periodically report to the Ministry.
3. The company shall control solvent fumes.
4. The company shall control emissions generated during handling, storing and processing of materials.
5. The company shall utilize a closed system to reduce emissions from material mixing and melting.
6. The company shall reuse and discharge treated liquid effluent in accordance with the Ministry's regulations.

7. The company shall develop a hazardous and non-hazardous waste management plan taking into consideration principles of waste reduction, recycling and use of clean technologies.
8. Based on the nature of the project and its location the Ministry may include additional requirements.

(b) Oil and Gas Projects

1. The company shall refrain from damaging or cutting of vegetation.
2. The company shall spray water to control dust generated during site preparation and leveling.
3. The company shall dispose collected non-hazardous waste at a licensed site and by a method approved by the Ministry.
4. The company shall ensure that gaseous emissions are within the limits specified by the Ministry.
5. Collection tanks shall be lined by reinforced concrete to prevent seepage of pollutants into the soil.
6. The company shall ensure that industrial liquid waste and wastewater are treated and discharged in accordance with the Ministry's regulations.
7. The National and /or International specifications of pipes, production stations, transportation and distribution of oil and gas shall be adhered to.
8. The company shall report immediately all incidents of spills to the Pollution Control Operations Centre of this Ministry.
9. If applicable, the company shall notify Air and Noise Pollution Section of the Ministry about intention to use explosives.
10. The company shall notify the Ministry stating amount of gas if possible, of any emergency discharge of gas into atmosphere.
11. Prior to discharging, the company shall submit a pipe-test water management plan that shall include among others information about any water treatment chemicals.
12. Care should be taken to recover hydrocarbon gas residues retained in control valves.
13. The company shall submit a plan for management of oil and gas production water that was approved by the Ministry of Water Resources. The plan should include but not be limited to, quantity, quality and methods of disposal of the production water.
14. Evaporation ponds that are used for the disposal of drilling mud shall be lined with an impermeable liner and surrounded with wire fence.
15. The company shall back fill dry unused evaporation ponds and reinstate the surrounding area.
16. The company shall submit periodical reports on volume and concentration of gaseous emissions at the project site.
17. The company shall ensure that fuel is stored in specially designed mobile containers or impermeable lined sites.
18. The company shall submit for review and approval technical information necessary to determine height of stacks of power generating stations (number of turbines, capacity of turbines, type and amount of fuel used).
19. Based on the nature of the project and its location the Ministry may include additional requirements.

(c) Water purification and desalination plants:

1. The company shall register the proposed plant with Ministry of Electricity and Water.
2. The company shall obtain a separate approval of Ministry Water Resources Saline for construction of lined evaporation ponds for disposal of saline cooling water.
3. The company, if applicable, shall submit for review and approval technical information necessary to determine minimum height of smoke stacks.
4. The company shall implement necessary measures to control emissions of chemicals used for water sterilization (chlorine and ozone).
5. Based on the nature of the project and its location the Ministry may include additional requirements.

(d) Power Stations:

1. The company shall place fuel storage tanks on impervious bases lined with reinforced concrete and surrounded by bunting walls.
2. The company shall collect, store and dispose of hazardous waste in accordance with the Ministry's regulation.
3. The company shall not use transformers and other electrical equipment containing polychlorinated Biphenyls (PCB) oils.
4. The company shall submit for review and approval technical information necessary to determine height of smoke stacks (number of turbines, capacity of turbines, type and amount of fuel used).

5. The company shall ensure that cooling water discharges to the sea adhere to the appropriate Ministry standards and regulations. .
6. The company shall obtain a separate approval of this Ministry for discharge of cooling water into the marine environment.
7. Based on the nature of the project and its location the Ministry may include additional requirements.

(e) Organic Fertilizers:

1. Complete information on the type of crude / raw materials used in the manufacturing process, shall be submitted to this Ministry.
2. The company shall place fermentation and storage tanks on impervious bases lined with reinforced concrete and surrounded by bunting walls.
3. The company shall reuse and discharge treated liquid effluent and storm water discharges in accordance with the Ministry's regulations.
4. The company shall submit for review and approval a detailed proposal to treat and dispose of contaminated wastewater.
5. The company shall develop and implement an odour control program.
6. The company shall submit for review and approval technical information necessary to determine height of smoke stacks (number of turbines, capacity of turbines, type and amount of fuel used).
7. Based on the nature of the project and its location the Ministry may include additional requirements.

(f) Textile Projects

1. Industrial waste-water shall be separated from domestic wastewater.
2. The company shall ensure that industrial effluent is treated and discharged in accordance with the Ministry's regulations.
3. The company shall ensure that prior to discharge to public sewer, industrial wastewater should undergo preliminary treatment and meet the Ministry's standards and regulations.
4. The company shall ensure that domestic wastewater is treated and discharged in accordance with the Ministry's regulations.
5. The company shall ensure that wastewater treatment sludge is treated and disposed of in accordance with the Ministry's regulations.
6. Based on the nature of the project and its location the Ministry may include additional requirements.

(g) Tannery and Leather Manufacturing Projects

1. The project shall be established in a suitable site for industries with potential environmental effects as designated by this Ministry in coordination with other government authorities.
2. Every possible effort shall be made to reuse the chemicals used in the manufacturing process.
3. The company shall ensure that prior to discharge to public sewer, industrial wastewater should undergo preliminary treatment and meet the Ministry's standards and regulations.
4. The company shall develop and implement an odour control program.
5. The company shall ensure that domestic wastewater is treated and discharged in accordance with the Ministry's regulations.
6. The company shall ensure that wastewater treatment sludge is treated and disposed of in accordance with the Ministry's regulations.
7. The company shall manage non-hazardous and hazardous solid wastes in accordance to the Ministry's regulations and standards.
8. The company shall ensure that the site is clean and free of waste and litter in order to avoid generation of vermin and vectors.
9. Based on the nature of the project and its location the Ministry may include additional requirements.

GROUP TWO: MINING PROJECTS

This group includes the following projects:

- (a) Quarries,
- (b) Crushers,
- (c) Gypsum production (decoration & ornamental sheets),
- (d) Marble, floor tiles production and ceramic factories,

- (e) Extraction of minerals,
- (f) Cement and brick factories, and
- (g) Other projects as determined by the Ministry.

2.2.1 General requirements that apply to all the projects listed within this group

1. The applicant should submit an approval from Department of Mines and Quarries of the Ministry of Commerce and Industry that would indicate the area of the proposed quarry/mine and map with the project coordinates.
2. The applicant should submit a completed application form for the environmental permit and if necessary attach an Environmental Impact Assessment study (EIA).
3. If possible, the proposed quarry/mining site should be located outside the protected areas.
4. If possible, the proposed quarry/crusher site should be located at a distance of at least 3000m from the nearest residential area or public road.
5. The applicant is fully financially and legally responsible for any environmental damage resulting from the project and restoration of the environment.
6. If applicable, the company shall notify Air and Noise Pollution Section of the Ministry about intention to use explosives.
7. The applicant should provide the designated Ministry's staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
8. The applicant for a quarry/crusher project is required to provide a bank guarantee of OR.5000.- valid for the period of the approval.
9. The applicant shall not commence operations before obtaining the necessary approvals.
10. If necessary, the applicant should apply to Chemicals Department in this Ministry for a permit for dealing with chemicals (import, production, processing, sale, purchase, distribution, storage and disposal).
11. The applicant should attach technical information describing production processes such as machinery catalogues, floor plans and production process flow diagrams.
12. If applicable, the applicant should apply to Air and Noise Pollution Section of the Ministry for a permit to use radioactive materials or equipment containing radioactive materials.
13. Based on the nature of the project and its location the Ministry may have additional requirements.

2.2.2. Technical Conditions

(a) Quarries

1. The company shall ensure that its excavation activities shall not exceed one and half (1.5) meters below grade and shall not change the course of wadis and tributaries.
2. The company shall not cut trees and remove or disturb the soil from within five (5) meters of the base of a tree.
3. The company shall control dust generated during the loading and transporting of soil and stones by water spray or other method approved by the Ministry.
4. After mining of material in borrow pits is completed, the company shall restore the site by demolition and removal of buildings, temporary roads, waste litter and grading the site.
5. The company shall place fuel storage tanks on impervious bases lined with reinforced concrete and surrounded by bunting walls.
6. The company shall collect spent oil in sealed drums and store them in concrete lined sites.
7. The company shall dispose collected non-hazardous waste at a licensed site and by a method approved by the Ministry.
8. Based on the nature of the project and its location the Ministry may include additional requirements.

(b) Crushers

1. The company shall utilize bag filters or water sprayers, or a combination of both systems to control dust generated from the gravel crushing and sorting processes.
2. The company shall ensure that hoppers are closed from all sides except material loading and water spray is used to control dust.
3. The company shall cover conveyor belts and install water sprayers at all falling points and crusher floor.
4. The company shall ensure that dust control equipment is used when necessary and maintained in good order.
5. The company shall control road dust with water spraying or other method approved by the Ministry. It is preferable that the trucks and vehicles use roads far from residential areas.

6. The company shall place fuel storage tanks on impervious bases lined with reinforced concrete and surrounded by bunting walls.
7. The company shall collect spent oil in sealed drums and store them in concrete lined sites.
9. The company shall dispose collected non-hazardous waste at a licensed site and by a method approved by the Ministry.
8. Based on the nature of the project and its location the Ministry may include additional requirements.

(c) Gypsum production (decoration & ornamental sheets)

1. The company shall implement efficient duct control measures.
2. The company shall ensure that collected marble dust is reused or disposed of at a licensed site and by a method approved by the Ministry.
3. The company shall ensure that industrial effluent is treated, reused or discharged in accordance with the Ministry's regulations.
4. The company shall dispose collected non-hazardous waste at a licensed site and by a method approved by the Ministry.
5. Based on the nature of the project and its location the Ministry may include additional requirements.

(d) Marble Production and Ceramic Tiles Factories

1. The company shall ensure that collected marble dust is reused or disposed of at a licensed site and by a method approved by the Ministry.
2. The company shall ensure that industrial effluent is treated, reused or discharged in accordance with the Ministry's regulations.
3. The company shall ensure that production floors are cleaned regularly to prevent emission of marble powder into the atmosphere.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(e) Extraction of Minerals

1. The company shall submit for review and approval a detailed solid non-hazardous and hazardous waste management plan that should include but not be limited to proposed handling, storage, disposal methods and monitoring and reporting procedures.
2. The company shall submit for review and approval a detailed liquid waste management plan that should include but not be limited to proposed handling, storage, disposal methods and monitoring and reporting procedures.
3. The company shall submit for review and approval a detailed dust, noise, particulates and gaseous emissions control, that should include but not be limited to proposed control methods and monitoring and reporting procedures.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

GROUP THREE: AGRICULTURAL PROJECTS

This group includes the following projects:

- (a) Poultry farms (poultry, broilers and chicken rearing),
- (b) Livestock pens,
- (c) Slaughterhouses,
- (d) Agricultural Products and animal fodder , and
- (e) Other projects as determined by the Ministry.

2.3.1 General requirements that apply to all the projects listed within this group

1. The applicant should submit a completed application form for the environmental permit and if necessary attach an Environmental Impact Assessment study (EIA).
2. The proposed project should be located in the area designated "agricultural". The applicant should attach a deed or lease agreement.
3. The applicant should submit an approval from Ministry of Agriculture and Fisheries Department of Mines and Quarries of the Ministry of Commerce and Industry that would indicate the location and production capacity of the project.
4. The project shall be located far from residential areas and main roads at a suitable distance to be determined by this Ministry.

5. The applicant is fully financially and legally responsible for any environmental damage resulting from the project and restoration of the environment.
6. The applicant should provide the designated Ministry's staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
7. The applicant shall not commence construction of the project before obtaining the necessary approvals.
8. Based on the nature of the project and its location the Ministry may have additional requirements.

2.3.2. Technical Conditions

(a) Poultry Farms

1. The company shall tile poultry-houses with cement or similar impervious material. The company shall ensure that the poultry-houses are always kept clean.
2. The company shall dispose collected dead chicken at a licensed site and by a method approved by the Ministry. Un-authorized incineration of dead chicken is prohibited.
3. The company shall not dry or store chicken manure at the site without approval by the Ministry. Chicken manure shall be disposed of promptly.
4. The company shall not locate poultry houses near water well at a distance closer than fifty (50) metres.
5. The company shall handle wastewater according to Ministry's regulation.

(b) Livestock Pens

1. The company shall tile livestock pens with cement or similar impervious material.
2. The company shall not dry or store manure at the site without approval by the Ministry. Manure shall be sold or disposed of promptly.
3. The company shall ensure that livestock pens are always kept clean.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(c) Slaughter-houses

- ~~1.~~ Slaughter-houses shall be designed in accordance with the health standards defined by the concerned authorities.
2. The company shall submit for review and approval a detailed liquid waste management plan that should include information about method(s) of treatment and disposal.
- ~~3.~~ Treatment of solid waste generated by slaughter-houses for the production of organic fertilizers and animals feed.
4. In case solid wastes are not re-used, then they shall be collected and disposed of immediately at the designated sites.
5. Based on the nature of the project and its location the Ministry may include additional requirements.

(d) Agricultural and animal feed production

1. The company shall store raw materials and products in specially designated sites lined with cement.
2. Plant material and animal waste used in production shall be collected and stored in enclosed sites.
3. All production processes shall be carried out in enclosed buildings.
4. The company shall store raw materials (especially dried fish) and products in sealed, specially designated containers.
5. The company shall not dry fish at the production site without prior permission from this Ministry.
6. The company shall not install boilers or other heating equipment without prior permission from this Ministry.
7. Based on the nature of the project and its location the Ministry may include additional requirements.

GROUP FOUR: FOOD PROJECTS

This group includes the following projects:

- (a) Dairy Production,
- (b) Bakeries,
- (c) Food Production and Packaging,
- (d) Flour Mills,
- (e) Fish wrapping, and
- (f) Other projects as determined by the Ministry.

2.4.1 General requirements that apply to all the projects listed within this group:

1. The applicant should submit a completed application form for the environmental permit and if necessary attach an Environmental Impact Assessment study (EIA).
2. The applicant should submit an approval from Ministry of Commerce and Industry that would indicate production capacity of the project.
3. The proposed project should be located in the area designated “industrial” or “commercial”. The applicant should attach a deed or lease agreement.
4. The applicant is fully financially and legally responsible for any environmental damage resulting from the project and restoration of the environment.
5. The applicant should attach technical information describing production processes such as machinery catalogues, floor plans and production process flow diagrams.
6. The applicant should provide the designated Ministry’s staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
7. The company shall collect solid non-hazardous waste and dispose at a site approved by the local Municipality.
8. If applicable, the company shall submit for review and approval technical information necessary to determine height of smoke stacks (type of fuel, boiler, etc.).
- ~~9.~~ Industrial wastewater shall be discharged into a septic tank annexed to a holding tank.
10. Non-hazardous solid waste shall be collected from the site and disposed immediately in the designated sites in coordination with the concerned Municipality.
11. Sewage waste shall be discharged into septic tank annexed to holding tank in case of non-existence of sewerage system.
12. Based on the nature of the project and its location the Ministry may have additional requirements.

2.4.2 Technical Conditions

(a) Dairy Production

The applicant should submit an approval from a health department of the concerned Municipality.

The company shall not incinerate waste without permission from this Ministry.

The company shall submit periodical reports on stack emissions.

Should there be cattle pens attached to the factory, then the project shall be established in an area designated “agricultural” and comply with the terms for cattle pens operations.

Based on the nature of the project and its location the Ministry may include additional requirements.

(b) Bakeries

1. The company shall ensure that only electricity or natural gas is utilized as furnace fuel.
2. The company shall ensure that the height of the stack shall not be less than three (3) meters above the apex (roof) of the bakery building and the nearby buildings.
3. Based on the nature of the project and its location the Ministry may include additional requirements.

(c) Food Production and Packaging

- ~~1.~~ Products shall be kept in stores equipped according to the standard food hygiene specifications provided that the stores shall be clad with reinforced concrete to prevent seepage of any pollutants into the soil.
2. The company shall submit periodical reports on stack emissions.
3. If the project is associated with agricultural products from local farms, it is preferable to be established on agricultural land provided with the approval of the Ministry of Transport and Housing
4. The applicant should submit an approval from a health department of the concerned Municipality
5. Based on the nature of the project and its location the Ministry may include additional requirements.

(d) Flour Mills

1. The company shall implement dust control measures, and install and maintain appropriate dust filters.
2. The company shall install covers over conveyer belts and hoppers.
3. The company shall submit periodical reports on stack emissions.
4. The company shall ensure that noise levels do not exceed the levels determined in the Ministry’s noise pollution control regulations.
5. Based on the nature of the project and its location the Ministry may include additional requirements.

(e) Fish wrapping

1. Products shall be kept in stores equipped according to the standard food hygiene specifications.
2. The company shall conduct drying, washing, cutting and wrapping inside of enclosed buildings.
3. Based on the nature of the project and its location the Ministry may include additional requirements.

GROUP FIVE: SERVICE PROJECTS

This group includes the following projects:

- (a) Roads,
- (b) Water supply systems,
- (c) Commercial and residential complexes,
- (d) Storage and recharge dams,
- (e) Hospitals and health centers,
- (f) Electric supplies and telephones,
- (g) Permanent and temporary camps,
- (h) Wastewater treatment plants, and
- (i) Other projects specified by the Ministry.

2.5.1 General requirements that apply to all the projects listed within this group:

1. The applicant should submit the completed application form for environmental permit and if necessary attach an Environmental Impact Assessment study (EIA).
2. A letter from the project owner shall be submitted.
3. The project designs, shall be submitted
4. The applicant/owner is fully legally and financially responsible for environmental impacts during construction, operation and post-closure phase of the project, including cost of mitigation measures, created by the actions or lack of action of its employees, contractors, subcontractors, payment of compensation, settlement of claims, etc.
5. If possible, the company should avoid locating project in areas of dense vegetation.
6. If applicable, the company shall notify Air and Noise Pollution Section of the Ministry about intention to use explosives.
7. The company should ensure that the proposed location comply with coastal set backs specified in the Ministry's regulations.
8. The applicant should provide the designated Ministry's staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
9. The company shall collect solid waste and dispose at a site approved by the local Municipality.
10. The applicant should ensure that domestic wastewater is treated and discharged in accordance with the Ministry's regulations.
11. Based on the nature of the project and its location the Ministry may have additional requirements.

2.5.2 Technical Conditions:

(a) Roads

1. The company shall collect removed asphalt and dispose it at a site approved by the local Municipality.
2. The company shall submit to the Ministry for review and approval designs of road crossing through wadis, tributaries and aflaj.
3. The company shall obtain a separate approval for establishing borrow pits, quarries, crushers or any other similar permanent or temporary, projects and facilities connected with construction and operation of the project
4. Care should be taken during construction bridges across the khawrs to avoid damage to the trees and disturbance to surrounding areas.
5. The company shall obtain a separate approval for establishing labour camps or any other permanent or temporary, manned or unmanned, projects and facilities connected with construction and operation of the project
6. The company shall control road dust with water spraying or other method approved by the Ministry.
7. Based on the nature of the project and its location the Ministry may include additional requirements.

(b) Water Supply Systems

1. Should the Ministry approve abandoning of an old pipeline in the ground, the company shall plug all openings of the old pipes to prevent spreading vermin and vectors.
2. The company should remove all temporary structures, waste and reinstate excavated areas.
- ~~3-~~ The national or international technical specification concerning the pipes and valves of the system shall be considered
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(c) Commercial and Residential Complexes:

1. The company shall control dust with water spraying or other method approved by the Ministry.
2. The company shall ensure that sewage effluent is treated and discharged in accordance with the Ministry's regulations.
3. Based on the nature of the project and its location the Ministry may include additional requirements.

(d) Storage and Recharge Dams

1. The company shall restore the area adjacent to the dam by demolition and removal of temporary buildings, temporary roads, waste litter and grading excavated sites.
2. The company shall control dust with water spraying or other method approved by the Ministry.
3. The company should ensure that the proposed design provide outlets for sand and gravel movement down a wadi towards the coast.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(e) Hospitals and Health Complexes

1. The company shall ensure that sewage effluent is treated and discharged in accordance with the Ministry's regulations.
2. Should the company decide to install a biomedical waste incinerator, it shall submit for review and approval the technical information necessary to determine the height of smoke stacks (type of fuel, boiler, etc.).
3. The company shall ensure that hazardous medical waste is managed and disposed off in accordance to the Ministry's regulations.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(f) Power and Telephone Lines

- ~~1-~~ Taking the required precautions to protect the electric lines in the areas of wadis and mountain passes.
- ~~2-~~ The company shall control dust with water spraying or other method approved by the Ministry.
- ~~3-~~ The company shall ensure that the electric power line right-of-way has sufficient setbacks from residential housing, as recommended by the Ministry.
4. Providing the Ministry with the information about the force of the electro-magnetic field generated during the electric current.
5. Based on the nature of the project and its location the Ministry may include additional requirements.

(g) Permanent and Temporary Workers Camps

1. The company shall not establish any temporary or permanent workers camps without prior approval by the Ministry.
2. Should the camp house more than (150) one hundred and fifty persons a sewage treatment plant shall be installed otherwise the company may use holding tank or septic tank approved by the Ministry.
3. The company shall ensure that all car wash and repair workshops are built and operated in accordance to the Ministry's regulations.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(h) Waste Water Treatment Plants

1. Prior to designing and constructing any temporary or permanent wastewater treatment plant the company shall obtain from the Ministry the necessary Permit to Discharge.
2. All technical data concerning the plant design, shall be provided to the Ministry.

3. The treatment effluent resulting from the plant shall comply with the specification stated in the related regulations.
4. A monthly report illustrating the result of the analysis of the quality of effluent resulting from the plant shall be submitted.
5. A monthly report illustrating the analysis of the quality of sludge resulting from the plant shall be submitted.
6. Based on the nature of the project and its location the Ministry may include additional requirements.

GROUP SIX: MARINE AND COASTAL PROJECTS

This group includes the following projects:

- (a) Commercial ports and Fishing harbours,
- (b) Marine bridges, marinas and clubs,
- (c) Aquiculture,
- (d) Artificial lakes, and
- (e) Other projects specified by the Ministry.

2.6.1 General requirements that apply to all the projects listed within this group:

1. The applicant should submit the completed application form for environmental permit and if necessary attach an Environmental Impact Assessment study (EIA).
2. Submitting a letter from the project owner.
3. Submitting the project designs.
4. The applicant/owner is fully legally and financially responsible for environmental impacts during construction, operation and post-closure phase of the project, including cost of mitigation measures, created by the actions or lack of action of its employees, contractors, subcontractors, payment of compensation, settlement of claims, etc.
5. If possible, the company should avoid locating the project in areas of dense vegetation.
6. If applicable, the company shall notify Air and Noise Pollution Section of the Ministry about intention to use explosives.
7. The company should ensure that the proposed location comply with coastal set backs specified in the Ministry's regulations.
8. The applicant should provide the designated Ministry's staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
9. The company shall collect solid waste and dispose at a site approved by the local Municipality.
10. The company shall ensure that domestic wastewater is treated and discharged in accordance with the Ministry's regulations.
11. The company shall submit for review and approval a monitoring reporting program that should include but not be limited to relevant environmental statistics, information about spills, progress of the project and implementation of mitigation measures.
12. The company shall control construction dust with water spraying or other method approved by the Ministry.
13. The company shall collect spent oil in sealed drums and store them in concrete lined sites.
14. Based on the nature of the project and its location the Ministry may include additional requirements.

2.6.2 Technical Conditions

(a) Commercial ports & Fishing harbours

1. Prior to the beginning of the operation phase, the company shall establish a waste reception facility that will provide services to ships using the port.
2. The company shall obtain a separate approval for disposal of dredging waste into the sea.
3. The company shall ensure that disposal of oil and oily waste from boats and ships does not take place.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(b) Marine clubs, marinas and bridges

1. The company shall ensure that there is no disposal into the sea of oil and oily waste from boats and ships.
2. Care shall be taken to protect vulnerable coastal areas such as mangroves and coral reefs.
3. The proposed location shall be far from the areas affected by coastal erosion.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

(c) Fish aquiculture

1. If applicable, the company shall utilize in its breeding program only fish that are indigenous to Oman.
2. If applicable, the company shall submit a certificate stating that imported fish species are free from any diseases.
3. The company shall not dispose to the sea any fish waste without prior approval of this Ministry.
4. Fish aquaculture projects shall not be established in Khawrs, mangrove area, coral reefs and the other environmentally vulnerable areas.
5. Nature feeders shall be used as much as possible.
6. Based on the nature of the project and its location the Ministry may include additional requirements.

(d) Artificial Lakes

1. The company shall control construction dust with water spraying or other method approved by the Ministry.
2. State of the art technology shall be used in lake waters filtration.
3. Artificial lakes shall not be established in Khawrs, areas of marine birds, natural reserves and wadis stream.
4. Based on the nature of the project and its location the Ministry may include additional requirements.

GROUP SEVEN: TOURISM PROJECTS.

This group includes the following projects:

- (a) Hotels,
- (b) Temporary tourist camps,
- (c) Tourist resorts and villages,
- (d) Tourist boats, and
- (e) Other projects specified by the Ministry.

2.7.1 General requirements that apply to all the projects listed within this group

1. The applicant should submit an approval from the Directorate General of Tourism, Ministry of Commerce and Industry.
2. The applicant should submit the completed application form for environmental permit and if necessary attaches an Environmental Impact Assessment study (EIA).
3. The proposed project should be located in area designated “tourism” or “commercial.”
4. Submitting-the project designs.
5. Care should be taken during construction to avoid damage to the roads and creating traffic jams.
6. The applicant/owner is fully legally and financially responsible for environmental impacts during construction, operation and post-closure phase of the project, including cost of mitigation measures, created by the actions or lack of action of its employees, contractors, subcontractors, payment of compensation, settlement of claims, etc.
7. The company should ensure that the proposed location complies with coastal set backs specified in the Ministry’s regulations.
8. The company shall control construction dust with water spraying or other method approved by the Ministry.
9. The applicant should provide the designated Ministry’s staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
10. The company shall ensure that domestic wastewater is treated and discharged in accordance with the Ministry’s regulations.
11. The company shall collect solid waste and dispose at a site approved by the local Municipality.
12. Based on the nature of the project and its location the Ministry may include additional requirements.

2.7.2 Technical Conditions

(a) Hotels

1. The company shall obtain a separate approval for establishing any marine activity associated with the project.
2. The company shall ensure that exterior design and colour schemes match local architecture and surrounding landscape.
3. Based on the nature of the project and its location the Ministry may include additional requirements.

(b) Temporary Tourist Camps

1. The company should ensure that the proposed location is far away from residential areas.
2. Care should be taken to avoid damage to trees and disturbance to surrounding areas.
3. The company shall not dispose any wastes to the sea.
4. The company shall not establish any permanent structure at the site.
5. Based on the nature of the project and its location the Ministry may include additional requirements.

(c) Tourist Resorts and Villages

1. If applicable, the company should inform the Ministry about intended use of pleasure crafts and recreational vehicles.
2. The company shall ensure that the exterior design and colour schemes of the structures match local architecture and surrounding landscape.
3. Based on the nature of the project and its location the Ministry may include additional requirements.

(d) Tourist Boats

1. The boat owner/operator shall not discharge/dispose of untreated liquid and solid waste to the sea.
2. The owner/operator of a vessel longer than seventy (70) feet shall submit for review and approval a detailed waste management plan.
3. The boat owner/operator shall not dispose of plastic waste to the sea.
4. The boat owner/operator of a vessel less than 70feet long shall post signboards stating "Disposal of waste to the sea is prohibited"
5. Based on the nature of the project and its location the Ministry may include additional requirements.

GROUP EIGHT: LIGHT INDUSTRIES.

This group includes the following projects:

- (a) Small brick factories,
- (b) Gas cylinders storage and sale,
- (c) Carpentry, smithy and metal workshops,
- (d) Car wash, oil change and car repair workshops, and
- (e) Other projects specified by the Ministry.

2.8.1 General requirements that apply to all the projects listed within this group

1. The applicant should submit an approval of the Ministry of Commerce and Industry.
2. If possible, the proposed project should be located in areas designated "industrial."
3. The applicant should submit a copy of lease or the site ownership.
4. The applicant should submit the completed application form for environmental permit and if necessary attach an Environmental Impact Assessment study (EIA).
5. The applicant should ensure that noise levels do not exceed the levels determined in the Ministry's noise pollution control regulations.
6. The applicant should provide the designated Ministry's staff with unrestricted access to the project site to ensure that all relevant environmental impacts of the projects are being considered.
7. For small non-polluting projects, should there be no available municipal sewerage system, wastewater should be discharged into a holding tank.
8. The company shall collect solid waste and dispose at a site approved by the local Municipality.
9. The company shall ensure that no work is carried out during the late night hours and rest days.
10. Based on the nature of the project and its location the Ministry may include additional requirements.

2.8.2 Technical Conditions:

(a) Brick Factories

1. The company shall line the production areas with concrete to prevent seepage of pollutants into the soil.
2. The project shall be located far from residential areas and main roads at a suitable distance to be determined by this Ministry.
3. The company shall implement dust control measures to control dust from cement mixing.
4. Based on the nature of the project and its location the Ministry may have additional requirements.

(b) Gas Cylinders Storage and Sale

1. The company shall obtain an approval of the Directorate General of Standards and Specifications of the Ministry of Commerce and Industry.
2. The company shall obtain an approval for the proposed storage location from the Civil Defence Department of the R.O.P.
3. The company shall ensure that all stored gas cylinders are tightly closed and there is no gas leakage.
4. The company shall ensure that the site is equipped with fire extinguishers.
5. Based on the nature of the project and its location the Ministry may have additional requirements.

(c) Carpentry, smithy and metal workshops

1. The company shall implement necessary measures to collect and dispose of sawdust and/or metal filings to prevent them from spreading.
2. Painting operations shall only take place in designated closed painting rooms. Painting booths shall be equipped with filters or water-curtains.
3. The company shall ensure that dyes and adhesives used in the shop do not contain lead or PCBs.
4. Based on the nature of the project and its location the Ministry may have additional requirements.

(d) Car wash, oil change and car repair workshops

1. Used oil and filters shall be collected in special containers and placed on cement-lined floor. Disposal of such waste shall be in accordance with the Ministry's regulations.
2. The workshop floor shall be lined with cement to prevent the seepage of pollutants into the ground.
3. Painting operations shall only take place in designated closed painting rooms. Painting booths shall be equipped with filters or water-curtains.
4. The company shall ensure that dyes and adhesives used in the shop do not contain lead or PCBs.
5. The company shall ensure that no work is carried out during the late night hours and rest days.
6. Based on the nature of the project and its location the Ministry may have additional requirements.

Appendix "A"

GCC guideline - Projects Requiring Detailed Study on Environmental Impacts

- (1) Projects with potential considerable adverse impacts on the social or natural environment or those, which have impacts on an area larger than the site.
- (2) Large projects with major capital investment or manpower or projects which cover large extensive areas.
- (3) Projects, which include the use of large quantities of chemicals, hazardous substances or operations or the activities, which might cause health hazards.
- (4) Projects with potential adverse impacts on natural, cultural, social, historical, heritable, esthetic, scenic or industrial resources.

Without prejudice to the above mentioned, in general, the following development projects and activities require detailed "Environmental Impact Assessment" (E.I.A). An "Environmental Impact Statement"(E.I.S) can be submitted as an executive summary for the detailed study.

(a) First List

Specified Projects

(1) Large projects which have an actual impact on the quality of the ambient air. They include:

- (i) Cement industry, factories which use clay containing materials and lime materials to produce (clinker) cement, and the works of grinding (clinker) cement.

- (ii) Potteries which produce annually more than 2000 tons of concrete products like bricks, tiles, pipes, potteries and anti melting substances and glass.
 - (iii) Concrete factories which annually produce more than 2000 tons of concrete products, by mixing sand, gravel, water and cement.
 - (iv) Factories producing ferrous and nonferrous substances. They are factories which melt metals for moulding or plating.
 - (v) Mixing asphalt works: They are the works which include grinding rock to mix with asphalt.
 - (vi) Grinding rocks, raw materials, metals and chemicals or grain products which are carried out by grinding or separating into different sizes by screening or purifying by aerification or any other method.
 - (vii) Oil refineries: The installations in which crude oil is refined.
 - (viii) Storing and manufacturing oil products: The work of storing oil products in tanks of more than 2000 cubic meters capacity or the work of purifying used oil or manufacturing grease.
 - (ix) Mining industries where raw materials are melted to extract minerals or metals.
 - (x) Factories of metal recovery from scrap: They are the factories in which metal scrap is treated by any equipment operating by fuel or the ones using electric power.
 - (xi) Any facility using one equipment or more, operating by fuel and consuming, or which may consume, separately or collectively, more than 300kg of fuel per hour.
 - (xii) Any facility for producing fungicide, insecticide and herbicide or any other chemicals.
 - (xiii) Any facility for manufacturing or treating paper.
 - (xiv) Any facility emitting more than 100 tons of air pollutants per year, in the absence of control equipment, which might have an adverse impact on air quality by itself or together with other similar facilities.
- (2) Projects which may affect water quality. They include the following projects which require treatment:
- Projects which must treat pollutants before discharging to the environment.
 - Projects which store waste and may subsequently treat and discharge them to the environment.
- (3) Projects and operations which are big enough to affect the soil. They include the following:
- Projects and operations which might generate tangible pollution to the soil such as the pollution resulting from harmful substances or compounds discharged into the soil or from the overuse of fertilizers and pesticides.
 - Projects and operations which might lead to tangible deterioration of the soil or its dispersion (by water or air) such as agriculture in marginal areas and the intensive use of forests, pastures, in addition to the main engineering projects which might lead to the natural liberation of water.
- (4) The activities which include the following:
- Slaughtering and skinning animals and handling meat.
 - Establishing jetties and buildings at the coast.
 - Mining.
 - Extraction industries.
 - Any construction works accompanied by dredging the sea bed and soil, and filling beaches, bays, shallow lakes and wet lands.
 - Landfills of solid, hazardous and harmful waste.
 - Exploitation of forests and scarce natural resources.

Any of the above listed projects shall be exempted if the applicant is capable of convincing the concerned authority, in a clear way, that his project represents a minor change or a little addition to an existing project while the impacts shall not exceed the standards stated regarding the conservation of environment.

(b) Second List

Development Activities with Environmental Impacts.

- (1) Projects which might affect areas of high environmental value, from the point of view of the conservation of environment. These areas include mountainous areas, wet land areas, forests, pastureland, valleys, coastal areas, coral reefs, shallow bays, and the areas containing unique and important flora and fauna.
- (2) Projects which might cause damage to archaeological and historical areas of scientific and educational or aesthetic value.
- (3) Projects which include exploitation and use of natural resources particularly if they are scarce or non renewable.

- (4) Projects including allocating specific areas with special patterns of development such as towns (regions), industrial services and new suburbs.
- (5) The main engineering works such as:
 - Electric, telephone and pipelines.
 - Transportation facilities such as main roads, ports, railways and airports.
- (6) Works with tangible impact on the nature and formation of wadis or dams , aquifer or irrigation and drainage systems and their water content.
- (7) Projects including the establishment of factories or performing operations which might lead to air, water or ground pollution. This includes chemical, biological, thermal and radiological pollution, or leads to noise or any other potential pollution. If the project proposer is not certain that his project, which is classified under the aforementioned classification, requires an E.I.A. he has to submit a preliminary report for the concerned authority, according to guidelines presented by the concerned authority. The decision of the concerned authority shall be final.

Appendix “B”

GUIDELINE ON ENVIRONMENTAL IMPACT ASSESSMENT

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1.0	Introduction
2.0	Key Features Of Environmental Impact Assessment
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2.2.5	Final assessment
2.3	Documentation
3.0	Data and information that should be included in the EIA submission

1.0 Introduction

This guideline describes the main elements of successful planning using the Environmental Impact Assessment process. Before commencing planning, the proponent should review this guideline and the accompanying (working title) “Environmental Permit Application Review Process – Information Guide”. These documents explain the requirements of the EIA process and explain how the main features can be incorporated into the planning process and preparation of the Environmental Impact Statement (EIS).

An Environmental Impact Assessment (EIA) is a process which attempts to identify, predict and assess the likely consequences of proposed project activities on the environment and on man’s health and well being, and to investigate and propose means for mitigating these consequences. The EIA is intended to provide for the protection, conservation and wise management of the environment through planning and informed decision-making.

The EIA process is founded on the following guiding principles:

- EIA is a process to help decision-makers to protect, conserve and manage Oman’s environment according to the principles of sustainable development, thereby achieving or maintaining human well being, a healthy environment and a sound economy.
- The EIA process should ensure that the individual, company or government agency proposing a project considers its effect on the health, economy and culture of the surrounding communities as well as its impacts on the air, land and water.
- The EIA must be applied as early as possible in a project’s planning stage and before irrevocable decisions are made.
- Public information is an important component of an open and balanced EIA process.

The following should be applied to determine an appropriate level of environmental assessment:

- Type and magnitude of the project;
- Location and sensitivity of environment; and
- Likelihood, nature and magnitude of potential impacts.

Type and Magnitude

Experience shows that large new projects will usually have more adverse harmful impacts than smaller projects or projects limited to modification or expansion of existing installation.

Location and Sensitivity

The location of the project is very important to significance of the environmental impacts of the project and required level of detail for the EIA study.

Likelihood, Nature and Magnitude of Potential Impacts

Likelihood of the potential impacts depends on probability of occurrence, and scientific uncertainty of the information and methods used in assessment.

To evaluate the nature of the impacts, the following aspects should be considered:

- Project type,
- Site sensitivity,
- Possibility of irreversible destruction of natural habitat,
- Cumulative environmental impacts,
- Sustainable use of renewable resources,
- Impacts on human health and safety,
- Effectiveness of mitigation measures.

To evaluate the magnitude of potential environmental impacts, the following issues should be considered:

- Total amount of the ecosystem or resource affected,
- Affected amount of the resource or ecosystem relative to the existing stock (to illustrate this point, consider impacts that may result in death of 100 sardines or in death of 100 green turtles),
- Degree, timing and duration of the impact.
- Indirect impacts of the project (this could include use of temporary access roads by poachers or grazing animals entering sensitive areas).

2.0 Key Features of Environmental Impact Assessment

The proponent in consultation with the Ministry should establish the scope of the study, and focus the study on significant issues and concerns.

2.1. Scoping

Scoping involves specifying the components of the proposed project and the environmental impacts that should be included in an EIA study. Scoping can improve the quality of the EIA, and reduce costs and delays.

The scope of an EIA should include determination of the environmental impacts to be mitigated and residual effects that are critical to make a decision regarding the project. It is important to maintain some flexibility so that new issues can be identified and addressed. The proponent in consultation with the Ministry should scope the EIA study to concentrate time and resources on the areas where potential impacts are likely to be discovered.

During the scoping process, the proponent in consultation with the Ministry should determine who is interested in the project, what their concerns are, and how the concerned parties should be involved in the EIA. Interested parties may include government authorities, municipal organizations, local planning committees, non-governmental organizations, private sector and the public. Concerns of these parties may result in expanding the scope of EIA. The proponent should develop and implement an efficient public information program that would continue throughout the duration of the project.

Once the scoping process is completed the proponent may continue with developing of the EIA.

2.2 Developing an EIA

A scoped EIA should include the following elements:

- Project description,

- Site description and environment - baseline study,
- Evaluation of project's impacts,
- Mitigating measures and risk assessment.

All of these elements should be properly documented.

2.2.1 Project Description

In the project description, the proponent should describe relevant parts of the project components and activities, including:

- Location (using maps of appropriate scale),
- Physical layout and design,
- Size, capacity,
- Pre-construction activities,
- Construction plans and scheduling,
- Staffing and support,
- Facilities and services,
- Operating procedures and decommissioning plans,
- Required off-site activities or projects,
- Estimates of the types and volumes of solid and liquid waste, and gaseous emissions,
- Life span of the project, etc.

The proponent should refer to Chapter 3 of the Guideline for additional information about data which should be included in the project description.

2.2.2 Site Description and Environment – Baseline Study

The description of the site should identify the most important environmental features of the study area and explain the reasons for selecting geographical limits of this area. The proponent should focus only on those elements of the environment that are relevant to the project. Before any assessment of future impacts can be made, the description must identify the existing physical, biological, social and legal characteristics of the site and its environment. This work is also called a baseline study. The extent of the required baseline study would depend on the significance of likely impacts generated by the project. The baseline study involves gathering and evaluating information from existing sources and collecting field data. The existing sources of information may include:

- Databases,
- Reports,
- Experts from government organizations,
- Previously developed EIAs,
- Indigenous people (Traditional Ecological Knowledge),
- Local community,
- Industry and academia,
- Aerial photos and satellite imagery.

Traditional ecological knowledge is the knowledge acquired over many years by local people who have direct experience and contact with the environment. This knowledge can be an excellent source of information about plants, animals, land, weather, agriculture, forestry, etc.

The proponent should verify information from the existing sources to ensure the accuracy of the data and date when the information was last updated. New information can be acquired through:

- Fieldwork which includes surveys, boreholes, aerial photography,
- Interviews,
- Monitoring.

The proponent should ensure that there are proper methods in place to assure adequate quality of the data gathered at the collection stage. The EIA document should include discussion of Quality Assurance (QA) and Quality Control (QC) programs implemented for the purpose of the study.

2.2.3 Evaluation of project's environmental impacts

At this stage of the EIA, the proponent should use information about the project and the existing environment at the time of the study, and identify and assess any potential environmental impacts. The proponent should compare the site and timing of the project activities with the local sensitivities, seasonal activities and availability of the impacted elements of the environment (population of endangered species, limited supply of

resources, available land, etc.). The major environmental impacts should be emphasized. Short and long term potential impacts should be discussed and indications should be given where the predictions are based on subjective judgments due to knowledge gaps.

Impacts should be considered for the entire life of the project, with exemption of mineral workings (mines, quarries, gas, petroleum projects, etc) and waste disposal sites where the afterlife (post closure impacts) of the site could be more environmentally important than the operational impacts. It is also important to describe the factors that may upset these long-term predictions. In addition, the proponent should describe environmental impacts if the project is abandoned before completion.

Cumulative and indirect environmental impacts

The proponent must assess any cumulative environmental impacts likely to result from the project in combination with existing or planned projects or activities. Environmental impacts are not separate from one another; they interact over time and space. It is important to recognize that many critical impacts of the project may occur some distance from the project site itself, and the interests of all affected parties should be addressed. The assessment of cumulative impacts should consider sustainable use of renewable resources and include impacts from the approved future projects.

Impact on socioeconomic conditions

Most of the projects will have impacts on socioeconomic conditions of the local population. The EIA should address impacts on the quality of life, economy, employment, commercial opportunities, recreational opportunities, future land use, and measures to mitigate these impacts.

Impacts on physical and cultural heritage

The proponent should consider in the EIA the potential impacts of the project on heritage and any structure, site or thing that is of historical, archeological or architectural significance. The EIA should ensure the preservation and protection of sites or objects that are considered heritage resources.

Proposal and evaluation of reasonable alternatives to the project and their impacts

The proponent must consider a reasonable range of different ways to achieve the purpose of the project and compare environmental impacts of these alternatives. This evaluation must include assessment of the future state of the environment if the proposed project did not take place (it is also called “do nothing” alternative).

Environmental criteria and evaluation methods

The proponent, when evaluating the environmental impact, must determine whether the environmental impact is harmful, significant and likely. There is no list of exclusive criteria which must be used to determine whether the impact is harmful, the most common way is to compare the quality of the environment before the project and predicted quality with the project in place.

As a general approach with respect to the significance, any impact that pushes the capacity of the environment beyond its normal stable threshold, or distorts the relationships between sectors of the environment, should be considered significant. The proponent can use environmental standards or guidelines to establish significance of the harmful impacts. A risk assessment can be used when there are no applicable threshold standards or guidelines. The following criteria should be applied to determine significance of adverse impacts: magnitude, frequency and duration, location and sensitivity of environment, and irreversibility.

The next step in evaluating environmental impacts is to determine whether the adverse significant effects are likely. The proponent should examine environmental impacts considering probability of occurrence and scientific uncertainty of the available data.

2.2.4 Mitigating measures and evaluating associated risks

The proponent should identify technically and economically feasible methods to avoid or reduce negative impacts and enhance positive effects. These mitigation measures can be introduced at various stages of the planning process. In some cases, the consideration of mitigation may change the project alternative that is selected. The following approaches can be used to mitigate likely significant harmful impacts:

Direct prevention – by avoiding sensitive areas

Reduction – by adjusting work schedules, pollution control devices, changes in design, etc.

Restoration and remediation measures – by removing temporary roads, re-grading, re-planting, establishing artificial reefs, relocation of corals, site cleanup, etc.

Compensation –financial or in-kind payments to affected people to compensate them for loss of use or enjoyment.

The proponent should develop in consultation with the Ministry a follow-up program to monitor efficiency of mitigation measures.

2.2.5 Final assessment

The proponent should evaluate through a net effect analysis, each project alternative or part of a project alternative in light of its advantages and disadvantages. The analysis should include a description of residual impact remaining after all mitigation measures are applied. This description should include their significance, duration, extent and nature.

The proponent's decision making process should be phased, narrowing progressively to a preferred alternative. It should include clear points where alternatives are assessed and net environmental impacts associated with each alternative are clearly identified. The output of this analysis should be a clear conclusion with respect to the project alternative chosen by the proponent.

The MRME's role

The Ministry will review the submitted data and follow the proponent's planning process to ensure that all significant impacts are addressed and conclusions of the EIA study are derived through the required planning steps. The complete EIA study document becomes a part of the application package for an Environmental Permit. After the review is completed the Ministry will either:

- accept the conclusions of the EIA and issue an Environmental Permit,
- request further study, or
- request re-application for an alternative proposal.

Once the permit is issued, the submitted EIA document becomes a part of the permit and any changes to the EIA require amendment to the Permit. The Environmental Permit forms a basis for issuance of other relevant environmental sub-permits and licences. For example:

- Permit to import/use radioactive materials,
- Licence to operate non-hazardous waste site,
- Licence to transport non-hazardous waste,
- Licence to dispose non-hazardous waste,
- Licence to recycle non-hazardous waste,
- Licence to operate hazardous waste disposal site,
- Licence to transport hazardous waste,
- Licence to dispose hazardous waste,
- Licence to recycle hazardous waste,
- Licence to store hazardous waste,
- Permit to discharge or reuse waste water,
- Permit to construct waste treatment facility,
- Permit for dumping at sea, and
- Permit for dealing with toxic chemicals.

2.3 Documentation

The documents arising out of an EIA will fall into two categories: reference documents and working documents. The former will contain a detailed record of the work done on the EIA. The latter is the document(s) which contain the information for action, i.e. the Environmental Impact Statement. This should be concise and unambiguous. Conclusions should be stated and reasons for those conclusions presented in a summary form. Preferred alternatives should be highlighted. Detailed technical analysis and data should be placed in appendices and support documents. It is important to cross-reference documentation so that all reviewers can locate specific information in the EIA and supporting documents.

The proponent should use summaries for all major areas of technical analysis to maintain connections between detailed considerations and the overall argument

The EIA document should include a summary in non-technical language of the information included in the EIA study. A good summary should clearly address the following questions:

1. **Why** is the project necessary?
2. **Where** is the project located? – This should include the reasons for selecting this particular site.
3. **Who** will be affected by the project?
4. **What** is the purpose of the project?
5. **When** is the project scheduled and how long will last?
6. **How** will the project affect the environment?

In addition the summary should include:

- Brief information about the consultant(s) who carried out the EIA Study, their telephone number(s), and person(s) who may be referred to for information.
- Brief project description and name(s) of project proponent(s).
- It may include the feasibility study (for major projects).
- A summary table of environmental impacts, mitigation measures and residual impacts.
- A simplified map showing the location of the project and affected area.

3.0 Data and information that should be included in the EIA submission.

The following outline is not meant to be exhaustive but is only an indication to developers of what is expected by the Ministry.

Information describing the EIA

- Scope of the project and scope of the EIA

Information describing the project

1. Purpose and physical characteristics of the project, including details of proposed access and transport arrangements and numbers to be employed and where they will come from. This should also include:
 - Project location options;
 - Technological options;
 - Location and project layout plans, maps, diagrams and photographs;
 - Landscaping;
 - Size, construction, and appearance of buildings and installations;
 - Infrastructure and utilities;
 - Time scale and schedule of the project;
 - Air emission sources/data; and
 - All anticipated discharges to the environment.
2. Land use requirements and other physical features of the project:
 - Existing land use;
 - Land-take during construction;
 - Land-take during operation;
 - Land-take after use has ceased;
 - Land-take reserved for future development;
 - Land-take for ancillary development, housing and recreation; and
 - Land-take for new roads, amenities, screen planting and bounding.
3. Production processes and operational features of the project:
 - i) Type and quantities of raw materials, energy and other resources consumed;
 - ii) Details of types, locations and land use requirements (including access roads) of all natural resource requirements and time-scale of consumption:
 - During construction, including extraction/production of aggregates, quarrying, borrow pits, etc.
 - When operational, including raw materials, especially minerals used as part of the process.
 - iii) Residues and emissions by type, quantity, composition and strength including:
 - Discharges to water,
 - Emissions to air,
 - Noise – day and night during construction and operation,
 - Vibration,
 - Light (i.e. effects on turtles for instance),
 - Radiation and heat emissions during day and night; and
 - Deposits/residues to land and soil.
 - iv) Methods of transportation, handling and storage of raw materials, chemicals, fuels and final products;
 - v) Details of generation, handling, storage, management and disposal of toxic and hazardous wastes; and
 - vi) Details of types, handling and disposal of radioactive materials.
4. Main alternative sites and processes considered, where appropriate, and reasons for final choice.
5. Any other information relevant to the project

6. Annexes should include the following:
 - i) Process flow-diagram indicating points of effluent discharges, and nature of emissions to atmosphere from various point sources, including noise, and solid and hazardous waste generation;
 - ii) Estimated air emissions and their predicted levels of concentration from all significant sources;
 - iii) Composition, characteristics and quantification of all envisaged industrial and domestic effluent discharges; atmospheric emissions and solid and hazardous wastes including provision for, and impact assessment of, their disposal locations and practices in accordance with legislation;
 - iv) List of machinery with noise level;
 - v) Flow-diagram of wastewater treatment systems;
 - vi) Design details and calculations of stack/chimney (if any);
 - vii) Details of other modelling studies (if any);
 - viii) List of chemicals and raw materials with quantities and data sheets for the chemicals.

Information describing the site and its environment

Physical features

1. Population-proximity and numbers.
2. Flora and fauna (including habitats and species) - in particular protected species and their habitats.
3. Soil: agricultural quality, geology and geomorphology.
4. Water aquifers, watercourses, shoreline and marine resources, and including any existing discharges their type, quantity, composition and strength.
5. Air; climatic factors, air quality, noise emissions, odours, dust etc.
6. Architectural and historic heritage, archeological sites and features and other material assets.
7. Landscape and topography.
8. Recreational uses.

Legislative framework

Where applicable the information considered under this section should include all statutory designations such as national nature reserves, sites of special scientific interest, areas of outstanding beauty etc. It should include references to all relevant Regulations/Ministerial Decisions, and local and national planning policies applying to the site and surrounding area.

Assessment of effects

This includes direct and indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development.

Impacts on human beings, buildings and man made features

1. Change in population arising from the development and consequential environmental impacts.
2. Visual impacts of the development on the surrounding area and landscape.
3. Levels and impacts of emissions from the development during normal operation.
4. Levels and impacts of noise from the development.
5. Impacts of the development on local roads and transport.
6. Impacts of the development on buildings, the architectural and historical heritage, archeological features and other human artefacts.

Impacts on flora, fauna and geology

7. Loss of, and damage to, habitats, trees, and other plant and animal species, including marine.
8. Loss of, and damage to geological, paleontological and physical features.
9. Loss of plants or trees constituting a visual asset to the landscape.
10. Existing environmental effects that may already have put the fauna and flora at risk.
11. Other ecological consequences.

Impacts on land

10. Physical effects of the development e.g. change in local topography, effect of earth moving on stability, soil or beach erosion etc.
11. Impact of cut and fill, deep foundations and piling on the natural drainage.
12. Impacts of chemical emissions and deposits on soil of site and the surrounding land.
12. Land use/resource impacts.
 - Quality and quantity of agricultural land to be taken,
 - Sterilization of mineral resources,
 - Other alternative uses of the site,
 - Impacts on the surrounding land uses including agriculture,
 - Waste disposal,
 - Impacts on the economic value of natural and cultural landscapes.

Impacts on water

13. Impacts of the development on the drainage pattern of the area.
14. Changes to other hydrographic characteristics, e.g. ground water level, watercourses, flow of underground water, pollution etc.
15. Impacts on coastal, estuarine hydrology.
16. Impacts of pollutants and waste on water quality.

Impacts on air and climate

17. Emissions from existing and approved future sources of air pollution that may have already created or will create stress on the environment.
18. Levels and concentrations of chemical emissions and their environmental impacts.
19. Impacts of particulate matter on humans, plants and other elements of the environment.
20. Offensive odours.
21. Any other climatic impacts.

Other direct and secondary effects associated with the project

22. Impacts from traffic related to the development.
23. Impacts arising from the extraction and consumption of materials (especially minerals such as stone, aggregates, sand, clay, etc.), water, energy and/or other resources required by the development.
24. Impacts of other developments associated with the project e.g. new roads, sewers, housing, power lines, etc.
25. Impacts specific to the construction period:
 - Construction camps,
 - Recreational activities of the construction staff,
 - Vandalism
 - Subcontractors' activities
26. Impacts of association of the development with other existing or proposed development(s).
27. Any other secondary impacts.
- 28.

Environmental Management Plan (EMP) - Mitigating measures

This chapter should include all the measures that have been incorporated into the project design to reduce or to eliminate significant potential environment impacts during all phases of the project. In addition, it should include all possible contingencies, their impacts, mitigation measures, contingency plans and a maintenance program.

1. A description of the measures to be taken to **prevent, reduce, remedy** or compensate harmful impacts of the project e.g.:
 - i) Site planning
 - ii) Technical measures such as:
 - Process selection,
 - Recycling /reuse of waste materials and waste utilisation processes,
 - Pollution control and treatment,
 - Containment
 - iii) Aesthetic and ecological measures such as:
 - Mounding,
 - Design, colour, taking advantage of topography,
 - Creating structures that are an asset to the environment,
 - Shielding working lights used at night,
 - Landscaping,
 - Tree planting,
 - Measures to preserve particular habitats or create alternative habitats,
 - Recording of archeological sites,

- Measures to safeguard historic buildings or sites.
2. Compensation for harmful impacts:
 - Compensation for loss of use (grazing land, access, etc.) and property value,
 - Subsidizing community projects.
 3. Details of possible contingencies, their impacts on the environment and mitigating measures including the maintenance programme.
 4. Details of Safety and Emergency Response Procedures and Contingency Plans.
 5. Risk Assessment and Management. Should include details on likelihood and possible effects of hazards associated with accidental release to the environment of hazardous materials, natural disasters (dam bursts, earthquakes, explosions, tank collapses, etc) or of site hazards (road accidents, tanker overturn, ship sinking, etc), arrangements for the keeping, storing and use of hazardous substances.
 6. Proposals for Environmental Monitoring programs.
 7. Site restoration after use:
- Disposal of redundant roads,
- Removal of construction facilities,
 - Removal of buildings, structures and facilities,
 - Restoration of quarries and mines,
 - Proposed land use after clearance,
 - Time scale of restoration,
 - Post-closure monitoring.

Conclusions and additional information

1. Conclusions
2. Definitions and abbreviations
3. Information sources, consultations, public participation
4. References

Appendix “C”

Excerpts from World Bank Guidelines on EIA

The Directives of Work.

A Brief summary of the Environmental Assessment Report concerning a specific Project.

- 1- Environmental assessment reports should be concise and limited to significant environmental issues. The details and sophistication of analysis should be commensurate with the potential impacts. The target audience should be project designers, implementing agencies and borrower and Bank Staff.
- 2- The Environmental Assessment report should include:
 - Executive Summary. Concise discussion of significant findings and recommended actions.
 - Policy, legal and administrative framework within which the EIA is prepared. The environmental requirements of any financiers should be explained.
 - Project description in a geographic, ecological, social and temporal context, including off-site investments that may be required by the project (e.g. dedicated pipelines, access roads, power plants, water supply, and basic housing: dimensions of the study area and description relevant physical, biological, and socio-economic conditions including any changes anticipated before the project commences. Current and proposed development activities within the project (but not directly connected to the project) should also be taken into consideration.
 - Environmental Impacts: The positive and negative impacts likely to result from the proposed project should be identified and assessed. Mitigation measures and the residual impacts that cannot be mitigated should be identified. Opportunities for environmental enhancement should be explored. The extent and quality of available data, key data gaps, and uncertainties associated with predictions should be identified. Topics that do not require further attention should be specified.
 - Analysis of Alternatives: Proposed investment design, site, technology and operational alternatives should be compared systematically in terms of their potential environmental impacts, capital and recurrent costs, institutional training and monitoring requirements. The environmental costs and benefits should be quantified for each alternative to determine the economic values for each whenever possible.
 - Mitigation Plan: Feasible and cost-effective measures which may reduce potentially significant adverse environmental impacts to acceptable levels should be proposed, and the potential environmental impacts, capital and recurrent costs, and institutional and training requirements of these measures estimated. The

plan (sometimes known as an “action plan” or “environmental management plan”) should provide details on proposed work programmes and schedules, to ensure that the proposed environmental actions are in phase with engineering activities throughout preparation. The plan should consider compensatory measures if mitigation measures are not feasible or cost-effective.

- Management and Training: The existence, role and capability of environmental unit at the on-site, agency and ministry level should be assessed, and recommendations made concerning the establishment and / or expansion of such units, and the training of the staff, to the point that E.A. recommendations can be implemented.
- Monitoring Plan Regarding Environmental impacts performance: The plan should specify the type of monitoring, who would do it, how much it would cost, and what are other inputs (e.g. training) are necessary.

27. Information on Climate Affairs to be provided in the Environmental Impact Assessment (EIA)

Ministry of Environment and Climate Affairs Directorate General of Climate Affairs

Annex: Information on Climate Affairs to be provided in the Environmental Impact Assessment (EIA) study submitted to the Ministry.

Section A.: Guideline:-

Any Environmental Impact Assessment study shall contain a separate chapter <X> on Climate Affairs covering but not limited to the themes structured under **Section C. Structure**.

<X> is the placeholder of the chapter number in the EIA study that will be submitted by the project developer. Please continue the numbering of the sections and subsections according to the relevant chapter number <X>.

It is requested to keep the structure of the sections for easy reference and general overview. In case the project developer requests to add further subjects or comments, another section can be added at the end of the chapter.

Words and expressions highlighted in *Italic* are referenced in **Section B. Definitions**.

Section B.: Definitions:-

The following words and expressions shall have the meaning assigned to each of them unless the context otherwise requires; words and expressions in *Italic* indicate a reference within this section:

- (1) “**Abatement**” means the anthropogenic intervention to reduce the sources (technological change and substitution) or enhance the sinks of greenhouse gases (GHG).
- (2) “**Adaptation**” means initiatives and measures to reduce vulnerability of natural and human systems against actual or expected climate change impacts.
- (3) “**Adaptation benefits**” are the avoided damage costs or the accrued benefits following the adoption and implementation of adaptation measures.
- (4) “**Adaptation costs**” are costs of planning, preparing for, facilitating, and implementing adaptation measures, including transition costs.
- (5) “**All stages of the project**” are preparation, planning, construction, operation, closure (decommissioning/dismantling) and after closure (disposal/re-naturation).
- (6) “**Anthropogenic emissions**” are emissions of greenhouse gases (GHG), greenhouse gas precursors, and aerosols associated with human activities, including the burning of fossil fuels, deforestation, *land-use changes*, livestock, fertilization, etc.
- (7) “**Climate Change**” refers to a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or to persistent anthropogenic changes in the composition of the atmosphere or in land use. While “**adaptation to climate change impacts**” needs to take into account the aggregated climate change, “**climate change abatement**” refers to the change of climate which is attributed directly or indirectly to anthropogenic activity that alters the composition of the global atmosphere and land use.
- (8) “**Energy**” is the amount of work or heat delivered, e.g. Primary energy (energy sources), Renewable energy, Embodied energy.
- (9) “**Energy efficiency**” is the ratio of useful energy output of a system, conversion process or activity, to its energy input.
- (10) “**Greenhouse Gas (es) (GHG)**” to be curbed under the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulphur hexafluoride (SF₆), hydrofluorocarbons (HFC) and perfluorocarbons (PFC). – Other greenhouse gases are water vapor (H₂O), ozone (O₃) and Ozone Depleting Substances (ODS).
- (11) “**(Climate Change) Impact Assessment**” is the practice of identifying and evaluating, in monetary and/or non-monetary terms, *climate change impacts*.

- (12) “**(Climate Change) Impacts**” are the adverse and beneficial effects of climate change (and variability) on natural and human systems. All impacts that may occur given a projected change in climate, without considering adaptation, are called **potential impacts**. **Residual impacts** are impacts that would occur after adaptation is taken into account.
- (13) “**Land-use change**” refers to a change in the use or management of land by humans, which may lead to a change in land cover. Land cover and land-use change may have an impact on the surface albedo, evapotranspiration, *sources* and *sinks* of *greenhouse gases (GHG)*, or other properties of the climate system.
- (14) “**Measures**” are technologies, processes, and practices that reduce *greenhouse gas (GHG)* emissions or effects below anticipated future levels. Examples of *measures* are *renewable energy* technologies, waste minimization processes, and public transport commuting practices.
- (15) “**Ozone Depleting Substances (ODS)**” are substances having the characteristic of chemical stability in the lower atmosphere, comprising one or more chlorine or bromine atoms or both and beginning a series of reactions in the stratospheric ozone layer causing depletion of the ozone. ODS are controlled by the Montreal Protocol and its amendments and by the Ministerial Decision No. (243/2005) – Regulations for the Control & Management Of Ozone Depleting Substances.
- (16) “**Points of generation and/or sources**” of *greenhouse gas (GHG)* emissions can be but are not limited to any process, activity or mechanism, any material or substance, any volatile, any storage, open transport, processing, disposal, and any burning, fermenting, manuring, cultivating, diffusion, chemical reaction, or any direct release to the atmosphere at a smokestack, chimney, flare, pipe, quarry, crusher, machine, open or closed tank, part of a building or construction, controlled or uncontrolled outlet or from a fugitive source.
- (17) “**Primary energy**” (also referred to as “**energy sources**”) is the *energy* embodied in natural resources that has not undergone any anthropogenic conversion. This primary energy needs to be converted and transported to become **usable energy** (e.g. light).
- (18) “**Proactive Adaptation**” is adaptation that takes place before *climate change impacts* are observed, also referred as **anticipatory adaptation**.
- (19) “**Reactive Adaptation**” is adaptation that takes place after *climate change impacts* are observed.
- (20) “**Renewable energy**” is obtained from the continuing or repetitive currents of *energy* occurring in the natural environment, and includes non-carbon technologies such as solar energy, hydropower, wind, tide and waves, and geothermal heat, as well as carbon neutral technologies such as biomass.
- (21) “**Risk**” refers to the uncertainty that surrounds future events and outcomes. It is the level of exposure to uncertainties that an organization must understand and effectively manage. Risk is the expression of the likelihood of a future event occurring as well as its potential to influence the achievement of an organization’s objectives.
- (22) “**Sea level change/sea level rise**”: Sea level can change, both globally and locally, due to (i) changes in the shape of the ocean basins, (ii) changes in the total mass of water, and (iii) changes in water density. Factors leading to sea level rise under global warming include both increases in the total mass of water from the melting of land-based snow and ice, and changes in water density from an increase in ocean water temperatures and salinity changes.
- (23) “**(GHG) Sink**” is any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a *greenhouse gas (GHG)* or aerosol from the atmosphere.
- (24) “**(GHG) Source**” refers to any process, activity or mechanism that releases a *greenhouse gas (GHG)*, an aerosol, or a precursor of a greenhouse gas or aerosol into the atmosphere.
- (25) “**State-of-the-art**” is the highest level of development, as of a device, procedure, process, technique, *technology* or science, achieved at a particular time.
- (26) “**Technology**” is the practical application of knowledge to achieve particular tasks that employs both technical artifacts (hardware, equipment) and (social) information (software, know-how for production and use of artifacts).
- (27) “**Tools (for adaptation)**” refers to methodologies, guidelines and simplified processes that enable stakeholders to assess the implications of *climate change impacts* and relevant adaptation options in the context of their operating environment.
- (28) “**Vulnerability**” is the degree to which a system is susceptible to, and unable to cope with, adverse effects of *climate change*, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

Section C. Structure:-

X. Climate Affairs:

X.1. Climate Affairs Contact

X.1.1. Provide name, organization and contact details of a person, a department or a third party who will deal with **climate affairs** issues.

X.2. Ozone Depleting Substances (ODS)

X.2.1. Specify for all stages of the project, the types and quantities of ODS to be used.

X.2.2. Specify for all stages of the project, the numbers and kinds of equipment that contain ODS to be used.

X.2.3. Identify for all stages of the project, any alternatives for ODS.

X.2.4. Specify the project plan for the usage of such ODS alternatives and the avoidance of any ODS release to the atmosphere.

X.2.5. Describe the procedure to adhere to the requirements of the Regulations for the Control and Management of the Ozone Depleting Substances issued by Ministerial Decision No. (243/2005).

X.3. Greenhouse Gas (GHG) Emissions

X.3.1. Specify all points of generation and/or sources of greenhouse gas (GHG) emissions from all gases, vapours, fumes, solids, effluents, and wastes, at all stages of the project.

X.3.2. Specify the types and quantities of GHG expected to be emitted during all stages of the project, together with the annual and total quantities during the life span of the project.

X.3.3. Attach a reference list of already existing GHG inventories and those that will be newly created.

X.3.4. Submit an action plan regarding the management of GHG emissions including but not limited to the following:

X.3.4.1. Methods to monitor or estimate GHG emissions from all sources and for all stages of the project.

X.3.4.2. Application of state-of-the-art technology and processes to **control** emissions of GHG for all stages of the project.

X.4. Climate Change Impact Assessment (Risk Assessment)

X.4.1. Identify the effects of the GHG emissions of the project activities alone and the accumulated effects of all projects in the area on the environment and the climate system at all stages of the project.

X.4.2. Identify the climate change impacts on the project and the surrounding systems at all stages of the project.

X.5. Vulnerability

X.5.1. Specify the vulnerability to the project and the surrounding systems at all stages of the project.

X.6. Climate Change Adaptation

X.6.1. Identify measures and tools for proactive and reactive adaptation and/or abatement of climate change impacts for the project and the surrounding environment in case of:

X.6.1.1. Storms, cyclones, high waves, floods, landslides, and dust storms.

X.6.1.2. Sea level change/sea level rise, drought, increase in temperature, changes of wind patterns, and groundwater level changes.

X.7. Climate Change Abatement – Energy & Technology

X.7.1. Specify all energy sources (primary energy) to be used for the different project processes at all stages of the project.

X.7.2. Identify renewable energy of benefit to the project at all stages of the project. Explain the intention of how to incorporate these into the project in future.

X.7.3. Identify natural greenhouse gas (GHG) sinks, e.g. plantations, green spaces, trees, etc. on the project site and in the vicinity, and any further GHG sink that can be implemented, e.g. by proper selection of indigenous plants, useful plants, plants that keep soil or water, and landscaping.

X.7.4. Identify project measures to minimize the energy consumption and to improve the energy efficiency.

X.7.5. Specify the types of technologies proposed to the project. Explain to what extent they coincide with the Standards and Specifications of techniques of clean production and state-of-the-art technology.

X.7.6. Submit an action plan regarding the management of GHG emissions for the application of state-of-the-art technology and processes to **abate** the emissions of GHG for all stages of the project.

X.8. Further Subjects and Comments (optional)

X.8.1. This chapter should be used to add further subjects or comments of the project developer if necessary.>

X.8.2. <Etc.>

28. EU Integrated Pollution Prevention and Control

DIRECTIVES
DIRECTIVE 2008/1/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 15 January 2008
concerning integrated pollution prevention and control
(Codified version)
(Text with EEA relevance)

The European parliament and the control of the European Nation

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee ⁽¹⁾,

After consulting the Committee of the Regions, Acting in accordance with the procedure laid down in Article 251 of the Treaty ⁽²⁾,

Whereas:

- (1) Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control ⁽³⁾ has been substantially amended several times ⁽⁴⁾. In the interests of clarity and rationality the said Directive should be codified.
- (2) The objectives and principles of the Community's environment policy, as set out in Article 174 of the Treaty, consist in particular of preventing, reducing and as far as possible eliminating pollution by giving priority to intervention at source and ensuring prudent management of natural resources, in compliance with the 'polluter pays' principle and the principle of pollution prevention.
- (3) The Fifth Environmental Action Programme, the broad outline of which was approved by the Council and the Representatives of the Governments of the Member States, meeting within the Council, in the Resolution of 1 February 1993 on a Community programme of policy and action in relation to the environment and sustainable development ⁽⁵⁾, accorded priority to integrated pollution control as an important part of the move towards a more sustainable balance between human activity and socioeconomic development, on the one hand, and the resources and regenerative capacity of nature, on the other.
- (4) The implementation of an integrated approach to reduce pollution requires action at Community level in order to modify and supplement existing Community legislation concerning the prevention and control of pollution from industrial plants.
- (5) Council Directive 84/360/EEC of 28 June 1984 on the combating of air pollution from industrial plants ⁽⁶⁾ introduced a general framework requiring authorization prior to any operation or substantial modification of industrial installations which may cause air pollution.
- (6) Directive 2006/11/EC of the European Parliament and of the Council of 15 February 2006 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community ⁽⁷⁾ provides for an authorisation requirement for the discharge of those substances.
- (7) Although Community legislation exists on the combating of air pollution and the prevention or minimisation of the discharge of dangerous substances into water, there is no comparable Community legislation aimed at preventing or minimising emissions into soil.
- (8) Different approaches to controlling emissions into the air, water or soil separately may encourage the shifting of pollution between the various environmental media rather than protecting the environment as a whole.
- (9) The objective of an integrated approach to pollution control is to prevent emissions into air, water or soil wherever this is practicable, taking into account waste management, and, where it is not, to minimise them in order to achieve a high level of protection for the environment as a whole.

- (1) OJ C 97, 28.4.2007, p. 12.
- (2) Opinion of the European Parliament of 19 June 2007 (not yet published in the Official Journal) and Council Decision of 17 December 2007.
- (3) OJ L 257, 10.10.1996, p. 26. Directive as last amended by Regulation (EC) No 166/2006 of the European Parliament and of the Council (OJ L 33, 4.2.2006, p. 1).
- (4) See Annex VI, Part A.
- (5) OJ C 138, 17.5.1993, p. 1.
- (6) OJ L 188, 16.7.1984, p. 20. Directive as amended by Directive 91/692/EEC (OJ L 377, 31.12.1991, p. 48).
- (7) OJ L 64, 4.3.2006, p. 52.
- (10) This Directive should establish a general framework for integrated pollution prevention and control. It should lay down the measures necessary to implement integrated pollution prevention and control in order to achieve a high level of protection for the environment as a whole. Application of the principle of sustainable development should be promoted by an integrated approach to pollution control.
- (11) The provisions of this Directive should apply without prejudice to the provisions of Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment ⁽¹⁾. When information or conclusions obtained further to the application of that Directive have to be taken into consideration for the granting of authorisation, this Directive should not affect the implementation of Directive 85/337/EEC.
- (12) Member States should take the necessary steps in order to ensure that the operator of the industrial activities referred to in this Directive is complying with the general principles of certain basic obligations. For that purpose it would suffice for the competent authorities to take those general principles into account when laying down the authorisation conditions.
- (13) Some of the provisions adopted pursuant to this Directive must be applied to existing installations after 30 October 2007 and others had to be applied as from 30 October 1999.
- (14) In order to tackle pollution problems more effectively and efficiently, environmental aspects should be taken into consideration by the operator. Those aspects should be communicated to the competent authority or authorities so that they can satisfy themselves, before granting a permit, that all appropriate preventive or pollution-control measures have been laid down. Very different application procedures may give rise to different levels of environmental protection and public awareness. Therefore, applications for permits under this Directive should include minimum data.
- (15) Full coordination of the authorisation procedure and conditions between competent authorities should make it possible to achieve the highest practicable level of protection for the environment as a whole.
- (16) The competent authority or authorities should grant or amend a permit only when integrated environmental protection measures for air, water and land have been laid down.
- (17) The permit should include all necessary measures to fulfil the authorisation conditions in order thus to achieve a high level of protection for the environment as a whole. Without prejudice to the authorisation procedure, those measures may also be the subject of general binding requirements.
- (18) Emission limit values, parameters or equivalent technical measures should be based on the best available techniques, without prescribing the use of one specific technique or technology and taking into consideration the technical characteristics of the installation concerned, its geographical location and local environmental conditions. In all cases the authorization conditions should lay down provisions on minimizing long-distance or transfrontier pollution and ensure a high level of protection for the environment as a whole.
- (19) It is for the Member States to determine how the technical characteristics of the installation concerned, its geographical location and local environmental conditions can, where appropriate, be taken into consideration.
- (20) When an environmental quality standard requires more stringent conditions than those that can be achieved by using the best available techniques, supplementary conditions should in particular be required by the permit, without prejudice to other measures that may be taken to comply with the environmental quality standards.

- (21) Because best available techniques will change with time, particularly in the light of technical advances, the competent authorities should monitor or be informed of such progress.
- (22) Changes to an installation may give rise to pollution. The competent authority or authorities should therefore be notified of any change which might affect the environment. Substantial changes to plant must be subject to the granting of prior authorisation in accordance with this Directive.
- (23) The authorisation conditions should be periodically reviewed and if necessary updated. Under certain conditions, they should in any event be re-examined.

(1) OJ L 175, 5.7.1985, p. 40. Directive as last amended by Directive 2003/35/EC of the European Parliament and of the Council (OJ L 156, 25.6.2003, p. 17).

- (24) Effective public participation in the taking of decisions should enable the public to express, and the decision maker to take account of, opinions and concerns which may be relevant to those decisions, thereby increasing the accountability and transparency of the decision-making process and contributing to public awareness of environmental issues and support for the decisions taken. In particular, the public should have access to information on the operation of installations and their potential effect on the environment and, before any decision is taken, to information relating to applications for permits for new installations or substantial changes and to the permits themselves, their updating and the relevant monitoring data.
- (25) Participation, including participation by associations, organisations and groups, in particular non-governmental organisations promoting environmental protection, should accordingly be fostered, including by promoting environmental education of the public.
- (26) On 25 June 1998 the Community signed the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Århus Convention). Among the objectives of the Århus Convention is the desire to guarantee rights of public participation in decision making in environmental matters in order to contribute to the protection of the right to live in an environment which is adequate for personal health and well-being.
- (27) The development and exchange of information at Community level about best available techniques should help to redress the technological imbalances in the Community, should promote the worldwide dissemination of limit values and techniques used in the Community and should help the Member States in the efficient implementation of this Directive.
- (28) Reports on the implementation and effectiveness of this Directive should be drawn up regularly.
- (29) This Directive is concerned with an installation that's potential for pollution, and therefore transfrontier pollution, is significant. Transboundary consultation should be organised where applications relate to the licensing of new installations or substantial changes to installations which are likely to have significant negative environmental effects. The applications relating to such proposals or substantial changes should be available to the public of the Member State likely to be affected.
- (30) The need for action may be identified at Community level to lay down emission limit values for certain categories of installation and pollutant covered by this Directive. The European Parliament and the Council should set such emission limit values in accordance with the provisions of the Treaty.
- (31) The provisions of this Directive should apply without prejudice to Community provisions on health and safety at the workplace.
- (32) This Directive should be without prejudice to the obligations of the Member States relating to the time-limits for transposition into national law of the Directives as set out in Annex VI, Part B,

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Purpose and scope

The purpose of this Directive is to achieve integrated prevention and control of pollution arising from the activities listed in Annex I. It lays down measures designed to prevent or, where that is not practicable, to reduce emissions in the air, water and land from the abovementioned activities, including measures concerning waste, in order to achieve a high level of protection of the environment taken as a whole, without prejudice to Directive 85/337/EEC and other relevant Community provisions. L 24/10 EN Official Journal of the European Union 29.1.2008

Article 2

Definitions

For the purposes of this Directive the following definitions shall apply:

1. 'substance' means any chemical element and its compounds, with the exception of radioactive substances within the meaning of Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation ⁽¹⁾ and genetically modified organisms within the meaning of Council Directive 90/219/EEC of 23 April 1990 on the contained use of genetically modified micro-organisms ⁽²⁾ and Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms ⁽³⁾;
2. 'pollution' means the direct or indirect introduction, as a result of human activity, of substances, vibrations, heat or noise into the air, water or land which may be harmful to human health or the quality of the environment, result in damage to material property, or impair or interfere with amenities and other legitimate uses of the environment;
3. 'installation' means a stationary technical unit where one or more activities listed in Annex I are carried out, and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution;
4. 'existing installation' means an installation which on 30 October 1999, in accordance with legislation existing before that date, was in operation or was authorised or, in the view of the competent authority, was the subject of a full request for authorisation, provided that that installation was put into operation no later than 30 October 2000;
5. 'emission' means the direct or indirect release of substances, vibrations, heat or noise from individual or diffuse sources in the installation into the air, water or land;
6. 'emission limit values' means the mass, expressed in terms of certain specific parameters, concentration and/or level of an emission, which may not be exceeded during one or more periods of time; emission limit values may also be laid down for certain groups, families or categories of substances, in particular for those listed in Annex III. The emission limit values for substances normally apply at the point where the emissions leave the installation, any dilution being disregarded when determining them; with regard to indirect releases into water, the effect of a water treatment plant may be taken into account when determining the emission limit values of the installation involved, provided that an equivalent level is guaranteed for the protection of the environment as a whole and provided this does not lead to higher levels of pollution in the environment, without prejudice to Directive 2006/11/EC or the Directives implementing it;
7. 'environmental quality standard' means the set of requirements which must be fulfilled at a given time by a given environment or particular part thereof, as set out in Community legislation;
8. 'competent authority' means the authority or authorities or bodies responsible under the legal provisions of the Member States for carrying out the obligations arising from this Directive;

9. 'permit' means that part or the whole of a written decision (or several such decisions) granting authorisation to operate all or part of an installation, subject to certain conditions which guarantee that the installation complies with the requirements of this Directive. A permit may cover one or more installations or parts of installations on the same site operated by the same operator;
10. 'change in operation' means a change in the nature or functioning, or an extension, of the installation which may have consequences for the environment;
11. 'substantial change' means a change in operation which, in the opinion of the competent authority, may have significant negative effects on human beings or the environment; for the purposes of this definition, any change to or extension of an operation shall be deemed to be substantial if the change or extension in itself meets the thresholds, if any, set out in Annex I;
12. 'best available techniques' means the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole: 29.1.2008 EN Official Journal of the European Union L 24/11
 - (a) 'Techniques' shall include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.
 - (b) 'Available techniques' means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator.
 - (c) 'Best' means most effective in achieving a high general level of protection of the environment as a whole.

In determining the best available techniques, special consideration should be given to the items listed in Annex IV;

12. 'operator' means any natural or legal person who operates or controls the installation or, where this is provided for in national legislation, to whom decisive economic power over the technical functioning of the installation has been delegated;

(1) OJ L 159, 29.6.1996, p. 1.

(2) OJ L 117, 8.5.1990, p. 1. Directive as last amended by Commission Decision 2005/174/EC (OJ L 59, 5.3.2005, p. 20).

(3) OJ L 106, 17.4.2001, p. 1. Directive as last amended by Regulation (EC) No 1830/2003 (OJ L 268, 18.10.2003, p. 24).

14. 'the public' means one or more natural or legal persons and, in accordance with national legislation or practice, their associations, organisations or groups;
15. 'the public concerned' means the public affected or likely to be affected by, or having an interest in, the taking of a decision on the issuing or the updating of a permit or of permit conditions; for the purposes of this definition, nongovernmental organisations promoting environmental protection and meeting any requirements under national law shall be deemed to have an interest.

Article 3

General principles governing the basic obligations of the operator

1. Member States shall take the necessary measures to provide that the competent authorities ensure that installations are operated in such a way that:
 - a) all the appropriate preventive measures are taken against pollution, in particular through application of the best available techniques.
 - b) no significant pollution is caused.
 - c) waste production is avoided in accordance with Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste ⁽¹⁾; where waste is produced, it is recovered or, where that is technically and economically impossible, it is disposed of while avoiding or reducing any impact on the environment.
 - d) energy is used efficiently.
 - e) the necessary measures are taken to prevent accidents and limit their consequences;
 - f) the necessary measures are taken upon definitive cessation of activities to avoid any pollution risk and return the site of operation to a satisfactory state.

2. For the purposes of compliance with this Article, it shall be sufficient if Member States ensure that the competent authorities take account of the general principles set out in paragraph 1 when they determine the conditions of the permit.

Article 4

Permits for new installations

Member States shall take the necessary measures to ensure that no new installation is operated without a permit issued in accordance with this Directive, without prejudice to the exceptions provided for in Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants (2).

Article 5

Requirements for the granting of permits for existing installations

1. Member States shall take the necessary measures to ensure that the competent authorities see to it, by means of permits in accordance with Articles 6 and 8 or, as appropriate, by reconsidering and, where necessary, by updating the conditions, that existing installations operate in accordance with the requirements of Articles 3, 7, 9, 10 and 13, Article 14(a) and (b) and Article 15(2) not later than 30 October 2007, without prejudice to specific Community legislation.
2. Member States shall take the necessary measures to apply the provisions of Articles 1, 2, 11 and 12, Article 14(c), Article 15(1) and (3), Articles 17, 18 and Article 19(2) to existing installations as from 30 October 1999. L 24/12 EN Official Journal of the European Union 29.1.2008

Article 6

Applications for permits

1. Member States shall take the necessary measures to ensure that an application to the competent authority for a permit includes a description of:
 - a) the installation and its activities.
 - b) the raw and auxiliary materials, other substances and the energy used in or generated by the installation;

(1) OJ L 114, 27.4.2006, p. 9.

(2) OJ L 309, 27.11.2001, p. 1. Directive as last amended by Council Directive 2006/105/EC (OJ L 363, 20.12.2006, p. 368).

- a. the sources of emissions from the installation.
- b. the conditions of the site of the installation.
- c. the nature and quantities of foreseeable emissions from the installation into each medium as well as identification of significant effects of the emissions on the environment.
- d. the proposed technology and other techniques for preventing or, where this not possible, reducing emissions from the installation.
- e. where necessary, measures for the prevention and recovery of waste generated by the installation
- f. further measures planned to comply with the general principles of the basic obligations of the operator as provided for in Article 3.
- g. measures planned to monitor emissions into the environment.
- h. the main alternatives, if any, studied by the applicant in outline.

An application for a permit shall also include a non-technical summary of the details referred to in points (a) to (j).

2. Where information supplied in accordance with the requirements provided for in Directive 85/337/EEC or a safety report prepared in accordance with Council Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances (1) or other information produced in response to other legislation fulfils any of the requirements of this Article, that information may be included in, or attached to, the application.

Article 7

Integrated approach to issuing permits

Member States shall take the measures necessary to ensure that the conditions of, and procedure for the grant of, the permit are fully coordinated where more than one competent authority is involved, in order to guarantee an effective integrated approach by all authorities competent for this procedure.

Article 8

Decisions

Without prejudice to other requirements laid down in national or Community legislation, the competent authority shall grant a permit containing conditions guaranteeing that the installation complies with the requirements of this Directive or, if it does not, shall refuse to grant the permit. All permits granted and modified permits must include details of the arrangements made for air, water and land protection as referred to in this Directive.

Article 9

Conditions of the permit

1. Member States shall ensure that the permit includes all measures necessary for compliance with the requirements of Articles 3 and 10 for the granting of permits in order to achieve a high level of protection for the environment as a whole by means of protection of the air, water and land.
2. In the case of a new installation or a substantial change where Article 4 of Directive 85/337/EEC applies, any relevant information obtained or conclusion arrived at pursuant to Articles 5, 6 and 7 of that Directive shall be taken into consideration for the purposes of granting the permit.
3. The permit shall include emission limit values for polluting substances, in particular those listed in Annex III, likely to be emitted from the installation concerned in significant quantities, having regard to their nature and their potential to transfer pollution from one medium to another (water, air and land). If necessary, the permit shall include appropriate requirements ensuring protection of the soil and ground water and measures concerning the management of waste generated by the installation. Where appropriate, limit values may be supplemented or replaced by equivalent parameters or technical measures.

For installations under point 6.6 in Annex I, emission limit values laid down in accordance with this paragraph shall take into account practical considerations appropriate to these categories of installation. Where emissions of a greenhouse gas from an installation are specified in Annex I to Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community (1) in relation to an activity carried out in that installation.

(1) OJ L 10, 14.1.1997, p. 13. Directive as last amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council (OJ L 284, 31.10.2003, p. 1).

the permit shall not include an emission limit value for direct emissions of that gas unless it is necessary to ensure that no significant local pollution is caused. For activities listed in Annex I to Directive 2003/87/EC, Member States may choose not to impose requirements relating to energy efficiency in respect of combustion units or other units emitting carbon dioxide on the site. Where necessary, the competent authorities shall amend the permit as appropriate. The third, fourth and fifth subparagraphs shall not apply to installations temporarily excluded from the scheme for greenhouse gas emission allowance trading within the Community in accordance with Article 27 of Directive 2003/87/EC.

4. Without prejudice to Article 10, the emission limit values and the equivalent parameters and technical measures referred to in paragraph 3 shall be based on the best available techniques, without prescribing the use of any technique or specific technology, but taking into account the technical characteristics of the installation concerned, its geographical location and the local environmental conditions. In all circumstances, the conditions of the permit shall contain provisions on the minimization of long-distance or transboundary pollution and ensure a high level of protection for the environment as a whole.
5. The permit shall contain suitable release monitoring requirements, specifying measurement methodology and frequency, evaluation procedure and an obligation to supply the competent authority with data

required for checking compliance with the permit. For installations under point 6.6 in Annex I, the measures referred to in this paragraph may take account of costs and benefits.

6. The permit shall contain measures relating to conditions other than normal operating conditions. Thus, where there is a risk that the environment may be affected, appropriate provision shall be made for start-up, leaks, malfunctions, momentary stoppages and definitive cessation of operations. The permit may also contain temporary derogations from the requirements of paragraph 4 if a rehabilitation plan approved by the competent authority ensures that these requirements will be met within six months and if the project leads to a reduction of pollution.
7. The permit may contain such other specific conditions for the purposes of this Directive as the Member State or competent authority may think fit.
8. Without prejudice to the obligation to implement a permit procedure pursuant to this Directive, Member States may prescribe certain requirements for certain categories of installations in general binding rules instead of including them in individual permit conditions, provided that an integrated approach and an equivalent high level of environmental protection as a whole are ensured.

Article 10

Best available techniques and environmental quality standards

Where an environmental quality standard requires stricter conditions than those achievable by the use of the best available techniques, additional measures shall in particular be required in the permit, without prejudice to other measures which might be taken to comply with environmental quality standards.

Article 11

Developments in best available techniques

Member States shall ensure that the competent authority follows or is informed of developments in best available techniques.

Article 12

Changes by operators to installations

1. Member States shall take the necessary measures to ensure that the operator informs the competent authorities of any planned change in the operation. Where appropriate, the competent authorities shall update the permit or the conditions.
2. Member States shall take the necessary measures to ensure that no substantial change planned by the operator is made without a permit issued in accordance with this Directive. The application for a permit and the decision by the competent authority must cover those parts of the installation and those aspects listed in Article 6 that may be affected by the change. The relevant provisions of Article 3, Articles 6 to 10 and Article 15(1), (2) and (3) shall apply *mutatis mutandis*.

(1) OJ L 275, 25.10.2003, p. 32. Directive as amended by Directive 2004/101/EC (OJ L 338, 13.11.2004, p. 18).

Article 13

Reconsideration and updating of permit conditions by the competent authority

1. Member States shall take the necessary measures to ensure that competent authorities periodically reconsider and, where necessary, update permits conditions.
2. The reconsideration shall be undertaken in any event where:
 - a) the pollution caused by the installation is of such significance that the existing emission limit values of the permit need to be revised or new such values need to be included in the permit.
 - b) substantial changes in the best available techniques make it possible to reduce emissions significantly without imposing excessive costs.

- c) the operational safety of the process or activity requires other techniques to be used;
- d) new provisions of Community or national legislation so dictate.

Article 14

Compliance with permit conditions

Member States shall take the necessary measures to ensure that:

- a) the conditions of the permit are complied with by the operator when operating the installation;
- b) the operator regularly informs the competent authority of the results of the monitoring of releases and without delay of any incident or accident significantly affecting the environment.
- c) operators of installations afford the representatives of the competent authority all necessary assistance to enable them to carry out any inspections within the installation, to take samples and to gather any information necessary for the performance of their duties for the purposes of this Directive.

Article 15

Access to information and public participation in the permit procedure

1. Member States shall ensure that the public concerned is given early and effective opportunities to participate in the procedure for:
 - a) issuing a permit for new installations;
 - b) issuing a permit for any substantial change.
 - c) updating of a permit or permit conditions for an installation in accordance with Article 13(2)(a).
The procedure set out in Annex V shall apply for the purposes of such participation.
2. The results of monitoring of releases as required under the permit conditions referred to in Article 9 and held by the competent authority shall be made available to the public.
3. Paragraphs 1 and 2 shall apply subject to the restrictions laid down in Article 4(1), (2) and (4) of Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information .
4. When a decision has been taken, the competent authority shall inform the public in accordance with the appropriate procedures and shall make available to the public the following information:
 - a) the content of the decision, including a copy of the permit and of any conditions and any subsequent updates; and
 - b) having examined the concerns and opinions expressed by the public concerned, the reasons and considerations on which the decision is based, including information on the public participation process.

Article 16

Access to justice

1. Member States shall ensure that, in accordance with the relevant national legal system, members of the public concerned have access to a review procedure before a court of law or another independent and impartial body established by law to challenge the substantive or procedural legality of decisions, acts or omissions subject to the public participation provisions of this Directive when:
 - a) they have a sufficient interest; or
 - b) they maintain the impairment of a right, where administrative procedural law of a Member State requires this as a precondition.
2. Member States shall determine at what stage the decisions, acts or omissions may be challenged.
3. What constitutes a sufficient interest and impairment of a right shall be determined by the Member States, consistently with the objective of giving the public concerned wide access to justice. To this end, the interest of any non-governmental organisation promoting environmental protection and meeting any requirements under national law shall be deemed sufficient for the purpose of paragraph 1(a). Such organisations shall also be deemed to have rights capable of being impaired for the purpose of paragraph 1(b).
4. The provisions of this Article shall not exclude the possibility of a preliminary review procedure before an administrative authority and shall not affect the requirement of exhaustion of administrative review

procedures prior to recourse to judicial review procedures, where such a requirement exists under national law. Any such procedure shall be fair, equitable, timely and not prohibitively expensive.

5. In order to further the effectiveness of the provisions of this Article, Member States shall ensure that practical information is made available to the public on access to administrative and judicial review procedures.

Article 17

Exchange of information

1. With a view to exchanging information, Member States shall take the necessary measures to send the Commission every three years, and for the first time before 30 April 2001, the available representative data on the limit values laid down by specific category of activities in accordance with Annex I and, if appropriate, the best available techniques from which those values are derived in accordance with, in particular, Article 9. On subsequent occasions the data shall be supplemented in accordance with the procedures laid down in paragraph 3 of this Article.
2. The Commission shall organise an exchange of information between Member States and the industries concerned on best available techniques, associated monitoring, and developments in them. Every three years the Commission shall publish the results of the exchanges of information.
3. At intervals of three years, and for the first time for the period 30 October 1999 to 30 October 2002 inclusive, Member States shall send information to the Commission on the implementation of this Directive in the form of a report. The report shall be drawn up on the basis of a questionnaire or outline drafted by the Commission in accordance with the procedure laid down in Article 6(2) of Council Directive 91/692/EEC of 23 December 1991 standardising and rationalizing reports on the implementation of certain Directives relating to the environment (1). The questionnaire or outline shall be sent to the Member States six months before the start of the period covered by the report. The report shall be submitted to the Commission within nine months of the end of the three-year period covered by it. The Commission shall publish a Community report on the implementation of the Directive within nine months of receiving the reports from the Member States. The Commission shall submit the Community report to the European Parliament and to the Council, accompanied by proposals if necessary.
4. Member States shall establish or designate the authority or authorities which are to be responsible for the exchange of information under paragraphs 1, 2 and 3 and shall inform the Commission accordingly.

Article 18

Transboundary effects

1. Where a Member State is aware that the operation of an installation is likely to have significant negative effects on the environment of another Member State, or where a Member State likely to be significantly affected so requests, the Member State in whose territory the application for a permit pursuant to Article 4 or Article 12(2) was submitted shall forward to the other Member State any information required to be given or made available pursuant to Annex V at the same time as it makes it available to its own nationals. Such information shall serve as a basis for any consultations necessary in the framework of the bilateral relations between the two Member States on a reciprocal and equivalent basis.
2. Within the framework of their bilateral relations, Member States shall see to it that in the cases referred to in paragraph 1 the applications are also made available for an appropriate period of time to the public of the Member State likely to be affected so that it will have the right to comment on them before the competent authority reaches its decision.

(1) OJ L 377, 31.12.1991, p. 48. Directive as amended by Regulation (EC) No 1882/2003.

3. The results of any consultations pursuant to paragraphs 1 and 2 must be taken into consideration when the competent authority reaches a decision on the application.
4. The competent authority shall inform any Member State which has been consulted pursuant to paragraph 1 of the decision reached on the application and shall forward to it the information referred to in Article

15(4). That Member State shall take the measures necessary to ensure that that information is made available in an appropriate manner to the public concerned in its own territory.

Article 19

Community emission limit values

1. Where the need for Community action has been identified, on the basis, in particular, of the exchange of information provided for in Article 17, the European Parliament and the Council, acting on a proposal from the Commission, shall set emission limit values, in accordance with the procedures laid down in the Treaty, for:
 - a) the categories of installations listed in Annex I except for the landfills covered by points 5,1 and 5,4 of that Annex.
 - b) the polluting substances referred to in Annex III.
2. In the absence of Community emission limit values defined pursuant to this Directive, the relevant emission limit values contained in the Directives listed in Annex II and in other Community legislation shall be applied as minimum emission limit values pursuant to this Directive for the installations listed in Annex I.
3. Without prejudice to the requirements of this Directive, the technical requirements applicable for the landfills covered by points 5,1 and 5,4 of Annex I, have been fixed in Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (1).

Article 20

Transitional provisions

1. The provisions of Directive 84/360/EEC, the provisions of Articles 4, 5 and 6(2) of Directive 2006/11/EC and the relevant provisions concerning authorisation systems in the Directives listed in Annex II shall apply, without prejudice to the exceptions provided for in Directive 2001/80/EC, to existing installations in respect of activities listed in Annex I until the measures required pursuant to Article 5 of this Directive have been taken by the competent authorities.
2. The relevant provisions concerning authorisation systems in the Directives listed in Annex II shall not, in respect of the activities listed in Annex I, apply to installations which are not existing installations within the meaning of point 4 of Article 2.
3. Directive 84/360/EEC shall be repealed on 30 October 2007. Acting on a proposal from the Commission, the Council or the European Parliament and the Council shall, where necessary, amend the relevant provisions of the Directives listed in Annex II in order to adapt them to the requirements of this Directive before 30 October 2007.

Article 21

Communication

Member States shall communicate to the Commission the texts of the main provisions of national law which they adopt in the field covered by this Directive.

Article 22

Repeal

Directive 96/61/EC, as amended by the acts listed in Annex VI, Part A, is repealed, without prejudice to the obligations of the Member States relating to the time-limits for transposition into national law of the Directives as set out in Annex VI, Part B. 29.1.2008 EN Official Journal of the European Union L 24/17 References to the repealed Directive shall be construed as references to this Directive and shall be read in accordance with the correlation table in Annex VII.

Article 23

Entry into force

This Directive shall enter into force on the 20th day following its publication in the *Official Journal of the European Union*.

Article 24

Addressees

This Directive is addressed to the Member States. Done at Strasbourg, 15 January 2008. *For the European Parliament* *For the Council*
The President *The President*
H.-G. PÖTTERING J. LENARČIČ

(1) OJ L 182, 16.7.1999, p. 1. Directive as amended by Regulation (EC) No 1882/2003.

ANNEX I

CATEGORIES OF INDUSTRIAL ACTIVITIES REFERRED TO IN ARTICLE 1

1. Installations or parts of installations used for research, development and testing of new products and processes are not covered by this Directive.
2. The threshold values given below generally refer to production capacities or outputs. Where one operator carries out several activities falling under the same subheading in the same installation or on the same site, the capacities of such activities are added together.

1. Energy industries

- 1.1. Combustion installations with a rated thermal input exceeding 50 MW.
- 1.2. Mineral oil and gas refineries.
- 1.3. Coke ovens.
- 1.4. Coal gasification and liquefaction plants.

2. Production and processing of metals

- 2.1. Metal ore (including sulphide ore) roasting or sintering installations.
- 2.2. Installations for the production of pig iron or steel (primary or secondary fusion) including continuous casting, with a capacity exceeding 2,5 tonnes per hour.
- 2.3. Installations for the processing of ferrous metals:
 - a) hot-rolling mills with a capacity exceeding 20 tonnes of crude steel per hour.
 - b) smitheries with hammers the energy of which exceeds 50 kilojoules per hammer, where the calorific power used exceeds 20 MW.
 - c) application of protective fused metal coats with an input exceeding 2 tonnes of crude steel per hour.
- 2.4. Ferrous metal foundries with a production capacity exceeding 20 tonnes per day.
- 2.5. Installations:
 - a) for the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes.
 - b) for the smelting, including the alloyage, of non-ferrous metals, including recovered products, (refining, foundry casting, etc.) with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals.
- 2.6. Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30 m³.

3. Mineral industry

- 3.1. Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or lime in rotary kilns with a production capacity exceeding 50 tonnes per day or in other furnaces with a production capacity exceeding 50 tonnes per day.
- 3.2. Installations for the production of asbestos and the manufacture of asbestos-based products.
- 3.3. Installations for the manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day.
- 3.4. Installations for melting mineral substances including the production of mineral fibres with a melting capacity exceeding 20 tonnes per day.
- 3.5. Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per

day, and/or with a kiln capacity exceeding 4 m³ and with a setting density per kiln exceeding 300 kg/m³.

4. Chemical industry

Production within the meaning of the categories of activities contained in this section means the production on an industrial scale by chemical processing of substances or groups of substances listed in points 4.1 to 4.6.

- 4.1. Chemical installations for the production of basic organic chemicals, such as:
 - (a) simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic);
 - (b) oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins;
 - (c) sulphurous hydrocarbons;
 - (d) nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds or nitrate compounds, nitriles, cyanates, isocyanates;
 - (e) phosphorus-containing hydrocarbons;
 - (f) halogenic hydrocarbons;
 - (g) organometallic compounds;
 - (h) basic plastic materials (polymers, synthetic fibres and cellulose-based fibres);
 - (i) synthetic rubbers;
 - (j) dyes and pigments;
 - (k) surface-active agents and surfactants.
- 4.2. Chemical installations for the production of basic inorganic chemicals, such as:
 - (a) gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluoride, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl chloride;
 - (b) acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids;
 - (c) bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide;
 - (d) salts, such as ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate;
 - (e) non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide.
- 4.3. Chemical installations for the production of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers).
- 4.4. Chemical installations for the production of basic plant health products and of biocides.
- 4.5. Installations using a chemical or biological process for the production of basic pharmaceutical products.
- 4.6. Chemical installations for the production of explosives.

5. Waste management

Without prejudice to Article 11 of Directive 2006/12/EC or Article 3 of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste (1):

- 5.1. Installations for the disposal or recovery of hazardous waste as defined in the list referred to in Article 1(4) of Directive 91/689/EEC, as defined in Annexes II A and II B (operations R1, R5, R6, R8 and R9) to Directive 2006/12/EC and in Council Directive 75/439/EEC of 16 June 1975 on the disposal of waste oils (2), with a capacity exceeding 10 tonnes per day.
- 5.2. Installations for the incineration of municipal waste (household waste and similar commercial, industrial and institutional wastes) with a capacity exceeding 3 tonnes per hour.
- 5.3. Installations for the disposal of non-hazardous waste as defined in Annex II A to Directive 2006/12/EC under headings D8 and D9, with a capacity exceeding 50 tonnes per day.
- 5.4. Landfills receiving more than 10 tonnes per day or with a total capacity exceeding 25 000 tonnes, excluding landfills of inert waste.

6. Other activities

- 6.1. Industrial plants for the production of:
 - a) pulp from timber or other fibrous materials.
 - b) paper and cardboard with a production capacity exceeding 20 tonnes per day.
- 6.2. Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles where the treatment capacity exceeds 10 tonnes per day.
- 6.3. Plants for the tanning of hides and skins where the treatment capacity exceeds 12 tonnes of finished products per day.
- 6.4.
 - (a) Slaughterhouses with a carcase production capacity greater than 50 tonnes per day.
 - (b) Treatment and processing intended for the production of food products from:
 - animal raw materials (other than milk) with a finished product production capacity greater than 75 tonnes per day.

- vegetable raw materials with a finished product production capacity greater than 300 tonnes per day (average value on a quarterly basis).
 - (c) Treatment and processing of milk, the quantity of milk received being greater than 200 tonnes per day (average value on an annual basis).
- 6.5. Installations for the disposal or recycling of animal carcasses and animal waste with a treatment capacity exceeding 10 tonnes per day.
 - 6.6. Installations for the intensive rearing of poultry or pigs with more than:
 - a) 40 000 places for poultry.
 - b) 2 000 places for production pigs (over 30 kg); o.
 - c) 750 places for sows.
 - 6.7. Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with a consumption capacity of more than 150 kg per hour or more than 200 tonnes per year.
 - 6.8. Installations for the production of carbon (hard-burnt coal) or electrographite by means of incineration or graphitisation.

(1) OJ L 377, 31.12.1991, p. 20. Directive as last amended by Regulation (EC) No 166/2006 of the European Parliament and of the Council (OJ L 33, 4.2.2006, p. 1).

(2) OJ L 194, 25.7.1975, p. 23. Directive as last amended by Directive 2000/76/EC of the European Parliament and of the Council (OJ L 332, 28.12.2000, p. 91).

ANNEX II

LIST OF THE DIRECTIVES REFERRED TO IN ARTICLES 19(2), (3) AND 20

1. Council Directive 87/217/EEC of 19 March 1987 on the prevention and reduction of environmental pollution by asbestos.
2. Council Directive 82/176/EEC of 22 March 1982 on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry.
3. Council Directive 83/513/EEC of 26 September 1983 on limit values and quality objectives for cadmium discharges.
4. Council Directive 84/156/EEC of 8 March 1984 on limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry.
5. Council Directive 84/491/EEC of 9 October 1984 on limit values and quality objectives for discharges of hexachlorocyclohexane.
6. Council Directive 86/280/EEC of 12 June 1986 on limit values and quality objectives for discharges of certain dangerous substances included in List I of the Annex to Directive 76/464/EEC.
7. Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste.
8. Council Directive 92/112/EEC of 15 December 1992 on procedures for harmonising the programmes for the reduction and eventual elimination of pollution caused by waste from the titanium dioxide industry.
9. Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants.
10. Directive 2006/11/EC of the European Parliament and of the Council of 15 February 2006 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.
11. Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste.
12. Council Directive 75/439/EEC of 16 June 1975 on the disposal of waste oils.
13. Council Directive 91/689/EEC of 12 December 1991 on hazardous waste.
14. Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste.

ANNEX III

INDICATIVE LIST OF THE MAIN POLLUTING SUBSTANCES TO BE TAKEN INTO ACCOUNT IF THEY ARE RELEVANT FOR FIXING EMISSION LIMIT VALUES

Air

1. Sulphur dioxide and other sulphur compounds.
2. Oxides of nitrogen and other nitrogen compounds.
3. Carbon monoxide.
4. Volatile organic compounds.
5. Metals and their compounds.
6. Dust.
7. Asbestos (suspended particulates, fibres).
8. Chlorine and its compounds.
9. Fluorine and its compounds.
10. Arsenic and its compounds.
11. Cyanides.
12. Substances and preparations which have been proved to possess carcinogenic or mutagenic properties or properties which may affect reproduction via the air.
13. Polychlorinated dibenzodioxins and polychlorinated dibenzofurans.

Water

1. Organohalogen compounds and substances which may form such compounds in the aquatic environment.
2. Organophosphorus compounds.
3. Organotin compounds.
4. Substances and preparations which have been proved to possess carcinogenic or mutagenic properties or properties which may affect reproduction in or via the aquatic environment.
5. Persistent hydrocarbons and persistent and bioaccumulable organic toxic substances.
6. Cyanides.
7. Metals and their compounds.
8. Arsenic and its compounds.
9. Biocides and plant health products.
10. Materials in suspension.
11. Substances which contribute to eutrophication (in particular, nitrates and phosphates).
12. Substances which have an unfavourable influence on the oxygen balance (and can be measured using parameters such as BOD, COD, etc.).

ANNEX IV

Considerations to be taken into account generally or in specific cases when determining best available techniques, as defined in Article 2(12), bearing in mind the likely costs and benefits of a measure and the principles of precaution and prevention:

1. the use of low-waste technology;
2. the use of less hazardous substances.
3. the furthering of recovery and recycling of substances generated and used in the process and of waste, where appropriate.
4. comparable processes, facilities or methods of operation which have been tried with success on an industrial scale.
5. technological advances and changes in scientific knowledge and understanding.
6. the nature, effects and volume of the emissions concerned.
7. the commissioning dates for new or existing installations.
8. the length of time needed to introduce the best available technique.
9. the consumption and nature of raw materials (including water) used in the process and energy efficiency.
10. the need to prevent or reduce to a minimum the overall impact of the emissions on the environment and the risks to it.
11. the need to prevent accidents and to minimise the consequences for the environment.
12. the information published by the Commission pursuant to Article 17(2), second subparagraph, or by international organisations.

ANNEX V

PUBLIC PARTICIPATION IN DECISION-MAKING

1. The public shall be informed (by public notices or other appropriate means such as electronic media where available) of the following matters early in the procedure for the taking of a decision or, at the latest, as soon as the information can reasonably be provided:
 - a) the application for a permit or, as the case may be, the proposal for the updating of a permit or of permit conditions in accordance with Article 15(1), including the description of the elements listed in Article 6(1).
 - b) where applicable, the fact that a decision is subject to a national or transboundary environmental impact assessment or to consultations between Member States in accordance with Article 18.
 - c) details of the competent authorities responsible for taking the decision, those from which relevant information can be obtained, those to which comments or questions can be submitted, and details of the time schedule for transmitting comments or questions.
 - d) the nature of possible decisions or, where there is one, the draft decision.
 - e) where applicable, the details relating to a proposal for the updating of a permit or of permit conditions.
 - f) an indication of the times and places where, or means by which, the relevant information will be made available.
 - g) details of the arrangements for public participation and consultation made pursuant to point 5.

3. Member States shall ensure that, within appropriate time-frames, the following is made available to the public concerned:
 - a) in accordance with national legislation, the main reports and advice issued to the competent authority or authorities at the time when the public concerned were informed in accordance with point 1.
 - b) in accordance with the provisions of Directive 2003/4/EC, information other than that referred to in point 1 which is relevant for the decision in accordance with Article 8 and which only becomes available after the time the public concerned was informed in accordance with point 1.

4. The public concerned shall be entitled to express comments and opinions to the competent authority before a decision is taken.

5. The results of the consultations held pursuant to this Annex must be taken into due account in the taking of a decision.

6. The detailed arrangements for informing the public (for example by bill posting within a certain radius or publication in local newspapers) and consulting the public concerned (for example by written submissions or by way of a public inquiry) shall be determined by the Member States. Reasonable time-frames for the different phases shall be provided, allowing sufficient time for informing the public and for the public concerned to prepare and participate effectively in environmental decision-making subject to the provisions of this Annex.

ANNEX VI

PART A

Repealed Directive with its successive amendments (referred to in Article 22)

Council Directive 96/61/EC (OJ L 257, 10.10.1996, p. 26).	
Directive 2003/35/EC of the European Parliament and of the Council (OJ L 156, 25.6.2003, p. 17).	only Article 4 and Annex II
Directive 2003/87/EC of the European Parliament and of the Council (OJ L 275, 25.10.2003, p. 32).	only Article 26
Regulation (EC) No 1882/2003 of the European Parliament and of the Council (OJ L 284, 31.10.2003, p. 1).	only point (61) of Annex III
Regulation (EC) No 166/2006 of the European Parliament and of the Council (OJ L 33, 4.2.2006, p. 1).	only Article 21(2)

PART B

List of time-limits for transposition into national law (referred to in Article 22)

Directive	Time-limit for transposition
96/61/EC	30 October 1999
2003/35/EC	25 June 2005
2003/87/EC	31 December 2003

ANNEX VII

CORRELATION TABLE

Directive 96/61/EC	This Directive
Article 1	Article 1
Article 2, introductory words	Article 2, introductory words
Article 2(1-9)	Article 2(1-9)
Article 2(10)(a)	Article 2(10)
Article 2(10)(b)	Article 2(11)
Article 2(11), first subparagraph, introductory wording	Article 2(12), first subparagraph, introductory wording
Article 2(11), first subparagraph, first indent	Article 2(12), first subparagraph, (a)
Article 2(11), first subparagraph, second indent	Article 2(12), first subparagraph, (b)
Article 2(11), first subparagraph, third indent	Article 2(12), first subparagraph, (c)
Article 2(11), second subparagraph	Article 2(12), second subparagraph
Article 2(12)	Article 2(13)
Article 2(13)	Article 2(14)
Article 2(14)	Article 2(15)
Article 3, first subparagraph	Article 3(1)
Article 3, second subparagraph	Article 3(2)
Article 4	Article 4
Article 5	Article 5
Article 6(1), first subparagraph, introductory wording	Article 6(1), first subparagraph, introductory wording
Article 6(1), first subparagraph, first to tenth indent	Article 6(1), first subparagraph, (a) to (j)
Article 6(1), second subparagraph	Article 6(1), second subparagraph
Article 6(2)	Article 6(2)
Article 7 to 12	Article 7 to 12
Article 13(1)	Article 13(1)
Article 13(2), introductory wording	Article 13(2), introductory wording
Article 13(2), first to fourth indent	Article 13(2)(a) to (d)
Article 14, introductory wording	Article 14, introductory wording
Article 14, first to third indent	Article 14(a) to (c)
Article 15(1), first subparagraph, introductory wording	Article 15(1), first subparagraph, introductory wording
Article 15(1), first subparagraph, first to third indent	Article 15(1), first subparagraph, (a) to (c)
Article 15(1), second subparagraph	Article 15(1), second subparagraph
Article 15(2)	Article 15(2)
Article 15(4)	Article 15(3)
Article 15(5)	Article 15(4)
Article 15a, first subparagraph, introductory and final words	Article 16(1)
Article 15a, first subparagraph, (a) and (b)	Article 16(1)(a) and (b)
Article 15a, second subparagraph	Article 16(2)
Article 15a, third subparagraph, first and second sentence	Article 16(3), first subparagraph
Article 15a, third subparagraph, third sentence	Article 16(3), second subparagraph
Article 15a, fourth subparagraph	Article 16(4), first subparagraph
Article 15a, fifth subparagraph	Article 16(4), second subparagraph
Article 15a, sixth subparagraph	Article 16(5)
Article 16	Article 17
Article 17	Article 18
Article 18(1), introductory and final words	Article 19(1)
Article 18(1), first and second indent	Article 19(1)(a) and (b)
Article 18(2), first subparagraph	Article 19(2)
Article 18(2), second subparagraph	Article 19(3)
Article 19	—
Article 20(1)	Article 20(1)
Article 20(2)	Article 20(2)
Article 20(3), first subparagraph	Article 20(3), first subparagraph

Article 20(3), second subparagraph
Article 20(3), third subparagraph
Article 21(1)
Article 21(2)
—
Article 22
Article 23
Annex I
Annex II
Annex III
Annex IV
Annex V
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Article 20(3), second subparagraph
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Article 21
Article 22
Article 23
Article 24
Annex I
Annex II
Annex III
Annex IV
Annex V
Annex VI
Annex VII

29. Basel Convention

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal

BASEL CONVENTION ON THE CONTROL OF TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AND THEIR DISPOSAL¹

PREAMBLE.²

The Parties to this Convention, Aware of the risk of damage to human health and the environment caused by hazardous wastes and other wastes and the transboundary movement thereof, Mindful of the growing threat to human health and the environment posed by the increased generation and complexity, and transboundary movement of hazardous wastes and other wastes.

Mindful also that the most effective way of protecting human health and the environment from the dangers posed by such wastes is the reduction of their generation to a minimum in terms of quantity and/or hazard potential.

Convinced that States should take necessary measures to ensure that the management of hazardous wastes and other wastes including their transboundary movement and disposal is consistent with the protection of human health and the environment whatever the place of disposal. Noting that States should ensure that the generator should carry out duties with regard to the transport and disposal of hazardous wastes and other wastes in a manner that is consistent with the protection of the environment, whatever the place of disposal. Fully recognizing that any State has the sovereign right to ban the entry or disposal of foreign hazardous wastes and other wastes in its territory. Recognizing also the increasing desire for the prohibition of transboundary movements of hazardous wastes and their disposal in other States, especially developing countries. Convinced that hazardous wastes and other wastes should, as far as is compatible with environmentally sound and efficient management, be disposed of in the State where they were generated,

Aware also that transboundary movements of such wastes from the State of their generation to any other State should be permitted only when conducted under conditions which do not endanger human health and the environment, and under conditions in conformity with the provisions of this Convention.

¹ The present text incorporates amendments to the Convention adopted subsequent to its entry into force and that are in force as at 8 October 2005. Only the text of the Convention as kept in the custody of the Secretary-General of the United Nations in his capacity as Depositary constitutes the authentic version of the Convention, as modified by any amendments and/or corrections thereto. This publication is issued for information purposes only.

² The Conference of the Parties adopted Decision III/1 at its third meeting to amend the Convention by adding, *inter alia*, a new preambular paragraph 7 bis. The amendment is not yet in force. The relevant part of Decision III/1 provides as follows:
“The Conference Decides to adopt the following amendment to the Convention:
‘Insert new preambular paragraph 7 bis: Recognizing that transboundary movements of hazardous wastes, especially to developing countries, have a high risk of not constituting an environmentally sound management of hazardous wastes as required by this Convention;’”

Considering that enhanced control of transboundary movement of hazardous wastes and other wastes will act as an incentive for their environmentally sound management and for the reduction of the volume of such transboundary movement.

Convinced that States should take measures for the proper exchange of information on and control of the transboundary movement of hazardous wastes and other wastes from and to those States. Noting that a number of international and regional agreements have addressed the issue of protection and preservation of the environment with regard to the transit of dangerous goods. Taking into account the Declaration of the United Nations Conference on the Human Environment (Stockholm, 1972), the Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes adopted by the Governing Council of the United Nations Environment Programme (UNEP) by decision 14/30 of 17 June 1987, the Recommendations of the United Nations Committee of Experts on the Transport of Dangerous Goods (formulated in 1957 and updated biennially), relevant recommendations, declarations, instruments and regulations adopted within the United Nations system and the work and studies done within other international and regional organizations.

Mindful of the spirit, principles, aims and functions of the World Charter for Nature adopted by the General Assembly of the United Nations at its thirty-seventh session (1982) as the rule of ethics in respect of the protection of the human environment and the conservation of natural resources. Affirming that States are responsible for the fulfillment of their international obligations concerning the protection of human health and protection and preservation of the environment, and are liable in accordance with international law. Recognizing that in the case of a material breach of the provisions of this Convention or any protocol thereto the relevant international law of treaties shall apply.

Aware of the need to continue the development and implementation of environmentally sound low-waste technologies, recycling options, good house-keeping and management systems with a view to reducing to a minimum the generation of hazardous wastes and other wastes.

Aware also of the growing international concern about the need for stringent control of transboundary movement of hazardous wastes and other wastes, and of the need as far as possible to reduce such movement to a minimum. Concerned about the problem of illegal transboundary traffic in hazardous wastes and other wastes. Taking into account also the limited capabilities of the developing countries to manage hazardous wastes and other wastes,

Recognizing the need to promote the transfer of technology for the sound management of hazardous wastes and other wastes produced locally, particularly to the developing countries in accordance with the spirit of the Cairo Guidelines and decision 14/16 of the Governing Council of UNEP on Promotion of the transfer of environmental protection technology. Recognizing also that hazardous wastes and other wastes should be transported in accordance with relevant international conventions and recommendations.

Convinced also that the transboundary movement of hazardous wastes and other wastes should be permitted only when the transport and the ultimate disposal of such wastes is environmentally sound, and Determined to protect, by strict control, human health and the environment against the adverse effects which may result from the generation and management of hazardous wastes and other wastes.

HAVE AGREED AS FOLLOWS:

ARTICLE 1

Scope of the Convention

1. The following wastes that are subject to transboundary movement shall be “hazardous wastes” for the purposes of this Convention:
 - (a) Wastes that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III.
 - (b) Wastes that are not covered under paragraph (a) but are defined as, or are considered to be, hazardous wastes by the domestic legislation of the Party of export, import or transit.
2. Wastes that belong to any category contained in Annex II that are subject to transboundary movement shall be “other wastes” for the purposes of this Convention.

3. Wastes which, as a result of being radioactive, are subject to other international control systems, including international instruments, applying specifically to radioactive materials are excluded from the scope of this Convention.
4. Wastes which derive from the normal operations of a ship, the discharge of which is covered by another international instrument, are excluded from the scope of this Convention.

ARTICLE 2

Definitions

For the purposes of this Convention:

1. “Wastes” are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law;
2. “Management” means the collection, transport and disposal of hazardous wastes or other wastes, including after-care of disposal sites.
3. “Transboundary movement” means any movement of hazardous wastes or other wastes from an area under the national jurisdiction of one State to or through an area under the national jurisdiction of another State or to or through an area not under the national jurisdiction of any State, provided at least two States are involved in the movement.
4. “Disposal” means any operation specified in Annex IV to this Convention.
5. “Approved site or facility” means a site or facility for the disposal of hazardous wastes or other wastes which is authorized or permitted to operate for this purpose by a relevant authority of the State where the site or facility is located.
6. “Competent authority” means one governmental authority designated by a Party to be responsible, within such geographical areas as the Party may think fit, for receiving the notification of a transboundary movement of hazardous wastes or other wastes, and any information related to it, and for responding to such a notification, as provided in Article 6.
7. “Focal point” means the entity of a Party referred to in Article 5 responsible for receiving and submitting information as provided for in Articles 13 and 16.
8. “Environmentally sound management of hazardous wastes or other wastes” means taking all practicable steps to ensure that hazardous wastes or other wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes.
9. “Area under the national jurisdiction of a State” means any land, marine area or airspace within which a State exercises administrative and regulatory responsibility in accordance with international law in regard to the protection of human health or the environment.
10. “State of export” means a Party from which a transboundary movement of hazardous wastes or other wastes is planned to be initiated or is initiated.
11. “State of import” means a Party to which a transboundary movement of hazardous wastes or other wastes is planned or takes place for the purpose of disposal therein or for the purpose of loading prior to disposal in an area not under the national jurisdiction of any State.
12. “State of transit” means any State, other than the State of export or import, through which a movement of hazardous wastes or other wastes is planned or takes place.

13. “States concerned” means Parties which are States of export or import, or transit States, whether or not Parties.
14. “Person” means any natural or legal person.
15. “Exporter” means any person under the jurisdiction of the State of export who arranges for hazardous wastes or other wastes to be exported.
16. “Importer” means any person under the jurisdiction of the State of import who arranges for hazardous wastes or other wastes to be imported.
17. “Carrier” means any person who carries out the transport of hazardous wastes or other wastes.
18. “Generator” means any person whose activity produces hazardous wastes or other wastes or, if that person is not known, the person who is in possession and/or control of those wastes.
19. “Disposer” means any person to whom hazardous wastes or other wastes are shipped and who carries out the disposal of such wastes.
20. “Political and/or economic integration organization” means an organization constituted by sovereign States to which its member States have transferred competence in respect of matters governed by this Convention and which has been duly authorized, in accordance with its internal procedures, to sign, ratify, accept, approve, formally confirm or accede to it.
21. “Illegal traffic” means any transboundary movement of hazardous wastes or other wastes as specified in Article 9.

ARTICLE 3

National Definitions of Hazardous Wastes

1. Each Party shall, within six months of becoming a Party to this Convention, inform the Secretariat of the Convention of the wastes, other than those listed in Annexes I and II, considered or defined as hazardous under its national legislation and of any requirements concerning transboundary movement procedures applicable to such wastes.
2. Each Party shall subsequently inform the Secretariat of any significant changes to the information it has provided pursuant to paragraph 1.
3. The Secretariat shall forthwith inform all Parties of the information it has received pursuant to paragraphs 1 and 2.
4. Parties shall be responsible for making the information transmitted to them by the Secretariat under paragraph 3 available to their exporters.

ARTICLE 4³

General Obligations

1. (a) Parties exercising their right to prohibit the import of hazardous wastes or other wastes for disposal shall inform the other Parties of their decision pursuant to Article 13.

- (b) Parties shall prohibit or shall not permit the export of hazardous wastes and other wastes to the Parties which have prohibited the import of such wastes, when notified pursuant to subparagraph (a) above.
 - (c) Parties shall prohibit or shall not permit the export of hazardous wastes and other wastes if the State of import does not consent in writing to the specific import, in the case where that State of import has not prohibited the import of such wastes.
2. Each Party shall take the appropriate measures to:
- (a) Ensure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects.
 - (b) Ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, which shall be located, to the extent possible, within it, whatever the place of their disposal.
 - (c) Ensure that persons involved in the management of hazardous wastes or other wastes within it take such steps as are necessary to prevent pollution due to hazardous wastes and other wastes arising from such management and, if such pollution occurs, to minimize the consequences thereof for human health and the environment.
 - (d) Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes, and is conducted in a manner which will protect human health and the environment against the adverse effects which may result from such movement.
 - (e) Not allow the export of hazardous wastes or other wastes to a State or group of States belonging to an economic and/or political integration organization that are Parties, particularly developing countries, which have prohibited by their legislation all imports, or if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner, according to criteria to be decided on by the Parties at their first meeting.
 - (f) Require that information about a proposed transboundary movement of hazardous wastes and other wastes be provided to the States concerned, according to Annex V A, to state clearly the effects of the proposed movement on human health and the environment.
 - (g) Prevent the import of hazardous wastes and other wastes if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner.
 - (h) Co-operate in activities with other Parties and interested organizations, directly and through the Secretariat, including the dissemination of information on the transboundary movement of hazardous wastes and other wastes, in order to improve the environmentally sound management of such wastes and to achieve the prevention of illegal traffic.
3. The Parties consider that illegal traffic in hazardous wastes or other wastes is criminal.
4. Each Party shall take appropriate legal, administrative and other measures to implement and enforce the provisions of this Convention, including measures to prevent and punish conduct in contravention of the Convention.

³ The Conference of the Parties adopted Decision III/1 at its third meeting to amend the Convention by adding, *inter alia*, a new Article 4A. The amendment is not yet in force. The relevant part of Decision III/1 provides as follows:

“The Conference

Decides to adopt the following amendment to the Convention:

‘Insert new Article 4A:

1. Each Party listed in Annex VII shall prohibit all transboundary movements of hazardous wastes which are destined for operations according to Annex IV A, to States not listed in Annex VII
2. Each Party listed in Annex VII shall phase out by 31 December 1997, and prohibit as of that date, all transboundary movements of hazardous wastes under Article 1(1)(a) of the Convention which are destined for operations according to Annex IV B to States not listed in Annex VII. Such transboundary movement shall not be prohibited unless the wastes in question are characterised as hazardous under the Convention. ...”
5. A Party shall not permit hazardous wastes or other wastes to be exported to a non-Party or to be imported from a non-Party.
6. The Parties agree not to allow the export of hazardous wastes or other wastes for disposal within the area south of 60° South latitude, whether or not such wastes are subject to transboundary movement
7. Furthermore, each Party shall:
 - (a) Prohibit all persons under its national jurisdiction from transporting or disposing of hazardous wastes or other wastes unless such persons are authorized or allowed to perform such types of operations.
 - (b) Require that hazardous wastes and other wastes that are to be the subject of a transboundary movement be packaged, labelled, and transported in conformity with generally accepted and recognized international rules and standards in the field of packaging, labeling, and transport, and that due account is taken of relevant internationally recognized practices.
 - (c) Require that hazardous wastes and other wastes be accompanied by a movement document from the point at which a transboundary movement commences to the point of disposal.
8. Each Party shall require that hazardous wastes or other wastes, to be exported, are managed in an environmentally sound manner in the State of import or elsewhere. Technical guidelines for the environmentally sound management of wastes subject to this Convention shall be decided by the Parties at their first meeting.
9. Parties shall take the appropriate measures to ensure that the transboundary movement of hazardous wastes and other wastes only be allowed if:
 - (a) The State of export does not have the technical capacity and the necessary facilities, capacity or suitable disposal sites in order to dispose of the wastes in question in an environmentally sound and efficient manner.
 - (b) The wastes in question are required as a raw material for recycling or recovery industries in the State of import.
 - (c) The transboundary movement in question is in accordance with other criteria to be decided by the Parties, provided those criteria do not differ from the objectives of this Convention.
10. The obligation under this Convention of States in which hazardous wastes and other wastes are generated to require that those wastes are managed in an environmentally sound manner may not under any circumstances be transferred to the States of import or transit.
11. Nothing in this Convention shall prevent a Party from imposing additional requirements that are consistent with the provisions of this Convention, and are in accordance with the rules of international law, in order better to protect human health and the environment.
12. Nothing in this Convention shall affect in any way the sovereignty of States over their territorial sea established in accordance with international law, and the sovereign rights and the jurisdiction which States have in their exclusive economic zones and their continental shelves in accordance with international law, and the exercise by ships and aircraft of all States of navigational rights and freedoms as provided for in international law and as reflected in relevant international instruments.
13. Parties shall undertake to review periodically the possibilities for the reduction of the amount and/or the pollution potential of hazardous wastes and other wastes which are exported to other States, in particular to developing countries.

ARTICLE 5

Designation of Competent Authorities and Focal Point

To facilitate the implementation of this Convention, the Parties shall:

1. Designate or establish one or more competent authorities and one focal point. One competent authority shall be designated to receive the notification in case of a State of transit.
2. Inform the Secretariat, within three months of the date of the entry into force of this Convention for them, which agencies they have designated as their focal point and their competent authorities.
3. Inform the Secretariat, within one month of the date of decision, of any changes regarding the designation made by them under paragraph 2 above.

ARTICLE 6

Transboundary Movement between Parties

1. The State of export shall notify, or shall require the generator or exporter to notify, in writing, through the channel of the competent authority of the State of export, the competent authority of the States concerned of any proposed transboundary movement of hazardous wastes or other wastes. Such notification shall contain the declarations and information specified in Annex V A, written in a language acceptable to the State of import. Only one notification needs to be sent to each State concerned.
2. The State of import shall respond to the notifier in writing, consenting to the movement with or without conditions, denying permission for the movement, or requesting additional information. A copy of the final response of the State of import shall be sent to the competent authorities of the States concerned which are Parties.
3. The State of export shall not allow the generator or exporter to commence the transboundary movement until it has received written confirmation that:
 - (a) The notifier has received the written consent of the State of import.
 - (b) The notifier has received from the State of import confirmation of the existence of a contract between the exporter and the disposer specifying environmentally sound management of the wastes in question.
4. Each State of transit which is a Party shall promptly acknowledge to the notifier receipt of the notification. It may subsequently respond to the notifier in writing, within 60 days, consenting to the movement with or without conditions, denying permission for the movement, or requesting additional information. The State of export shall not allow the transboundary movement to commence until it has received the written consent of the State of transit. However, if at any time a Party decides not to require prior written consent, either generally or under specific conditions, for transit transboundary movements of hazardous wastes or other wastes, or modifies its requirements in this respect, it shall forthwith inform the other Parties of its decision pursuant to Article 13. In this latter case, if no response is received by the State of export within 60 days of the receipt of a given notification by the State of transit, the State of export may allow the export to proceed through the State of transit.
5. In the case of a transboundary movement of wastes where the wastes are legally defined as or considered to be hazardous wastes only:
 - (a) By the State of export, the requirements of paragraph 9 of this Article that apply to the importer or disposer and the State of import shall apply mutatis mutandis to the exporter and State of export, respectively;
 - (b) By the State of import, or by the States of import and transit which are Parties, the requirements of paragraphs 1, 3, 4 and 6 of this Article that apply to the exporter and State of export shall apply mutatis mutandis to the importer or disposer and State of import, respectively; or
 - (c) By any State of transit which is a Party, the provisions of paragraph 4 shall apply to such State.
6. The State of export may, subject to the written consent of the States concerned, allow the generator or the exporter to use a general notification where hazardous wastes or other wastes having the same physical and chemical characteristics are shipped regularly to the same disposer via the same customs office of exit of the State of export via the same customs office of entry of the State of import, and, in the case of transit, via the same customs office of entry and exit of the State or States of transit.

7. The States concerned may make their written consent to the use of the general notification referred to in paragraph 6 subject to the supply of certain information, such as the exact quantities or periodical lists of hazardous wastes or other wastes to be shipped.
8. The general notification and written consent referred to in paragraphs 6 and 7 may cover multiple shipments of hazardous wastes or other wastes during a maximum period of 12 months.
9. The Parties shall require that each person who takes charge of a transboundary movement of hazardous wastes or other wastes sign the movement document either upon delivery or receipt of the wastes in question. They shall also require that the disposer inform both the exporter and the competent authority of the State of export of receipt by the disposer of the wastes in question and, in due course, of the completion of disposal as specified in the notification. If no such information is received within the State of export, the competent authority of the State of export or the exporter shall so notify the State of import.
10. The notification and response required by this Article shall be transmitted to the competent authority of the Parties concerned or to such governmental authority as may be appropriate in the case of non- Parties.
11. Any transboundary movement of hazardous wastes or other wastes shall be covered by insurance, bond or other guarantee as may be required by the State of import or any State of transit which is a Party.

ARTICLE 7

Transboundary Movement from a Party through States which are not Parties

Paragraph 1 of Article 6 of the Convention shall apply mutatis mutandis to transboundary movement of hazardous wastes or other wastes from a Party through a State or States which are not Parties.

ARTICLE 8

Duty to Re-import

When a transboundary movement of hazardous wastes or other wastes to which the consent of the States concerned has been given, subject to the provisions of this Convention, cannot be completed in accordance with the terms of the contract, the State of export shall ensure that the wastes in question are taken back into the State of export, by the exporter, if alternative arrangements cannot be made for their disposal in an environmentally sound manner, within 90 days from the time that the importing State informed the State of export and the Secretariat, or such other period of time as the States concerned agree. To this end, the State of export and any Party of transit shall not oppose, hinder or prevent the return of those wastes to the State of export.

ARTICLE 9

Illegal Traffic

1. For the purpose of this Convention, any transboundary movement of hazardous wastes or other wastes:
 - (a) Without notification pursuant to the provisions of this Convention to all States concerned; or
 - (b) Without the consent pursuant to the provisions of this Convention of a State concerned; or
 - (c) With consent obtained from States concerned through falsification, misrepresentation or fraud; or
 - (d) That does not conform in a material way with the documents.
 - (e) That results in deliberate disposal (e.g. dumping) of hazardous wastes or other wastes in contravention of this Convention and of general principles of international law, shall be deemed to be illegal traffic.
2. In case of a transboundary movement of hazardous wastes or other wastes deemed to be illegal traffic as the result of conduct on the part of the exporter or generator, the State of export shall ensure that the wastes in question are:
 - (a) Taken back by the exporter or the generator or, if necessary, by itself into the State of export, or, if impracticable.

- (b) Are otherwise disposed of in accordance with the provisions of this Convention within 30 days from the time the State of export has been informed about the illegal traffic or such other period of time as States concerned may agree. To this end the Parties concerned shall not oppose, hinder or prevent the return of those wastes to the State of export.
3. In the case of a transboundary movement of hazardous wastes or other wastes deemed to be illegal traffic as the result of conduct on the part of the importer or disposer, the State of import shall ensure that the wastes in question are disposed of in an environmentally sound manner by the importer or disposer or, if necessary, by itself within 30 days from the time the illegal traffic has come to the attention of the State of import or such other period of time as the States concerned may agree. To this end, the Parties concerned shall co-operate, as necessary, in the disposal of the wastes in an environmentally sound manner.
4. In cases where the responsibility for the illegal traffic cannot be assigned either to the exporter or generator or to the importer or disposer, the Parties concerned or other Parties, as appropriate, shall ensure, through co-operation, that the wastes in question are disposed of as soon as possible in an environmentally sound manner either in the State of export or the State of import or elsewhere as appropriate.
5. Each Party shall introduce appropriate national/domestic legislation to prevent and punish illegal traffic. The Parties shall cooperate with a view to achieving the objects of this Article.

ARTICLE 10

International Co-operation

1. The Parties shall co-operate with each other in order to improve and achieve environmentally sound management of hazardous wastes and other wastes.
2. To this end, the Parties shall:
 - (a) Upon request, make available information, whether on a bilateral or multilateral basis, with a view to promoting the environmentally sound management of hazardous wastes and other wastes, including harmonization of technical standards and practices for the adequate management of hazardous wastes and other wastes.
 - (b) Co-operate in monitoring the effects of the management of hazardous wastes on human health and the environment.
 - (c) (Co-operate, subject to their national laws, regulations and policies, in the development and implementation of new environmentally sound low-waste technologies and the improvement of existing technologies with a view to eliminating, as far as practicable, the generation of hazardous wastes and other wastes and achieving more effective and efficient methods of ensuring their management in an environmentally sound manner, including the study of the economic, social and environmental effects of the adoption of such new or improved technologies.
 - (d) Co-operate actively, subject to their national laws, regulations and policies, in the transfer of technology and management systems related to the environmentally sound management of hazardous wastes and other wastes. They shall also co-operate in developing the technical capacity among Parties, especially those which may need and request technical assistance in this field;
 - (e) Co-operate in developing appropriate technical guidelines and/or codes of practice.
3. The Parties shall employ appropriate means to co-operate in order to assist developing countries in the implementation of subparagraphs a, b, c and d of paragraph 2 of Article 4.
4. Taking into account the needs of developing countries, cooperation between Parties and the competent international organizations is encouraged to promote, inter alia, public awareness, the development of sound management of hazardous wastes and other wastes and the adoption of new low-waste technologies.

ARTICLE 11

Bilateral, Multilateral and Regional Agreements

1. Notwithstanding the provisions of Article 4 paragraph 5, Parties may enter into bilateral, multilateral, or regional agreements or arrangements regarding transboundary movement of hazardous wastes or other wastes with Parties or non-Parties provided that such agreements or arrangements do not derogate from the environmentally sound management of hazardous wastes and other wastes as required by this Convention. These agreements or arrangements shall stipulate provisions which are not less environmentally sound than those provided for by this Convention in particular taking into account the interests of developing countries.
2. Parties shall notify the Secretariat of any bilateral, multilateral or regional agreements or arrangements referred to in paragraph 1 and those which they have entered into prior to the entry into force of this Convention for them, for the purpose of controlling transboundary movements of hazardous wastes and other wastes which take place entirely among the Parties to such agreements. The provisions of this Convention shall not affect transboundary movements which take place pursuant to such agreements provided that such agreements are compatible with the environmentally sound management of hazardous wastes and other wastes as required by this Convention.

ARTICLE 12

Consultations on Liability

The Parties shall co-operate with a view to adopting, as soon as practicable, a protocol setting out appropriate rules and procedures in the field of liability and compensation for damage resulting from the transboundary movement and disposal of hazardous wastes and other wastes.

ARTICLE 13

Transmission of Information

1. The Parties shall, whenever it comes to their knowledge, ensure that, in the case of an accident occurring during the transboundary movement of hazardous wastes or other wastes or their disposal, which are likely to present risks to human health and the environment in other States, those States are immediately informed.
2. The Parties shall inform each other, through the Secretariat, of:
 - (a) Changes regarding the designation of competent authorities and/or focal points, pursuant to Article 5.
 - (b) Changes in their national definition of hazardous wastes, pursuant to Article 3; and, as soon as possible.
 - (c) Decisions made by them not to consent totally or partially to the import of hazardous wastes or other wastes for disposal within the area under their national jurisdiction.
 - (d) Decisions taken by them to limit or ban the export of hazardous wastes or other wastes.
 - (e) Any other information required pursuant to paragraph 4 of this Article.
3. The Parties, consistent with national laws and regulations, shall transmit, through the Secretariat, to the Conference of the Parties established under Article 15, before the end of each calendar year, a report on the previous calendar year, containing the following information:
 - (a) Competent authorities and focal points that have been designated by them pursuant to Article 5.
 - (b) Information regarding transboundary movements of hazardous wastes or other wastes in which they have been involved, including:
 - (i) The amount of hazardous wastes and other wastes exported their category, characteristics, destination, and any transit country and disposal method as stated on the response to notification.
 - (ii) The amount of hazardous wastes and other wastes imported, their category, characteristics, origin, and disposal methods.
 - (iii) Disposals which did not proceed as intended.

- (iv) Efforts to achieve a reduction of the amount of hazardous wastes or other wastes subject to transboundary movement;
- (c) Information on the measures adopted by them in implementation of this Convention.
- (d) Information on available qualified statistics which have been compiled by them on the effects on human health and the environment of the generation, transportation and disposal of hazardous wastes or other wastes.
- (e) Information concerning bilateral, multilateral and regional agreements and arrangements entered into pursuant to Article 11 of this Convention.
- (f) Information on accidents occurring during the transboundary movement and disposal of hazardous wastes and other wastes and on the measures undertaken to deal with them.
- (g) Information on disposal options operated within the area of their national jurisdiction.
- (h) Information on measures undertaken for development of technologies for the reduction and/or elimination of production of hazardous wastes and other wastes.
- (i) Such other matters as the Conference of the Parties shall deem relevant. 4. The Parties, consistent with national laws and regulations, shall ensure that copies of each notification concerning any given transboundary movement of hazardous wastes or other wastes, and the response to it, are sent to the Secretariat when a Party considers that its environment may be affected by that transboundary movement has requested that this should be done.

ARTICLE 14 Financial Aspects

1. The Parties agree that, according to the specific needs of different regions and sub regions, regional or sub-regional centers for training and technology transfers regarding the management of hazardous wastes and other wastes and the minimization of their generation should be established. The Parties shall decide on the establishment of appropriate funding mechanisms of a voluntary nature.
2. The Parties shall consider the establishment of a revolving fund to assist on an interim basis in case of emergency situations to minimize damage from accidents arising from trans boundary movements of hazardous wastes and other wastes or during the disposal of those wastes.

ARTICLE 15 Conference of the Parties

1. A Conference of the Parties is hereby established. The first meeting of the Conference of the Parties shall be convened by the Executive Director of UNEP not later than one year after the entry into force of this Convention. Thereafter, ordinary meetings of the Conference of the Parties shall be held at regular intervals to be determined by the Conference at its first meeting.
2. Extraordinary meetings of the Conference of the Parties shall be held at such other times as may be deemed necessary by the Conference, or at the written request of any Party, provided that, within six months of the request being communicated to them by the Secretariat, it is supported by at least one third of the Parties.
3. The Conference of the Parties shall by consensus agree upon and adopt rules of procedure for itself and for any subsidiary body it may establish, as well as financial rules to determine in particular the financial participation of the Parties under this Convention.
4. The Parties at their first meeting shall consider any additional measures needed to assist them in fulfilling their responsibilities with respect to the protection and the preservation of the marine environment in the context of this Convention.
5. The Conference of the Parties shall keep under continuous review and evaluation the effective implementation of this Convention, and, in addition, shall:

- (a) Promote the harmonization of appropriate policies, strategies and measures for minimizing harm to human health and the environment by hazardous wastes and other wastes.
 - (b) Consider and adopt, as required, amendments to this Convention and its annexes, taking into consideration, inter alia, available scientific, technical, economic and environmental information.
 - (c) Consider and undertake any additional action that may be required for the achievement of the purposes of this Convention in the light of experience gained in its operation and in the operation of the agreements and arrangements envisaged in Article 11.
 - (d) Consider and adopt protocols as required.
 - (e) Establish such subsidiary bodies as are deemed necessary for the implementation of this Convention.
6. The United Nations, its specialized agencies, as well as any State not Party to this Convention, may be represented as observers at meetings of the Conference of the Parties. Any other body or agency, whether national or international, governmental or non-governmental, qualified in fields relating to hazardous wastes or other wastes which has informed the Secretariat of its wish to be represented as an observer at a meeting of the Conference of the Parties, may be admitted unless at least one third of the Parties present object. The admission and participation of observers shall be subject to the rules of procedure adopted by the Conference of the Parties.
 7. The Conference of the Parties shall undertake three years after the entry into force of this Convention, and at least every six years thereafter, an evaluation of its effectiveness and, if deemed necessary, to consider the adoption of a complete or partial ban of transboundary movements of hazardous wastes and other wastes in light of the latest scientific, environmental, technical and economic information.

ARTICLE 16 Secretariat

1. The functions of the Secretariat shall be:
 - a. To arrange for and service meetings provided for in Articles 15 and 17.
 - b. To prepare and transmit reports based upon information received in accordance with Articles 3, 4, 6, 11 and 13 as well as upon information derived from meetings of subsidiary bodies established under Article 15 as well as upon, as appropriate, information provided by relevant intergovernmental and nongovernmental entities.
 - c. To prepare reports on its activities carried out in implementation of its functions under this Convention and present them to the Conference of the Parties.
 - d. To ensure the necessary coordination with relevant international bodies, and in particular to enter into such administrative and contractual arrangements as may be required for the effective discharge of its function.
 - e. To communicate with focal points and competent authorities established by the Parties in accordance with Article 5 of this Convention.
 - f. To compile information concerning authorized national sites and facilities of Parties available for the disposal of their hazardous wastes and other wastes and to circulate this information among Parties.
 - g. To receive and convey information from and to Parties on:
 - Sources of technical assistance and training.
 - Available technical and scientific know-how.
 - Sources of advice and expertise.
 - Availability of resources with a view to assisting them, upon request, in such areas as.
 - The handling of the notification system of this Convention.
 - The management of hazardous wastes and other wastes.
 - Environmentally sound technologies relating to hazardous wastes and other wastes; such as low- and non-waste technology.

- The assessment of disposal capabilities and sites.
 - The monitoring of hazardous wastes and other wastes.
 - Emergency responses.
- h. To provide Parties, upon request, with information on consultants or consulting firms having the necessary technical competence in the field, which can assist them to examine a notification for a transboundary movement, the concurrence of a shipment of hazardous wastes or other wastes with the relevant notification, and/or the fact that the proposed disposal facilities for hazardous wastes or other wastes are environmentally sound, when they have reason to believe that the wastes in question will not be managed in an environmentally sound manner. Any such examination would not be at the expense of the Secretariat.
 - i. To assist Parties upon request in their identification of cases of illegal traffic and to circulate immediately to the Parties concerned any information it has received regarding illegal traffic.
 - j. To co-operate with Parties and with relevant and competent international organizations and agencies in the provision of experts and equipment for the purpose of rapid assistance to States in the event of an emergency situation.
 - k. To perform such other functions relevant to the purposes of this Convention as may be determined by the Conference of the Parties.
2. The secretariat functions will be carried out on an interim basis by UNEP until the completion of the first meeting of the Conference of the Parties held pursuant to Article 15.
 3. At its first meeting, the Conference of the Parties shall designate the Secretariat from among those existing competent intergovernmental organizations which have signified their willingness to carry out the secretariat functions under this Convention. At this meeting, the Conference of the Parties shall also evaluate the implementation by the interim Secretariat of the functions assigned to it, in particular under paragraph 1 above, and decide upon the structures appropriate for those functions.

ARTICLE 17

Amendment of the Convention

1. Any Party may propose amendments to this Convention and any Party to a protocol may propose amendments to that protocol. Such amendments shall take due account, inter alia, of relevant scientific and technical considerations.
2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. Amendments to any protocol shall be adopted at a meeting of the Parties to the protocol in question. The text of any proposed amendment to this Convention or to any protocol, except as may otherwise be provided in such protocol, shall be communicated to the Parties by the Secretariat at least six months before the meeting at which it is proposed for adoption. The Secretariat shall also communicate proposed amendments to the Signatories to this Convention for information.
3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting, and shall be submitted by the Depositary to all Parties for ratification, approval, formal confirmation or acceptance.
4. The procedure mentioned in paragraph 3 above shall apply to amendments to any protocol, except that a two-thirds majority of the Parties to that protocol present and voting at the meeting shall suffice for their adoption.
5. Instruments of ratification, approval, formal confirmation or acceptance of amendments shall be deposited with the Depositary. Amendments adopted in accordance with paragraphs 3 or 4 above shall enter into force between Parties having accepted them on the ninetieth day after the receipt by the Depositary of their instrument of ratification, approval, formal confirmation or acceptance by at least three-fourths of the Parties who accepted them or by at least two thirds of the Parties to the protocol concerned who accepted them, except as may otherwise be provided in such protocol. The amendments shall enter into

force for any other Party on the ninetieth day after that Party deposits its instrument of ratification, approval, formal confirmation or acceptance of the amendments.

6. For the purpose of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote.

ARTICLE 18

Adoption and Amendment of Annexes

1. The annexes to this Convention or to any protocol shall form an integral part of this Convention or of such protocol, as the case may be and, unless expressly provided otherwise, a reference to this Convention or its protocols constitutes at the same time a reference to any annexes thereto. Such annexes shall be restricted to scientific, technical and administrative matters.
2. Except as may be otherwise provided in any protocol with respect to its annexes, the following procedure shall apply to the proposal, adoption and entry into force of additional annexes to this Convention or of annexes to a protocol:
 - a) Annexes to this Convention and its protocols shall be proposed and adopted according to the procedure laid down in Article 17, paragraphs 2, 3 and 4.
 - b) Any Party that is unable to accept an additional annex to this Convention or an annex to any protocol to which it is party shall so notify the Depositary, in writing, within six months from the date of the communication of the adoption by the Depositary. The Depositary shall without delay notify all Parties of any such notification received. A Party may at any time substitute an acceptance for a previous declaration of objection and the annexes shall thereupon enter into force for that Party;
 - c) On the expiry of six months from the date of the circulation of the communication by the Depositary, the annex shall become effective for all Parties to this Convention or to any protocol concerned, which have not submitted a notification in accordance with the provision of subparagraph (b) above.
3. The proposal, adoption and entry into force of amendments to annexes to this Convention or to any protocol shall be subject to the same procedure as for the proposal, adoption and entry into force of annexes to the Convention or annexes to a protocol. Annexes and amendments thereto shall take due account, inter alia, of relevant scientific and technical considerations.
4. If an additional annex or an amendment to an annex involves an amendment to this Convention or to any protocol, the additional annex or amended annex shall not enter into force until such time the amendment to this Convention or to the protocol enters into force.

ARTICLE 19

Verification

Any Party which has reason to believe that another Party is acting or has acted in breach of its obligations under this Convention may inform the Secretariat thereof, and in such an event, shall simultaneously and immediately inform, directly or through the Secretariat, the Party against whom the allegations are made. All relevant information should be submitted by the Secretariat to the Parties.

ARTICLE 20

Settlement of Disputes

1. In case of a dispute between Parties as to the interpretation or application of, or compliance with, this Convention or any protocol thereto, they shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.
2. If the Parties concerned cannot settle their dispute through the means mentioned in the preceding paragraph, the dispute, if the Parties to the dispute agree, shall be submitted to the International Court of

Justice or to arbitration under the conditions set out in Annex VI on Arbitration. However, failure to reach common agreement on submission of the dispute to the International Court of Justice or to arbitration shall not absolve the Parties from the responsibility of continuing to seek to resolve it by the means referred to in paragraph 1.

3. When ratifying, accepting, approving, formally confirming or acceding to this Convention, or at any time thereafter, a State or political and/or economic integration organization may declare that it recognizes as compulsory ipso facto and without special agreement, in relation to any Party accepting the same obligation:
 - i. Submission of the dispute to the International Court of Justice; and/or
 - j. Arbitration in accordance with the procedures set out in Annex VI. Such declaration shall be notified in writing to the Secretariat which shall communicate it to the Parties.

ARTICLE 21

Signature

This Convention shall be open for signature by States, by Namibia, represented by the United Nations Council for Namibia, and by political and/or economic integration organizations, in Basel on 22 March 1989, at the Federal Department of Foreign Affairs of Switzerland in Berne from 23 March 1989 to 30 June 1989 and at United Nations Headquarters in New York from 1 July 1989 to 22 March 1990.

ARTICLE 22

Ratification, Acceptance, Formal Confirmation or Approval

1. This Convention shall be subject to ratification, acceptance or approval by States and by Namibia, represented by the United Nations Council for Namibia, and to formal confirmation or approval by political and/or economic integration organizations. Instruments of ratification, acceptance, formal confirmation, or approval shall be deposited with the Depositary.
2. Any organization referred to in paragraph 1 above which becomes a Party to this Convention without any of its member States being a Party shall be bound by all the obligations under the Convention. In the case of such organizations, one or more of whose member States is a Party to the Convention, the organization and its member States shall decide on their respective responsibilities for the performance of their obligations under the Convention. In such cases, the organization and the member States shall not be entitled to exercise rights under the Convention concurrently.
3. In their instruments of formal confirmation or approval, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary, who will inform the Parties of any substantial modification in the extent of their competence.

ARTICLE 23

Accession

1. This Convention shall be open for accession by States, by Namibia, represented by the United Nations Council for Namibia, and by political and/or economic integration organizations from the day after the date on which the Convention is closed for signature. The instruments of accession shall be deposited with the Depositary.
2. In their instruments of accession, the organizations referred to in paragraph 1 above shall declare the extent of their competence with respect to the matters governed by the Convention. These organizations shall also inform the Depositary of any substantial modification in the extent of their competence.
3. The provisions of Article 22, paragraph 2, shall apply to political and/or economic integration organizations which accede to this Convention.

ARTICLE 24

Right to Vote

Except as provided for in paragraph 2 below, each Contracting Party to this Convention shall have one vote.

2. Political and/or economic integration organizations, in matters within their competence, in accordance with Article 22, paragraph 3, and Article 23, paragraph 2, shall exercise their right to vote with a number of votes equal to the number of their member States which are Parties to the Convention or the relevant protocol. Such organizations shall not exercise their right to vote if their member States exercise theirs, and vice versa.

ARTICLE 25

Entry into Force

1. This Convention shall enter into force on the ninetieth day after the date of deposit of the twentieth instrument of ratification, acceptance, formal confirmation, approval or accession.
2. For each State or political and/or economic integration organization which ratifies, accepts, approves or formally confirms this Convention or accedes thereto after the date of the deposit of the twentieth instrument of ratification, acceptance, approval, formal confirmation or accession, it shall enter into force on the ninetieth day after the date of deposit by such State or political and/or economic integration organization of its instrument of ratification, acceptance, approval, formal confirmation or accession.
3. For the purpose of paragraphs 1 and 2 above, any instrument deposited by a political and/or economic integration organization shall not be counted as additional to those deposited by member States of such organization.

ARTICLE 26

Reservations and Declarations

1. No reservation or exception may be made to this Convention.
2. Paragraph 1 of this Article does not preclude a State or political and/or economic integration organization, when signing, ratifying, accepting, approving, formally confirming or acceding to this Convention, from making declarations or statements, however phrased or named, with a view, inter alia, to the harmonization of its laws and regulations with the provisions of this Convention, provided that such declarations or statements do not purport to exclude or to modify the legal effects of the provisions of the Convention in their application to that State.

ARTICLE 27

Withdrawal

1. At any time after three years from the date on which this Convention has entered into force for a Party that Party may withdraw from the Convention by giving written notification to the Depository.
2. Withdrawal shall be effective one year from receipt of notification by the Depository, or on such later date as may be specified in the notification.

ARTICLE 28

Depository

The Secretary-General of the United Nations shall be the Depository of this Convention and of any protocol thereto.

ARTICLE 29

Authentic texts

The original Arabic, Chinese, English, French, Russian and Spanish texts of this Convention are equally authentic. IN WITNESS WHEREOF the undersigned, being duly authorized to that effect, have signed this Convention. Done at Basel on the 22 day of March 1989

Category of wastes to be control**Waste Streams**

- Y1** Clinical wastes from medical care in hospitals, medical centers and clinics
- Y2** Wastes from the production and preparation of pharmaceutical products
- Y3** Waste pharmaceuticals, drugs and medicines
- Y4** Wastes from the production, formulation and use of biocides and phytopharmaceuticals
- Y5** Wastes from the manufacture, formulation and use of wood preserving chemicals
- Y6** Wastes from the production, formulation and use of organic solvents
- Y7** Wastes from heat treatment and tempering operations containing cyanides
- Y8** Waste mineral oils unfit for their originally intended use
- Y9** Waste oils/water, hydrocarbons/water mixtures, emulsions
- Y10** Waste substances and articles containing or contaminated with polychlorinated biphenyls (PCBs) and/or polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)
- Y11** Waste tarry residues arising from refining, distillation and any pyrolytic treatment
- Y12** Wastes from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish
- Y13** Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives
- Y14** Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on man and/or the environment are not known
- Y15** Wastes of an explosive nature not subject to other legislation
- Y16** Wastes from production, formulation and use of photographic chemicals and processing materials
- Y17** Wastes resulting from surface treatment of metals and plastics
- Y18** Residues arising from industrial waste disposal operations

Wastes having as constituents:

- Y19** Metal carbonyls
- Y20** Beryllium; beryllium compounds
- Y21** Hexavalent chromium compounds
- Y22** Copper compounds
- Y23** Zinc compounds
- Y24** Arsenic; arsenic compounds
- Y25** Selenium; selenium compounds
- Y26** Cadmium; cadmium compounds
- Y27** Antimony; antimony compounds
- Y28** Tellurium; tellurium compounds
- Y29** Mercury; mercury compounds
- Y30** Thallium; thallium compounds
- Y31** Lead; lead compounds
- Y32** Inorganic fluorine compounds excluding calcium fluoride
- Y33** Inorganic cyanides
- Y34** Acidic solutions or acids in solid form
- Y35** Basic solutions or bases in solid form
- Y36** Asbestos (dust and fibres)
- Y37** Organic phosphorus compounds
- Y38** Organic cyanides
- Y39** Phenols; phenol compounds including chlorophenols
- Y40** Ethers
- Y41** Halogenated organic solvents
- Y42** Organic solvents excluding halogenated solvents
- Y43** Any congener of polychlorinated dibenzo-furan
- Y44** Any congener of polychlorinated dibenzo-p-dioxin
- Y45** Organohalogen compounds other than substances referred to in this Annex (e.g. Y39, Y41, Y42, Y43, Y44)
 - (a) To facilitate the application of this Convention, and subject to paragraphs (b), (c) and (d), wastes listed in Annex VIII are characterized as hazardous pursuant to Article 1, paragraph 1 (a), of this Convention, and wastes listed in Annex IX are not covered by Article 1, paragraph 1 (a), of this Convention.

- (b) Designation of a waste on Annex VIII does not preclude, in a particular case, the use of Annex III to demonstrate that a waste is not hazardous pursuant to Article 1, paragraph 1 (a), of this Convention.
- (c) Designation of a waste on Annex IX does not preclude, in a particular case, characterization of such a waste as hazardous pursuant to Article 1, paragraph 1 (a), of this Convention if it contains Annex I material to an extent causing it to exhibit an Annex III characteristic.
- (d) Annexes VIII and IX do not affect the application of Article 1, paragraph 1 (a), of this Convention for the purpose of characterization of wastes.⁴

ANNEX II

Category of wastes requiring special consideration

- Y46 Wastes collected from households
Y47 Residues arising from the incineration of household wastes

⁴ The amendment whereby paragraphs (a), (b), (c) and (d) were added to the end of Annex I entered into force on 6 November 1998, six months following the issuance of depositary notification C.N.77.1998 of 6 May 1998 (reflecting Decision IV/9, adopted by the Conference of the Parties at its fourth meeting).

ANNEX III

List of Hazardous Characteristic

UN Classs	Code	Characteristics
1	H1	Explosive An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.
3	H3	Flammable liquids The word “flammable” has the same meaning as “inflammable”. Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc., but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5°C, closed-cup test, or not more than 65.6°C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition.)
4.1	H4.1	Flammable solids Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.
4.2	H4.2	Substances or wastes liable to spontaneous combustion Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.
1.3	H4.3	Substances or wastes which, in contact with water emit flammable gases Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.
5.1	H5.1	Oxidizing Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.
5.2	H5.2	Organic Peroxides Organic substances or wastes which contain the bivalent-o-o-structure are thermally unstable substances which may undergo exothermic self accelerating decomposition
6.1	H6.1	Poisonous (Acute)

Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.

- | | | |
|-----|------|--|
| 6.2 | H6.2 | Infectious substances or wastes containing viable micro organisms or their toxins which are known or suspected to cause disease in animals or humans. |
| 8 | H8 | Corrosives
Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards. |

⁵ Corresponds to the hazard classification system included in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/AC.10/1Rev.5, United Nations, New York, 1988).

- | | | |
|---|-----|--|
| 9 | H10 | Liberation of toxic gases in contact with air or water
Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities. |
| 9 | H11 | Toxic (Delayed or chronic)
Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity. |
| 9 | H12 | Ecotoxic
Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems. |
| 9 | H13 | Capable, by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above. |

Tests

The potential hazards posed by certain types of wastes are not yet fully documented; tests to define quantitatively these hazards do not exist. Further research is necessary in order to develop means to characterize potential hazards posed to man and/or the environment by these wastes. Standardized tests have been derived with respect to pure substances and materials. Many countries have developed national tests which can be applied to materials listed in Annex I, in order to decide if these materials exhibit any of the characteristics listed in this Annex.

Disposal Operations

A. Operations which do not lead to the possibility of resource recovery, recycling, reclamation, direct re-use or alternative uses

Section A encompasses all such disposal operations which occur in practice.

- D1 Deposit into or on to land, (e.g., landfill, etc.)
- D2 Land treatment, (e.g., biodegradation of liquid or sludgy discards in soils, etc.)
- D3 Deep injection, (e.g., injection of pumpable discards into wells, salt domes or naturally occurring repositories, etc.)
- D4 Surface impoundment, (e.g., placement of liquid or sludge discards into pits, ponds or lagoons, etc.)
- D5 Specially engineered landfill, (e.g., placement into lined discrete cells which are capped and isolated from one another and the environment, etc.)
- D6 Release into a water body except seas/oceans
- D7 Release into seas/oceans including sea-bed insertion
- D8 Biological treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Section A
- D9 Physico chemical treatment not specified elsewhere in this Annex which results in final compounds or mixtures which are discarded by means of any of the operations in Section A, (e.g., evaporation, drying, calcinations, neutralization, precipitation, etc.)
- D10 Incineration on land
- D11 Incineration at sea
- D12 Permanent storage (e.g., emplacement of containers in a mine, etc.)
- D13 Blending or mixing prior to submission to any of the operations in Section A
- D14 Repackaging prior to submission to any of the operations in Section A
- D15 Storage pending any of the operations in Section A

B. Operations which may lead to resource recovery, recycling reclamation, direct re-use or alternative uses

Section B encompasses all such operations with respect to materials legally defined as or considered to be hazardous wastes and which otherwise would have been destined for operations included in Section A

- R1 Use as a fuel (other than in direct incineration) or other means to generate energy
- R2 Solvent reclamation/regeneration
- R3 Recycling/reclamation of organic substances which are not used as solvents
- R4 Recycling/reclamation of metals and metal compounds
- R5 Recycling/reclamation of other inorganic materials
- R6 Regeneration of acids or bases
- R7 Recovery of components used for pollution abatement
- R8 Recovery of components from catalysts
- R9 Used oil re-refining or other reuses of previously used oil
- R10 Land treatment resulting in benefit to agriculture or ecological improvement
- R11 Uses of residual materials obtained from any of the operations numbered R1-R10
- R12 Exchange of wastes for submission to any of the operations numbered R1-R11
- R13 Accumulation of material intended for any operation in Section B

Information to be Provided on Notification

1. Reason for waste export
2. Exporter of the waste 1/
3. Generator(s) of the waste and site of generation 1/
4. Disposer of the waste and actual site of disposal 1/
5. Intended carrier(s) of the waste or their agents, if known 1/
6. Country of export of the waste
Competent authority 2/
7. Expected countries of transit
Competent authority 2/
8. Country of import of the waste
Competent authority 2/
9. General or single notification
10. Projected date(s) of shipment(s) and period of time over which waste is to be exported and proposed itinerary (including point of entry and exit)3/
11. Means of transport envisaged (road, rail, sea, air, inland waters)
12. Information relating to insurance 4/
13. Designation and physical description of the waste including Y number and UN number and its composition 5/ and information on any special handling requirements including emergency provisions in case of accidents
14. Type of packaging envisaged (e.g. bulk, drummed, tanker)
15. Estimated quantity in weight/volume 6/
16. Process by which the waste is generated 7/
17. For wastes listed in Annex I, classifications from Annex III: hazardous characteristic, H number, and UN class
18. Method of disposal as per Annex IV
19. Declaration by the generator and exporter that the information is correct
20. Information transmitted (including technical description of the plant) to the exporter or generator from the disposer of the waste upon which the latter has based his assessment that there was no reason to believe that the wastes will not be managed in an environmentally sound manner in accordance with the laws and regulations of the country of import
21. Information concerning the contract between the exporter and disposer.

Notes:

- 1/ Full name and address, telephone, telex or telefax number and the name, address, telephone, telex or telefax number of the person to be contacted.
- 2/ Full name and address, telephone, telex or telefax number.
- 3/ In the case of a general notification covering several shipments, either the expected dates of each shipment or, if this is not known, the expected frequency of the shipments will be required.
- 4/ Information to be provided on relevant insurance requirements and how they are met by exporter, carrier and disposer.
- 5/ The nature and the concentration of the most hazardous components, in terms of toxicity and other dangers presented by the waste both in handling and in relation to the proposed disposal method.
- 6/ In the case of a general notification covering several shipments, both the estimated total quantity and the estimated quantities for each individual shipment will be required.
- 7/ Insofar as this is necessary to assess the hazard and determine the appropriateness of the proposed disposal operation.

Information on be Provided on the Movement Document

1. Exporter of the waste 1/
2. Generator(s) of the waste and site of generation 1/
3. Disposer of the waste and actual site of disposal 1/
4. Carrier(s) of the waste 1/ or his agent(s)
5. Subject of general or single notification
6. The date the transboundary movement started and date(s) and signature on receipt by each person who takes charge of the waste
7. Means of transport (road, rail, inland waterway, sea, air) including countries of export, transit and import, also point of entry and exit where these have been designated
8. General description of the waste (physical state, proper UN shipping name and class, UN number, Y number and H number as applicable)
9. Information on special handling requirements including emergency provision in case of accidents
10. Type and number of packages
11. Quantity in weight/volume
12. Declaration by the generator or exporter that the information is correct
13. Declaration by the generator or exporter indicating no objection from the competent authorities of all States concerned which are Parties
14. Certification by disposer of receipt at designated disposal facility and indication of method of disposal and of the approximate date of disposal.

Notes:

The information required on the movement document shall where possible be integrated in one document with that required under transport rules. Where this is not possible the information should complement rather than duplicate that required under the transport rules. The movement document shall carry instructions as to who is to provide information and fill-out any form.

- 1/ Full name and address, telephone, telex or telefax number and the name, address, telephone, telex or telefax number of the person to be contacted in case of emergency.

Arbitration

Article 1 Unless the agreement referred to in Article 20 of the Convention provides otherwise, the arbitration procedure shall be conducted in accordance with Articles 2 to 10 below.

Article 2 The claimant Party shall notify the Secretariat that the Parties have agreed to submit the dispute to arbitration pursuant to paragraph 2 or paragraph 3 of Article 20 and include, in particular, the Articles of the Convention the interpretation or application of which are at issue. The Secretariat shall forward the information thus received to all Parties to the Convention.

Article 3 The arbitral tribunal shall consist of three members. Each of the Parties to the dispute shall appoint an arbitrator, and the two arbitrators so appointed shall designate by common agreement the third arbitrator, who shall be the chairman of the tribunal. The latter shall not be a national of one of the Parties to the dispute, nor have his usual place of residence in the territory of one of these Parties, nor be employed by any of them, nor have dealt with the case in any other capacity.

Article 4

1. If the chairman of the arbitral tribunal has not been designated within two months of the appointment of the second arbitrator, the Secretary-General of the United Nations shall, at the request of either Party, designate him within a further two months period.
2. If one of the Parties to the dispute does not appoint an arbitrator within two months of the receipt of the request, the other Party may inform the Secretary-General of the United Nations who shall designate the chairman of the arbitral tribunal within a further two months' period. Upon designation, the chairman of the arbitral tribunal shall request the Party which has not appointed an arbitrator to do so within two months. After such period, he shall inform the Secretary-General of the United Nations, who shall make this appointment within a further two months' period.

Article 5

1. The arbitral tribunal shall render its decision in accordance with international law and in accordance with the provisions of this Convention.
2. Any arbitral tribunal constituted under the provisions of this Annex shall draw up its own rules of procedure.

Article 6

- 1 The decisions of the arbitral tribunal both on procedure and on substance shall be taken by majority vote of its members.
- 2 The tribunal may take all appropriate measures in order to establish the facts. It may, at the request of one of the Parties, recommend essential interim measures of protection.
- 3 The Parties to the dispute shall provide all facilities necessary for the effective conduct of the proceedings.
- 4 The absence or default of a Party in the dispute shall not constitute an impediment to the proceedings.

Article 7 The tribunal may hear and determine counter-claims arising directly out of the subject-matter of the dispute.

Article 8 Unless the arbitral tribunal determines otherwise because of the particular circumstances of the case, the expenses of the tribunal, including the remuneration of its members, shall be borne by the Parties to the dispute in equal shares. The tribunal shall keep a record of all its expenses, and shall furnish a final statement thereof to the Parties.

Article 9 Any Party that has an interest of a legal nature in the subject matter of the dispute which may be affected by the decision in the case may intervene in the proceedings with the consent of the tribunal.

Article 10

- 1 The tribunal shall render its award within five months of the date on which it is established unless it finds it necessary to extend the time-limit for a period which should not exceed five months.

- 2 The award of the arbitral tribunal shall be accompanied by a statement of reasons. It shall be final and binding upon the Parties to the dispute.
- 3 Any dispute which may arise between the Parties concerning the interpretation or execution of the award may be submitted by either Party to the arbitral tribunal which made the award or, if the latter cannot be seized thereof, to another tribunal constituted for this purpose in the same manner as the first.

ANNEX VII

[not yet entered into force]

6 Annex VII is an integral part of the Amendment adopted by the third meeting of the Conference of the Parties in 1995 in its Decision III/1. The amendment is not yet in force. The relevant part of Decision III/1 provides as follows: “The Conference,
3. Decides to adopt the following amendment to the Convention:
‘**Annex VII** Parties and other States which are members of OECD, EC, Liechtenstein.’”

ANNEX VIII⁷

List A

Wastes contained in this Annex are characterized as hazardous under Article 1, paragraph 1 (a), of this convention, and their designation on this Annex does not preclude the use of Annex III to demonstrate that a waste is not hazardous.

A1 Metal and metal-bearing wastes A1010 Metal wastes and waste consisting of alloys of any of the following:

- Antimony
- Arsenic
- Beryllium
- Cadmium
- Lead
- Mercury
- Selenium
- Tellurium
- Thallium

But excluding such wastes specifically listed on list B.

- A1020 Waste having as constituents or contaminants, excluding metal waste in massive form, any of the following:
- Antimony; antimony compounds
 - Beryllium; beryllium compounds
 - Cadmium; cadmium compounds
 - Lead; lead compounds
 - Selenium; selenium compounds
 - Tellurium; tellurium compounds
- A1030 Wastes having as constituents or contaminants any of the following:
- Arsenic; arsenic compounds
 - Mercury; mercury compounds
 - Thallium; thallium compounds
- A1040 Wastes having as constituents any of the following_
- Metal carbonyls
 - Hexavalent chromium compounds
- A1050
- Galvanic sludges
- A1060
- Waste liquors from the pickling of metals
- A1070
- Leaching residues from zinc processing, dust and sludges such as jarosite, hematite, etc.
- A1080
- Waste zinc residues not included on list B, containing lead and cadmium in concentrations sufficient to exhibit Annex III characteristics
- A1090
- Ashes from the incineration of insulated copper wire
- A1100
- Dusts and residues from gas cleaning systems of copper smelters
- A1110
- Spent electrolytic solutions from copper electrorefining and electro winning operations
- A1120
- Waste sludges, excluding anode slimes, from electrolyte purification systems in copper electrorefining and electro winning operations
- A1130
- Spent etching solutions containing dissolved copper
- A1140
- Waste cupric chloride and copper cyanide catalysts
- A1150
- Precious metal ash from incineration of printed circuit boards not included on list B_s
- A1160
- Waste lead-acid batteries, whole or crushed

—

⁷ The amendment whereby Annex VIII was added to the Convention entered into force on 6 November 1998, six months following the issuance of depositary notification C.N.77.1998 of 6 May 1998 (reflecting Decision IV/9 adopted by the Conference of the Parties at its fourth meeting). The amendment to Annex VIII whereby new entries were added entered into force on 20 November 2003 (depositary notification C.N.1314.2003), six months following the issuance of depositary notification C.N.399.2003 of 20 May 2003 (reflecting Decision VI/35 adopted by the Conference of the Parties at its sixth meeting). The amendment to Annex VIII whereby one new entry was added entered into force on 8 October 2005 (depositary notification C.N.1044.2005), six months following the issuance of depositary

- A1170 Unsorted waste batteries excluding mixtures of only list B batteries. Waste batteries not specified on list B containing Annex I constituents to an extent to render them hazardous
- A1180 Waste electrical and electronic assemblies or scrap, containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB capacitors, or contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they possess any of the characteristics contained in Annex III (note the related entry on list B B1110)¹⁰
- A1190 Waste metal cables coated or insulated with plastics containing or contaminated with coal tar, PCB¹¹, lead, cadmium, other organohalogen compounds or other Annex I constituents to an extent that they exhibit Annex III characteristics.

A2 Wastes containing principally inorganic constituents, which may contain metals and organic materials

- A2010 Glass waste from cathode-ray tubes and other activated glasses
- A2020 Waste inorganic fluorine compounds in the form of liquids or sludges but excluding such wastes specified on list B
- A2030 Waste catalysts but excluding such wastes specified on list B
- A2040 Waste gypsum arising from chemical industry processes, when containing Annex I constituents to the extent that it exhibits an Annex III hazardous characteristic (note the related entry on list B B2080)
- A2050 Waste asbestos (dusts and fibers)
- A2060 Coal-fired power plant fly-ash containing Annex I substances in concentrations sufficient to exhibit Annex III characteristics (note the related entry on list B B2050)

A3 Wastes containing principally organic constituents, which may contain metals and inorganic materials

- A3010 Waste from the production or processing of petroleum coke and bitumen
- A3020 Waste mineral oils unfit for their originally intended use
- A3030 Wastes that contain consist of or are contaminated with leaded anti-knock compound sludges
- A3040 Waste thermal (heat transfer) fluids
- A3050 Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives excluding such wastes specified on list B (note the related entry on list B B4020)
- A3060 Waste nitrocellulose
- A3070 Waste phenols, phenol compounds including chlorophenol in the form of liquids or sludges
- A3080 Waste ethers not including those specified on list B
- A3090 Waste leather dust, ash, sludges and flours when containing hexavalent chromium compounds or biocides (note the related entry on list B B3100)
- A3100 Waste paring and other waste of leather or of composition leather not suitable for the manufacture of leather articles containing hexavalent chromium compounds or biocides (note the related entry on list B B3090)
- A3110 Fellmongery wastes containing hexavalent chromium compounds or biocides or infectious substances (note the related entry on list B B3110)
- A3120 Fluff - light fraction from shredding
- A3130 Waste organic phosphorous compounds
- A3140 Waste non-halogenated organic solvents but excluding such wastes specified on list B
- A3150 Waste halogenated organic solvents
- A3160 Waste halogenated or unhalogenated non-aqueous distillation residues arising from organic solvent recovery operations
- A3170 Wastes arising from the production of aliphatic halogenated hydrocarbons (such as chloromethane, dichloro-ethane, vinyl chloride, vinylidene chloride, allyl chloride and epichlorhydrin)

⁸ Note that mirror entry on list B (B1160) does not specify exceptions.

⁹ This entry does not include scrap assemblies from electric power generation.

¹⁰ PCBs are at a concentration level of 50 mg/kg or more.

¹¹ PCBs are at a concentration level of 50 mg/kg or more.

- A3180 Wastes, substances and articles containing, consisting of or contaminated with polychlorinated biphenyl (PCB), polychlorinated terphenyl (PCT), polychlorinated naphthalene (PCN) or polybrominated biphenyl (PBB), or any other polybrominated analogues of these compounds, at a concentration level of 50 mg/kg or more¹²
- A3190 Waste tarry residues (excluding asphalt cements) arising from refining, distillation and any pyrolytic treatment of organic materials
- A3200 Bituminous material (asphalt waste) from road construction and maintenance, containing tar (note the related entry on list B, B2130)

A4 Wastes which may contain either inorganic or organic constituents

- A4010 Wastes from the production, preparation and use of pharmaceutical products but excluding such wastes specified on list B
- A4020 Clinical and related wastes; that is wastes arising from medical, nursing, dental, veterinary, or similar practices, and wastes generated in hospitals or other facilities during the investigation or treatment of patients, or research projects
- A4030 Wastes from the production, formulation and use of biocides and phytopharmaceuticals, including waste pesticides and herbicides which are off-specification, outdated,¹³ or unfit for their originally intended use
- A4040 Wastes from the manufacture, formulation and use of wood-preserving chemicals¹⁴
- A4050 Wastes that contain consist of or are contaminated with any of the following:
- Inorganic cyanides, excepting precious-metalbearing residues in solid form containing traces of inorganic cyanides
 - Organic cyanides
- A4060 Waste oils/water, hydrocarbons/water mixtures, emulsions
- A4070 Wastes from the production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish excluding any such waste specified on list B (note the related entry on list B B4010)
- A4080 Wastes of an explosive nature (but excluding such wastes specified on list B)
- A4090 Waste acidic or basic solutions, other than those specified in the corresponding entry on list B (note the related entry on list B B2120)
- A4100 Wastes from industrial pollution control devices for cleaning of industrial off-gases but excluding such wastes specified on list B
- A4110 Wastes that contain consist of or are contaminated with any of the following:
- Any congener of polychlorinated dibenzo-furan
 - Any congener of polychlorinated dibenzo-dioxin
- A4120 Wastes that contain consist of or are contaminated with peroxides
- A4130 Waste packages and containers containing Annex I substances in concentrations sufficient to exhibit Annex III hazard characteristics
- A4140 Waste consisting of or containing off specification or outdated¹⁵ chemicals corresponding to Annex I categories and exhibiting Annex III hazard characteristics
- A4150 Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on human health and/or the environment are not known
- A4160 Spent activated carbon not included on list B (note the related entry on list B B2060)

¹² The 50 mg/kg level is considered to be an internationally practical level for all wastes. However, many individual countries have established lower regulatory levels (e.g., 20 mg/kg) for specific wastes.

¹³ "Outdated" means unused within the period recommended by the manufacturer.

¹⁴ This entry does not include wood treated with wood preserving chemicals.

LIST B

Wastes contained in the Annex will not be wastes covered by Article 1, paragraph 1 (a), of this Convention unless they contain Annex I material to an extent causing them to exhibit an Annex III characteristic.

B1 Metal and metal-bearing wastes

- B1010 Metal and metal-alloy wastes in metallic, non-dispersible form:
- Precious metals (gold, silver, the platinum group, but not mercury)
 - Iron and steel scrap
 - Copper scrap
 - Nickel scrap
 - Aluminium scrap
 - Zinc scrap
 - Tin scrap
 - Tungsten scrap
 - Molybdenum scrap
 - Tantalum scrap
 - Magnesium scrap
 - Cobalt scrap
 - Bismuth scrap
 - Titanium scrap
 - Zirconium scrap
 - Manganese scrap
 - Germanium scrap
 - Vanadium scrap
 - Scrap of hafnium, indium, niobium, rhenium and gallium
 - Thorium scrap
 - Rare earths scrap
 - Chromium scrap
- B1020 Clean, uncontaminated metal scrap, including alloys, in bulk finished form (sheet, plate, beams, rods, etc.), of:
- Antimony scrap
 - Beryllium scrap
 - Cadmium scrap
 - Lead scrap (but excluding lead-acid batteries)
 - Selenium scrap
 - Tellurium scrap
- B1030 Refractory metals containing residues
- B1031 Molybdenum, tungsten, titanium, tantalum, niobium and rhenium metal and metal alloy wastes in metallic dispersible form (metal powder), excluding such wastes as specified in list A under entry A1050, Galvanic sludges
- B1040 Scrap assemblies from electrical power generation not contaminated with lubricating oil, PCB or PCT to an extent to render them hazardous
- B1050 Mixed non-ferrous metal, heavy fraction scrap, not containing Annex I materials in concentrations sufficient to exhibit Annex III characteristics¹⁷

¹⁶ "Outdated" means unused within the period recommended by the manufacturer.

¹⁷ The amendment whereby Annex IX was added to the Convention entered into force on 6 November 1998, six months following the issuance of depositary notification C.N.77.1998 (reflecting Decision IV/9 adopted by the Conference of the Parties at its fourth meeting). The amendment to Annex IX whereby new entries were added entered into force on 20 November 2003 (depositary notification C.N.1314.2003), six months following the issuance of depositary notification C.N.399.2003 of 20 May 2003 (reflecting Decision VI/35 adopted by the Conference of the Parties at its sixth meeting). The amendment to Annex IX whereby one entry was added entered into force on 8 October 2005 (depositary notification C.N.1044.2005), six months following the issuance of depositary notification C.N.263.2005 of 8 April 2005 (re-issued on 13 June 2005, reflecting Decision VII/19 adopted by the Conference of the Parties at its seventh meeting). The present text includes all amendments.

- B1060 Waste selenium and tellurium in metallic elemental form including powder
- B1070 Waste of copper and copper alloys in dispersible form, unless they contain Annex I constituents to an extent that they exhibit Annex III characteristics
- B1080 Zinc ash and residues including zinc alloys residues in dispersible form unless containing Annex I constituents in concentration such as to exhibit Annex III characteristics or exhibiting hazard characteristic H4.3¹⁸
- B1090 Waste batteries conforming to a specification, excluding those made with lead, cadmium or mercury
- B1100 Metal-bearing wastes arising from melting, smelting and refining of metals:
- Hard zinc smelter
 - Zinc-containing drosses:
 - Galvanizing slab zinc top dross (>90% Zn)
 - Galvanizing slab zinc bottom dross (>92% Zn)
 - Zinc die casting dross (>85% Zn)
 - Hot dip galvanizers slab zinc dross (batch)(>92% Zn)
 - Zinc skimmings
 - Aluminium skimmings (or skims) excluding salt slag
 - Slags from copper processing for further processing or refining not containing arsenic, lead or cadmium to an extent that they exhibit Annex III hazard characteristics
 - Wastes of refractory linings, including crucibles, originating from copper smelting
 - Slags from precious metals processing for further refining
 - Tantalum-bearing tin slags with less than 0.5% tin
- B1110 Electrical and electronic assemblies:
- Electronic assemblies consisting only of metals or alloys
 - Waste electrical and electronic assemblies or scrap¹⁹ (including printed circuit boards) not containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode ray tubes and other activated glass and PCB-capacitors, or not contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the characteristics contained in Annex III (note the related entry on list A A1180)
 - Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse,²⁰ and not for recycling or final disposal²¹
- B1115 Waste metal cables coated or insulated with plastics, not included in list A1190, excluding those destined for Annex IVA operations or any other disposal operations involving, at any stage, uncontrolled thermal processes, such as open burning.
- B1120 Spent catalysts excluding liquids used as catalysts, containing any of:

Transition metals, excluding waste catalysts (spent catalysts, liquid used catalysts or other catalysts) on list A:	Scandium Vanadium Manganese Cobalt Copper Yttrium Niobium Hafnium Tungsten	Titanium Chromium Iron Nickel Zinc Zirconium Molybdenum Tantalum Rhenium
Lanthanides (rare earth metals):	Lanthanum Praseodymium Samarium Gadolinium Dysprosium Erbium Ytterbium	Cerium Neodymium Europium Terbium Holmium Thulium Lutetium

¹⁷ Note that even where low level contamination with Annex I materials initially exists, subsequent processes, including recycling processes, may result in separated fractions containing significantly enhanced concentrations of those Annex I materials.

¹⁸ The status of zinc ash is currently under review and there is a recommendation with the United Nations Conference on Trade and Development (UNCTAD) that zinc ashes should not be dangerous goods.

¹⁹ This entry does not include scrap from electrical power generation

B1130	Cleaned spent precious-metal-bearing catalysts
B1140	Precious-metal-bearing residues in solid form which contain traces of inorganic cyanides
B1150	Precious metals and alloy wastes (gold, silver, the platinum group, but not mercury) in a dispersible, non-liquid form with appropriate packaging and labeling
B1160	Precious-metal ash from the incineration of printed circuit boards (note the related entry on list A A1150)
B1170	Precious-metal ash from the incineration of photographic film
B1180	Waste photographic film containing silver halides and metallic silver
B1190	Waste photographic paper containing silver halides and metallic silver
B1200	Granulated slag arising from the manufacture of iron and steel
B1210	Slag arising from the manufacture of iron and steel including slags as a source of TiO ₂ and vanadium
B1220	Slag from zinc production, chemically stabilized, having a high iron content (above 20%) and processed according to industrial specifications (e.g., DIN 4301) mainly for construction
B1230	Mill scaling arising from the manufacture of iron and steel
B1240	Copper oxide mill-scale
B1250	Waste end-of-life motor vehicles, containing neither liquids nor other hazardous components

B2 Wastes containing principally inorganic constituents, which may contain metals and organic materials

B2010	Wastes from mining operations in non-dispersible form: <ul style="list-style-type: none">• Natural graphite waste• Slate waste, whether or not roughly trimmed or merely cut, by sawing or otherwise• Mica waste• Leucite, nepheline and nepheline syenite waste• Feldspar waste• Fluorspar waste• Silica wastes in solid form excluding those used in foundry operations
B2020	Glass waste in non-dispersible form: <ul style="list-style-type: none">• Cullet and other waste and scrap of glass except for glass from cathode-ray tubes and other activated glasses
B2030	Ceramic wastes in non-dispersible form: <ul style="list-style-type: none">• Ceramic wastes and scrap (metal ceramic composites)• Ceramic based fibres not elsewhere specified or included
B2040	Other wastes containing principally inorganic constituents: <ul style="list-style-type: none">• Partially refined calcium sulphate produced from flue-gas desulphurization (FGD)• Waste gypsum wallboard or plasterboard arising from the demolition of buildings• Slag from copper production, chemically stabilized, having high iron content (above 20%) and processed according to industrial specifications (e.g., DIN 4301 and DIN 8201) mainly for construction and abrasive applications• Sulphur in solid form• Limestone from the production of calcium cyanamide (having a pH less than 9)• Sodium, potassium, calcium chlorides• Carborundum (silicon carbide)• Broken concrete• Lithium-tantalum and lithium-niobium containing glass scraps
B2050	Coal-fired power plant fly-ash, not included on list A (note the related entry on list A A2060)
B2060	Spent activated carbon not containing any Annex I constituents to an extent they exhibit Annex III characteristics, for example, carbon resulting from the treatment of potable water and processes of the food industry and vitamin production (note the related entry on list A, A4160)
B2070	Calcium fluoride sludge
B2080	Waste gypsum arising from chemical industry processes not included on list A (note the related entry on list A A2040)
B2090	Waste anode butts from steel or aluminium production made of petroleum coke or bitumen and cleaned to normal industry specifications (excluding anode butts from chlor alkali electrolyses and from metallurgical industry)

²⁰ Reuse can include repair, refurbishment or upgrading, but not major reassembly

²¹ In some countries these materials destined for direct re-use are not considered wastes.

- B2100 Waste hydrates of aluminium and waste alumina and residues from alumina production excluding such materials used for gas cleaning, flocculation or filtration processes
- B2110 Bauxite residue (“red mud”) (pH moderated to less than 11.5)
- B2120 Waste acidic or basic solutions with a pH greater than 2 and less than 11.5, which are not corrosive or otherwise hazardous (note the related entry on list A A4090)
- B2130 Bituminous material (asphalt waste) from road construction and maintenance, not containing tar²² (note the related entry on list A, A3200)

B3 Wastes containing principally organic constituents, which may contain metals and inorganic materials

- B3010 Solid plastic waste: The following plastic or mixed plastic materials, provided they are not mixed with other wastes and are prepared to a specification:
- Scrap plastic of non-halogenated polymers and co-polymers, including but not limited to the following²³:
 - ethylene
 - styrene
 - polypropylene
 - polyethylene terephthalate
 - acrylonitrile
 - butadiene
 - polyacetals
 - polyamides
 - polybutylene terephthalate
 - polycarbonates
 - polyethers
 - polyphenylene sulphides
 - acrylic polymers
 - alkanes C10-C13 (plasticiser)
 - polyurethane (not containing CFCs)
 - polysiloxanes
 - polymethyl methacrylate
 - polyvinyl alcohol
 - polyvinyl butyral
 - polyvinyl acetate
 - Cured waste resins or condensation products including the following:
 - urea formaldehyde resins
 - phenol formaldehyde resins
 - melamine formaldehyde resins
 - epoxy resins
 - alkyd resins
 - polyamides
 - The following fluorinated polymer wastes²⁴:
 - perfluoroethylene/propylene (FEP)
 - perfluoro alkoxyalkane
 - tetrafluoroethylene/per fluoro vinyl ether (PFA)
 - tetrafluoroethylene/per fluoro methylvinyl ether (MFA)
 - polyvinylfluoride (PVF)
 - polyvinylidene fluoride (PVDF)

22 The concentration level of Benzol (a) pyrene should not be 50mg/kg or more.

23 It is understood that such scraps are completely polymerized.

24 Post-consumer wastes are excluded from this entry:

- Wastes shall not be mixed

- Problems arising from open-burning practices to be considered

B3020 Paper, paperboard and paper product wastes. The following materials provided they are not mixed with hazardous wastes:

Waste and scrap of paper or paperboard of:

- Unbleached paper or paperboard or of corrugated paper or paperboard
- Other paper or paperboard, made mainly of bleached chemical pulp, not colored in the mass
- Paper or paperboard made mainly of mechanical pulp (for example, newspapers, journals and similar printed matter)
- Other, including but not limited to (1) laminated paperboard (2) unsorted scrap

B3030 Textile wastes

The following materials provided they are not mixed with other wastes and are prepared to a specification:

- Silk waste (including cocoons unsuitable for reeling, yarn waste and garneted stock)
 - not carded or combed
 - other
- Waste of wool or of fine or coarse animal hair, including yarn waste but excluding garneted stock
 - noils of wool or of fine animal hair
 - other waste of wool or of fine animal hair
 - waste of coarse animal hair
- Cotton waste (including yarn waste and garneted stock)
 - yarn waste (including thread waste)
 - garneted stock
 - other
- Flax tow and waste
- Tow and waste (including yarn waste and garneted stock) of true hemp (*Cannabis sativa* L.)
- Tow and waste (including yarn waste and garneted stock) of jute and other textile bast fibres (excluding flax, true hemp and ramie)
- Tow and waste (including yarn waste and garneted stock) of sisal and other textile fibres of the genus *Agave*
- Tow, noils and waste (including yarn waste and garneted stock) of coconut
- Tow, noils and waste (including yarn waste and garneted stock) of abaca (*Manila hemp* or *Musa textiles* Nee)
- Tow, noils and waste (including yarn waste and garneted stock) of ramie and other vegetable textile fibres, not elsewhere specified or included
- Waste (including noils, yarn waste and garneted stock) of man made fibres
 - of synthetic fibres
 - of artificial fibres
- Worn clothing and other worn textile articles
- Used rags, scrap twine, cordage, rope and cables and worn out articles of twine, cordage, rope or cables of textile materials
 - sorted
 - other

B3035 Waste textile floor coverings, carpets

B3040 Rubber wastes

The following materials, provided they are not mixed with other wastes:

- Waste and scrap of hard rubber (e.g., ebonite)
- Other rubber wastes (excluding such wastes specified elsewhere)

B3050 Untreated cork and wood waste:

- Wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms
- Cork waste: crushed, granulated or ground cork

B3060 Wastes arising from agro-food industries provided it is not infectious:

- Wine lees

- Dried and sterilized vegetable waste, residues and byproducts, whether or not in the form of pellets, of a kind used in animal feeding, not elsewhere specified or included
 - Degras: residues resulting from the treatment of fatty substances or animal or vegetable waxes
 - Waste of bones and horn-cores, unworked, defatted, simply prepared (but not cut to shape), treated with acid or degelatinised
 - Fish waste
 - Cocoa shells, husks, skins and other cocoa waste
 - Other wastes from the agro-food industry excluding by-products which meet national and international requirements and standards for human or animal consumption
- B3065 Waste edible fats and oils of animal or vegetable origin (e.g. frying oils), provided they do not exhibit an Annex III characteristic
- B3070 The following wastes:
- Waste of human hair
 - Waste straw
 - Deactivated fungus mycelium from penicillin production to be used as animal feed
- B3080 Waste parings and scrap of rubber
- B3090 Paring and other wastes of leather or of composition leather not suitable for the manufacture of leather articles, excluding leather sludges, not containing hexavalent chromium compounds and biocides (note the related entry on list A A3100)
- B3100 Leather dust, ash, sludges or flours not containing hexavalent chromium compounds or biocides (note the related entry on list A A3090)
- B3110 Fellmongery wastes not containing hexavalent chromium compounds or biocides or infectious substances (note the related entry on list A A3110)
- B3120 Wastes consisting of food dyes
- B3130 Waste polymer ethers and waste non-hazardous monomer ethers incapable of forming peroxides
- B3140 Waste pneumatic tyres, excluding those destined for Annex IVA operations

B4 Wastes which may contain either inorganic or organic constituents

- B4010 Wastes consisting mainly of water-based/latex paints, inks and hardened varnishes not containing organic solvents, heavy metals or biocides to an extent to render them hazardous (note the related entry on list A A4070)
- B4020 Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives, not listed on list A, free of solvents and other contaminants to an extent that they do not exhibit Annex III characteristics, e.g., water based, or glues based on casein starch, dextrin, cellulose ethers, polyvinyl alcohols (note the related entry on list A A3050)
- B4030 Used single-use cameras, with batteries not included on list A

30. New Dutch List

The New Dutch list

Contaminant	Soil Sediment (mg/kg dry weight)		Groundwater (µg/l)	
	optimum	action	optimum	action
Metals				
Arsenic	29	55	10	60
Barium	200	625	50	625
Cadmium	0.8	12	0.4	6
Chromium	100	380	1	30
Cobalt	20	240	20	100
Copper	36	190	15	75
Lead	85	530	15	75
Molybdenum	10	200	5	300
Nickel	35	210	15	75
Mercury	0.3	10	0.05	0.3
Zinc	140	720	65	800
Cyanides	optimum	action	optimum	action
Free	1	20	5	1500
Complex (pH<5) ⁽¹⁾	5	650	10	1500
Complex (pH>5) ⁽¹⁾	5	50	10	1500
Thiocyanate	-	-	20	1500
Aromatics	optimum	action	optimum	action
Benzene	0.05[d]	2	0.2	30
Ethylbenzene	0.05[d]	50	0.2	150
Phenol	0.05[d]	40	0.2	2000
Toluene	0.05[d]	130	0.2	1000
Xylene	0.05[d]	25	0.2	70
Cresol	-	5[d]	-	200
Catechin	-	20	-	1250
Resorein	-	10	-	600
Hydroquinone	-	10	-	800
Polycyclic Aromatic Hydrocarbons (PAH)	optimum	action	optimum	action
Anthracene	-	-	0.02	5
Benzo(a)pyrene	-	-	0.001	0.5
Fluoroanthrene	-	-	0.005	1
Naphtalene	-	-	0.1	70
Phenanthrene	-	-	0.03	5
Benzo(a)anthracene	-	-	0.002	0.5
Chrysene	-	-	0.002	0.05
Benzo(a)fluoranthrene	-	-	0.003	0.5
Benzo(k)fluoranthrene	-	-	0.001	0.05
Benzo(g,h,i)perylene	-	-	0.0002	0.05
Indenol(1,2,3-c,d)pyrene	-	-	0.0004	0.05
Total PAH ⁽²⁾⁽¹⁰⁾	1	40	-	-

Chlorinated

Hydrocarbons	optimum	action	optimum	action
1,2 Dichloroethane	-	4	0.01[d]	400
Dichloromethane	[d]	20	0.01[d]	1000
Tetrachloromethane	0.001	1	0.01[d]	10
Tetrachloroethane	0.01	4	0.01[d]	40
Trichloromethane	0.001	10	0.01[d]	400
Trichloroethene	0.001	60	0.01[d]	500
Vinylchloride	-	0.1	-	0.7
Monochlorobenzene	[d]	-	0.01[d]	180
Dichlorobenzol (total)	0.01	-	0.01[d]	50
Trichlorobenzol (total)	0.01	-	0.01[d]	10
Tetrachlorobenzol (total)	0.01	-	0.01[d]	2.5
Pentachlorobenzene	0.0035	-	0.01[d]	1
Hexachlorobenzene	0.0025	-	0.01[d]	0.5
Chlorobenzenes ⁽³⁾⁽¹⁰⁾	-	30	-	-
Monochlorophenol	0.0025	-	0.25	100
Dichlorophenol	0.003	-	0.08	30
Trichlorophenol	0.001	-	0.025	10
Tetrachlorophenol	0.001	-	0.01	10
Pentachlorophenol	0.002	5	0.02	3
Chlorophenols (total) ⁽⁴⁾⁽¹⁰⁾	-	10	-	-
Chloronaphthylene	-	10	-	6
PolyChloroBiphenyls(total) ⁽⁵⁾⁽¹⁰⁾	0.02	1	0.01	0.01[d]
Pesticides	optimum	action	optimum	action
DDT/DDD/DDE (total) ⁽⁶⁾	0.0025	4	[d]	0.01
Aldrin	0.0025	-	[d]	-
Dieldrin	0.0005	-	0.02ng/l -	-
Endrin	0.001	[d]	-	-
Drins (total)	-	4	-	0.1
alpha HCH	0.0025	-	[d]	-
beta HCH	0.001	-	[d]	-
gamma HCH	0.05µg/l -	-	0.2 ng/l	-
HCH combined ⁽⁷⁾	-	2	-	1
Carbaryl	-	5	0.01[d]	0.1
Carbofuran	-	2	0.01[d]	0.1
Maneb	-	35	[d]	0.1
Atrazin	0.05µg/l	6	0.0075	150
Miscellaneous	optimum	action	optimum	action
Tetrahydrofuran	0.1	0.4	0.5	1
Pyridine	0.1	1	0.5	3
Tetrahydrothiophene	0.1	90	0.5	30
Cyclohexanone	0.1	270	0.5	15000
Styrene	0.1	100	0.5	300
Mineral Oil ⁽⁹⁾	50	5000	50	600
Phthalates (total)	0.1	60	0.5	5

Notes :-

Values are for a Standard Dutch Soil (10% organic matter and 25% dry content)

[d] = Detection Limit.

1. Acidity: pH (0.01M CaCl₂) The 90 percentile of the measured value is used to determine the pH value
2. PAH (total of 10) is the total of Anthracene, Benzo(a)anthracene, Benzo(a)fluoranthrene, Benzo(g,h,i)perylene, Benzo(k)fluoranthrene, Chrysene, Fluoroanthrene, Indenol(1,2,3-c,d)pyrene, Naphtalene, Phenanthrene.
3. Chlorobenzenes are the total of all chlorobenzenes (mono-, di-, tri-, tetra-, penta- and hexachlorobenzene).
4. Chlorophenols are the total of all chlorophenols (mono-, di-, tri-, tetra-, pentachlorophenols).
5. The action value for PCB's (Polychlorinatedbiphenyls) is the total of PCB's 28,52,101, 118, 153, 180. The target value refers to the total excluding PCB 118.
6. DDT/DDD/DDE is the total of DDT, DDD, DDE.
7. Drins is the total of Aldrin + Dieldrin + Endrin.
8. HCH combined is the total of alpha, beta, gamma and delta HCH.
9. Mineral Oil is the sum of all alkanes (both straight and branch-chain) When contamination is due to mixtures (eg petrol or heating oil), then the content of aromatic and/or polycyclic aromatic hydrocarbons must also be determined.
10. The total values for PAH's, chlorophenols and chlorobenzenes in the soil/sediment apply to the total concentration of the compound belonging to the relevant category. If contamination is due to only one compound of a category, the value used is the intervention value of that compound. Where there are two or more compounds the value for the total of these compounds applies. For soil/sediment the effects are directly additive. In the case of groundwater effects are indirect and are expressed as a fraction of the individual values before being summed.

Source Document:-

This table is based on the publication Intervention values and target values - soil quality standards issued by:-

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31. Guidance Note Chemical Substances

Guidance note

Chemical Substances; import, export, using, handling and storage @ Sohar Industrial Port and Sohar Free Zone.

REP-115-10-DJ

January 2011

Definitions:

<i>Chemical substances:</i>	Substances with a CAS number
<i>CAS:</i>	Chemical Abstracts Service
<i>NOL:</i>	No Objection Letter
<i>LNJ</i>	Letter of No Jurisdiction
<i>MSDS:</i>	Material Safety Data Sheet
<i>UN number</i>	A number that identifies a hazardous substance
<i>Controlled substances</i>	Substances that are on controlled lists and require chemical permit
<i>SIP</i>	Sohar Industrial Port
<i>SFZ</i>	Sohar Free Zone
<i>ARWA</i>	Advanced Regulatory Wiki Application, the compilation of regulatory documents by the SEU.
<i>EHS</i>	Extremely Hazardous Substances

Chemicals are produced and used as raw materials and process aids in various companies in the SIP and SFZ. Chemicals are hardly ever pure substances and are mostly mixtures. The components in the mixture or the mixture itself has a CAS number (refer to <http://www.cas.org/expertise/cascontent/index.html>).

Substances can be categorized as:

- non-hazardous,
- hazardous and
- extremely hazardous.

A substance will get a UN number when it is considered as hazardous. A substance is extremely hazardous as listed in the US EPA regulation.

Regulating chemical substances serves various purposes like control for control global climate change, control chemical warfare agents, reducing risk of exposure to hazardous substances and safe storage and handling of chemical substances

Legal Framework

- MD 25/2009 concerning the Regulations for Organisation of Handling and Use of Chemicals
- ROP Civil Defense requirements for storage and transport.

Permits

Chemical Permit basis

A *Chemical Permit* is required for substances that are imported, exported, traded, handled, processed or stored and have a UN number or are otherwise controlled substances.

The Permit Owner is the SIP or SFZ company that provides any one of the above listed services.

SEU considers in principle only SIP and SFZ companies as permit holders as the chemical handling and storage is covered by the Environmental Management Plan and company procedures of the particular SIP or SFZ company.

Note that till now the hydrocarbon fuels were exempted from a Chemical Permit, however from now on a chemical permit is required for all hazardous and controlled substances.

The *Chemical Permit* is issued by the MECA Chemical Department; applications for SIP and SFZ companies need to be submitted to the SEU.

Permit applications for multiple substances can be combined in one application form for chemicals that are local purchase. Permit applications for imported chemicals require an application form for every chemical substance.

Controlled substances

Substances that are listed in one the categories below, require a chemical permit and might be subject to additional requirements.

Substances listed in MD 25/2009

Hazardous Chemicals

Refer to the UN number system http://en.wikipedia.org/wiki/List_of_UN_numbers or the iphone app 'Un Number' and other internet sources.

Chemical Precursors

Table 2 Chemical Precursors

Substance	CAS	Substance	CAS	Substance	CAS
Acetic anhydride	108-24-7	Ergometrine	113-15-5	piperidine	110-89-5
N- Acetylanthranilic acid	89-52-1	Norephedrine		Pseudo ephedrine	90-82-4
Potassium permanganate	7722-64-7	Phenyl propanone	103-79-7	Safrole	94-59-7
Ephedrine	299-42-3	Alpeleronal	120-57-0	Acetone	67-64-1
Ergometrine	60-79-7	Hydrochloric acid	7647-01-0	phenylacetic acid	103-82-2
Anthranilic acid	118-92-3	Methylethyl ketone	78-93-3	Toluene	108-88-3
Ethylether	60-29-7	Sulphuric acid	7664-93-9		

Pesticides

Refer to the Rotterdam Convention Annex III list and the principle of PIC (Prior Informed Consent) <http://www.pic.int>

Ozone Depleting Substances (ODP's)

Refer to the Montreal Protocol <http://www.undp.org/chemicals/montrealprotocol.htm>.

Extremely Hazardous Substances (EHS)

EHS Substances are defined by the US EPA (<http://www.epa.gov/ceppo/pubs/title3.pdf>). The US EPA regulation uses a threshold value for regulating the EHS.

Examples of the common Extremely Hazardous Chemicals:

Acrylonitrile	Liquefied petroleum gas (LPG)
Ammonia (anhydrous)	Methacrylonitrile
Ammonia	Nitric acid
Chlorine	Nitric acid (conc 80% or greater)
Diphenylmethane diisocyanate (MDI)	Nitrogen dioxide
Formaldehyde	Nitrogen oxide (NO)
Formaldehyde (solution)	Ozone
Hydrazine	Phenol
Hydrofluoric acid (conc. 50% or greater)	Sulfur dioxide
Hydrogen chloride (gas only)	Sulfuric acid
Hydrogen fluoride	Styrene
Hydrogen peroxide (conc.>52%)	Toluene diisocyanate (TDI)

Hydrogen sulfide	Vinyl acetate
Hydroquinone	Vinyl acetate monomer

For the full list please check: <http://www.epa.gov/ceppo/pubs/title3.pdf>

Chemical Permit Conditions

The issued Chemical Permit contains a number of generic conditions. In some cases the SEU will include additional conditions as required by the chemical substance involved, this will mostly in the case of the extremely hazardous substances (EHS).

In these special conditions, requirements for handling and storage will be mined from international available documentation referred to in the IPPC documentation or sectorial organizations like CEFIC.

Under all circumstances MECA/SEU assumes that chemicals are handled with full awareness of the hazardous properties and that all 'good practices' are adhered to.

Companies might be requested to submit to the SEU a list of type and quantity of controlled chemical substances that are on-site handled or stored.

Chemical Storage permit conditions

The storage of chemicals requires a permit of ROP Civil Defense. The conditions cover transport and storage. The storage requirements are aimed at the prevention of exposure to humans, to safe handling and prevention of chemical reactions.

The requirements will be included in ARWA.

Chemical Storage Best Practices

Basic requirements for storage of chemical substances

Construction

- Constructed of fire resistant material with a minimum fire resistance of two hours.
- Separation with fire resistance of at least two hours from any building or room which may be affected by the materials being stored.
- Double containment of plus 10 percent of that quantity, can be contained.
- Suitable shelving, if necessary, constructed of non-porous and non-combustible material.
- Properly ventilation

Facilities and equipment

- Clear labeling of storage cells and packaging.
- Presence of personal protective equipment.
- Eye wash and emergency shower facility.
- Equipped with fire extinguishers with suitable quantity and type (near escape route).
- Smoke detection.
- Communication system to the main office or emergency system.
- Spill control and clean-up materials.

Operational

- All chemicals must be stored according to the [Chemical Storage Incompatibility Guidelines](#). Note that the guidelines are not exhaustive.
- Spilled chemicals must be cleaned up directly and broken packaging or containment must be repaired.
- Chemical inventory must be available at all times for emergency response purposes.
- Proper labeling of storage cells and shelves as well as packaging is required.
- 'Good practices' must be used by trained staff.

How to store chemicals:

- Store all chemicals by their hazard class and not in alphabetical order. Chemical Storage Segregation Guidelines in this chapter.
- Storing chemicals by compatibility means for example that oxidizers should be separated from organics, air/water reactives must be kept dry and inorganic cyanides should be stored away from acids.
- Volatile toxic substances should be stored in ventilated storage cabinets. When volatiles must be stored in a cooled atmosphere, explosion-proof refrigerators or cold rooms designed for this purpose must be used.
- Toxic substances must be segregated in a well-identified area with local exhaust ventilation.
- Chemicals that are highly toxic or other chemicals whose containers have been opened must be in unbreakable secondary containers. For example, place containers of concentrated acids or bases into plastic tubs to help contain any leakage.
- Do not store chemicals near heat sources such as ovens or steam pipes. Also, do not store chemicals in direct sunlight.
- Containers must be kept closed at all times.
- Liquid and solid materials are to be stored separately where possible, to avoid contamination in case of a spillage.
- Do not store any chemicals in glass containers on the floor.
- Inspect your chemicals routinely for any signs of deterioration and for the integrity of the label.

Be safety conscious:

- Storerooms must have adequate security. Unauthorized entry to the store is prohibited. Only scientists and technicians from the Group are allowed in the chemical store.
- Relevant safety information on chemicals is to be available via the Hazardous Substances Controller or the Safety Representative. MSDS's must be kept in a filing cabinet in the store.
- Consult your Hazardous Substances Controller for the disposal of any old, outdated, or unused chemicals.
- Smoking, eating or drinking in the store or during handling of chemical substances are prohibited. Appropriate decontamination procedures, such as washing hands with soap and water after handling chemicals in the store, must be followed.
- Wear the prescribed personal protective equipment for the chemical substance to be handled. Clothing rules and all the personal protection measures and rules (regarding lab coats, safety goggles, gloves, etc) that apply to laboratory workers, also apply to people entering the chemical store room.
- When decanting liquid chemicals into measures or other containers, care must be taken to prevent spillage.
- When transferring solid chemicals to other containers, care must be taken to prevent dust formation and spillage.
- Spillages are to be cleaned up immediately.
- All water used for washing equipment should be collected as chemical waste material.
- All waste materials must be put in the dedicated waste containers and only be removed or destroyed according to instructions. (See section on chemical waste.)
- Empty containers are not to be disposed of with other waste. To prevent re-use for unauthorized applications they need to be removed with other chemical waste, according to the chemical waste disposal guidelines.
- Know the location of the master control shut-off valves for gas, water and electricity.
- Stored chemicals should be examined periodically (at least annually) for replacement, deterioration, and container integrity and with a view to minimization.

Conducting an annual inventory

The Chemical Store Supervisor will perform or initiate and supervise an annual stock taking survey to update his inventory. The aims are:

- To check for ethers and other chemicals with limited shelf life.
- To remove surplus hazardous chemicals.
- To remove chemicals that will not or have not been used in the past 1-3 years.
- To correct incompatible storage.
- To identify which chemicals are present.
- To conduct a regular clean-up of containers and shelving.

Signs and Labels

Prominent signs and labels of the following types should be used:

- Laboratory Inventory posters, including emergency contacts, must be posted outside each work area;
- Emergency Instruction signs must be prominently posted;
- Identity labels, showing contents of containers and associated hazards. Labels on all incoming chemical containers cannot be removed or defaced (unless the container is empty and ready for disposal). All secondary containers must be labeled with at least the identity of the contents, health hazards (including target organs), and manufacturer name. Waste Disposal Labels/Tags must be used to identify a waste container as "waste".
- Location signs for safety equipment, first aid equipment, and exits;
- Warning signs at areas or equipment where special or unusual hazards exist;
- Areas where food and beverage consumption and storage are not permitted.

Records

- Maintaining current records of hazardous chemicals assists in implementing proper storage and safety procedures and is necessary for emergency response pre-planning. It is the Hazardous Substances Controller's responsibility to keep an updated hazardous chemical inventory poster on file and to post a current inventory summary sign outside the lab entrance. Lab personnel should also keep usage records of high-risk substances.
- Material Safety Data Sheets (MSDS) provide information on hazardous chemicals and must be readily available for all hazardous chemicals in the lab
- Any lab accident must be reported to the competent department or management.

Chemical Storage Incompatibility Guidelines

- The competent Chemical Substances Controller will implement and regularly check if the guidelines are followed.
- Examples of compatibility problems arising from storing chemicals alphabetically include:
 - Alkanes and Ammonium Nitrate
 - Hydrogen Peroxide and Hydrazine
 - Ammonia and Bromine
 - Nitric Acid and Phenol
 - Aldehydes and Amines
 - Sodium Cyanide and Sulfuric Acid
- Calcium Hypochlorite and Carbon
- Even apparently safe storage can be a potential problem. The following materials are often stored together even though there are hazards should the materials mix:
 - Acetic Acid and Nitric Acid
 - Perchloric Acid and Sulfuric Acid
 - Concentrated Acids and Bases
- Separate by Compatibility refer to:
 - Material Safety Data Sheets
 - Chemical Catalogues

Guidelines for storage of acids and bases:

- store acids and bases separately
- store acids in dedicated acid cabinet
- store oxidizing acids (e.g. nitric acid) away from organic acids (e.g. acetic acid)
- store hydrofluoric and perchloric acids in secondary containers manufactured from compatible materials
- safety showers and eye wash facilities must be within easy access

- protective equipment must be inspected regularly to insure proper working order, especially in corrosive atmospheres
 - storage or dispensing facility.
- due to flammable vapors.

Storage of Compressed Gas Cylinders

- protect against mechanical damage
- store in a secure area
- store with protective caps on
- store in a dry, well-ventilated area
- store flammable, oxidizing and poison gases separately
- if stored indoors, the room must have a 2-hour fire separation with entry from the exterior
- natural ventilation to outside wall must exist; room must have no other purpose
- poisonous compressed gases shall be separated from remainder of building by a gas tight fire separation.
- poisonous compressed gases shall be stored in a room with an exterior entrance and not with combustible or flammable material.

Flammable Liquid Storage Rooms

- A properly designed flammable liquid storage room must satisfy many requirements, e.g. location, ventilation, electrical equipment, fire protection, etc. It must also meet the needs of the user, e.g. adequate size, conveniently located, etc.
- The flammable liquids room should be easily accessible to fire fighting. From a fire safety standpoint, rooms located in corners of buildings meet this requirement; e.g. window openings and doors all providing sufficient entry; also, explosion venting can be incorporated into the exterior walls. From a management point of view, such a location is advantageous in that incoming shipments of flammables can be handled without having to transport them through the main work area.
- There are specific guidelines for flammable liquid storage rooms. The maximum number of liters per square meter of floor space; maximum room size with and without a sprinkler system (or other automatic extinguishing system); fire resistance rating of the interior walls. Other additional requirements include: a raised liquid-tight sill of at least 102 mm in height (a sunken floor or open grated trench is also permissible); floor drains which drain to a safe location; self-closing, listed, one and one-half hour Class B fire door (listed 3-hour Class A may be required for walls with a rating greater than 2 hours).
- Rooms containing Class I flammables must have electrical equipment suitable for Class I, division 2; for Class II and Class III liquids, electrical fixtures must be approved for general use. The room must also have a gravity or mechanical exhaust ventilation system (ICFM/sq.ft. of floor area) equipped with suitable interlocks.

Guidelines for storage of Oxidizing Materials:

- Oxidizing materials must be stored away from flammable and combustible materials as well as separate from reducing agents.
- The simplest method of ensuring that this occurs is to locate all oxidizing materials and store them in a separate location.
- Read material safety data sheets to ensure that they are all compatible with each other.

Guidelines for storage of Dangerously Reactive Materials:

- Read MSDS. Isolate from other chemicals and ensure that storage conditions are appropriate. Cool, dry well-ventilated areas are required. Additional criteria may include an oxygen free environment for water reactive materials.
- Once the chemicals are sorted into the previously described groupings, they can then be sorted into organic and inorganic classes.. The compatible families suggested are:

Inorganic

- Metals, hydrides

- Halides, sulfates, sulfites, thiosulfates
- Amides, nitrates** (except ammonium nitrate), nitrites**, azides**, nitric acid
- Ethers**, ketones, ketenes, halogenated carbon
- Sulfides, selenides, phosphides, carbides, nitrides
- Chlorates, perchlorates**, perchloric acid**, chlorites, hypochlorites, peroxides**, hydrogen peroxide
- Arsenates, cyanides, cyanates
- Borates, chromates, manganates, permanganates
- Acids (except nitric)
- Sulfur, phosphorus**, arsenic, phosphorus pentoxide**

Organic

- Acids, anhydrides, peracids
- Alcohols, glycols, amines, amides, imines, phosphates, halogens, imides
- Hydrocarbons, esters, aldehydes
- Hydroxides, oxides, silicates, carbonates, hydrocarbons, ethylene oxide
- Epoxy compounds, isocyanates
- Peroxides, hydroperoxides, azides**
- Sulfides, polysulfides, sulfoxides, nitriles
- Phenols, cresols

** potentially unstable

32. Guidance Note Environmental Performance Reporting

Guidance Note

Environmental Performance Reporting

REP-197-11-DJ
July 2011

Definitions:

<i>ARWA</i>	Advanced Regulatory Wiki Application (produced by SEU)
<i>BAT</i>	Best Available Technique
<i>BRC</i>	Beyond Regulatory Control
<i>Bref</i>	BAT reference document
<i>CA</i>	Competent Authority
<i>EIA</i>	Environmental Impact Assessment
<i>EMP</i>	Environmental Management Plan
<i>EPR</i>	Environmental Performance Report
<i>ER</i>	Environmental Review
<i>H1-2</i>	Half yearly report starting at half year 1 of a specific year
<i>IPPC</i>	Integrated Pollution Prevention and Control
<i>LDAR</i>	Leak Detection and Repair
<i>M1-12</i>	Monthly report January – December of a specific year
<i>MECA</i>	Ministry of Environment and Climate Affairs
<i>NOL</i>	No objection letter
<i>PQL</i>	Practical Quantitation Limit
<i>Q1-4</i>	Quarterly report starting at quarter 1 of a specific year
<i>SEU</i>	Sohar Environmental Unit
<i>SFZ:</i>	Sohar Free Zone
<i>W1-52</i>	Weekly report starting at week 1 of a specific year

1: Objective and approach

Environmental Performance Reporting is a requirement that a permit holder has and that allows the Competent Authority to keep track of the environmental issues on all the relevant environmental compartments. The SEU likes to harmonize the reporting on the environmental issues in order to have a more effective compliance control.

The Guidance Note Environmental Performance Reporting is connected to the Guidance Note Sampling (under construction) and the Guidance Note Analytical Methods (under construction).

Compliance

Environmental Performance of a company is the level of compliance to the imposed environmental requirements. The Environmental Performance Report (EPR) must include the standards and the source of the standard for verification of the compliance with the permit or other requirements.

In addition to the regulatory requirements, a company can decide to perform better, which is called BRC Beyond Regulatory Control (BRC). These additional environmental activities are contributing to the total environmental performance and need to be included into the performance records. Examples are additional monitoring efforts, developing waste recycling routes, process optimization to reduce emissions, etc.

Covered environmental compartments

The EPR covers the regulated environmental compartments that are selected from (but additional reporting requirements might be present) the following list.

Air	Ambient, emissions
Industrial Waste	Construction, hazardous, non-hazardous,
Water	Marine quality, discharge to marine, sewage, deep excavation, irrigation water
Climate	As per Climate Affairs requirements
Noise	On-site, at boundary

Radio Activity	Focused on Radio Active check gates
Industrial Safety	Incident/accident reporting

You are advised to integrate the reporting requirements into the Environmental Management Plan.

2: General reporting

Who

All companies that have an environmental permit.

An EPR must be submitted by the company that holds the permit. Background information can be annexed (e.g. lab reports, subcontractor reports). Subcontractors (e.g. during construction) are reporting through the permit holder and it is the permit holders duty to make sure that subcontractors are compliant with the reporting requirements.

When

The EPR must be submitted to the SEU with the agreed frequency and directly by the permit holder or explicitly on behalf of the permit holder and must mention the name of the responsible person in the company. The covered period must be clearly mentioned. The period numbering convention is that notations start at the beginning of the calendar year (e.g. Q2 2011 means covering the second quarter in 2011 and does **not** mean the second submitted quarterly report).

The reporting frequency is Monthly, Quarterly, Half yearly, Yearly or any other period if so found necessary by the CA. Reporting frequency can be adapted (less frequent, more frequent) based on historical data, process control history and environmental risk.

The EPR is due within 3 weeks after ending of the reporting period.

If a company works on project basis (e.g. rig repair) the EPR must be adopted to the specifics of the project with respect to EPR chapters, parameters and frequency.

How

The EPR format is not regulated but all the required information must be included in a clear presentation of the data. The usual convention of units has to be respected (Mt is interpreted as Mega tons and not as metric tons). The EPR is to be submitted as soft-copy that is send to meca.seu@gmail.com and two hard-copies. E-mail reception will be acknowledged by a reply email.

What

Background information on the reported data is very much appreciated, however repeating the same background information (e.g. method description, equipment description, location layout, etc.) in consecutive reports is not necessary, referring to a previous report is acceptable.

Reportable are special circumstances like e.g. one-off emissions, emergency shutdowns/start-ups, incidents/accidents, major equipment trips.

Production data are to be reported in order to relate the performance to operational parameters like: on-stream time, gas consumption, product tonnage or volume, energy consumption.

In specific cases the composition of raw materials have to be reported (e.g. sulphur content, ash content).

Emissions can be directly measured, indirectly measured or calculated, methods must be reported. Indicated must be if the emission data are generated by grab-sampling or by continuous monitoring.

Continuous monitoring data must be presented graphically (time on the x-axis) in addition to key data like average, min, max, validation percentage.

Measured but not regulated components must be reported. E.g. data from ambient monitoring or CEMS results (e.g. ozone, meteo data).

Specific emission (e.g. g per kg product) or yearly emissions (actual or prorated) for key components that are relevant for IPPC compliance are to be reported. As key components are considered: NO_x, SO₂, PM10, CO, CO₂, VOC. Typically to be reported: key component in ton/yr and in g/kg product. Prorating can be done by taking the results in a specific year so far (say x months, result y) and estimate the yearly result with $y \cdot 12/x$.

Exceptions

Exceptions on EPR reporting (combining reports, changing frequency, parameters etc.) is permitted only after explicit acceptance by the SEU.

EPR processing by SEU

On reception of an EPR, SEU will register reception, forward a copy to MECA Muscat office and review the content. If so deemed necessary SEU will comment or ask for clarifications. If non-compliances are identified, SEU will consider enforcement as follows: administrative enforcement for non-compliances with this Guidance Note and providing wrong or incomplete data and information and regulatory enforcement for non-compliances with standards for concentrations, quantities, etc.

EPR Submission enforcement schedule that will be used by the SEU is as follows:

- One week exceedance of EPR due date: reminder mail.
- Two weeks exceedance of EPR due date: warning letter.
- Three weeks exceedance of EPR due date: fine as per article (13) and (31) RD114/2001.

Enforcement for non-compliances with standards will be assessed on a case by case basis.

If any circumstances occur that prevents timely submission of the EPR, the company must request suspension of the enforcement and specify the reasons for delay to the SEU before the due date.

3: EPR content overview

- Company is required to select relevant EPR chapters based on relevance. Minimum required: Report summary (compliance situation), Regulatory and Industrial safety (incident registration).
- Explicit statements have to be made concerning compliance and non-normal situations (e.g. 'in reporting period no standards were exceeded, no non-compliance situation were encountered, no accidents/incidents occurred').

EPR Report summary

- The report summary is advised to point to any specific non-compliance situation or special circumstance that is not 'business as usual'. These include spills, leaks, accidents, etc..
- Info: non-compliances, incidents, accidents, etc.
- Example: emergency shutdown by turbine trip, flared 10 tons, startup after 24 hours.

EPR Regulatory

- **All** current permits, licenses, No Objections, waivers and other environmental regulatory documents.
- Info: Type, date of expiration, date renewal request.
- Example: Env. Permit no 12345, expiry date: 1 Aug 2011, renewal request submitted on 1 Jul 2011.
- Changes in technology, equipment or operations that influence environmental performance.

EPR Substances

- Composition and quantity of raw materials that are regulated.
- On-site storage of relevant hazardous chemicals (raw materials, intermediates, products)
- Info: kton used, stored or handled with weight fraction of regulated components.
- Example: anthracite, processed 20 kton, sulphur content 2.5 wt %, ash content 0.1 wt %.

EPR Air emissions

- Emissions to the atmosphere must be reported as (per source).
 - Concentration C_x (mg/Nm³)
 - Mass flow M_x (kg/day, pro rated ton/yr)
 - Specific Mass emission S_x (kg/kg product)
- Sample location, time/period.
- The location of the source, the operational conditions (temp, flow rate, etc) must be included.
- For continuous monitors: parameter vs time graph.

- Companies that generate information from CEMS, need to report all the measured data in a summarized format that includes: average value over reporting period, max/min value, percentage validated values.
- CEMS data: source id, $C_{x,avg}$, $C_{x,min}$, $C_{x,max}$, percentage validated data, graphically C_x vs time.
- Example: Stack 01, boiler, C_{NOx} , avg: 50 mg/Nm³, min: 25 mg/Nm³, 85% valid data, flowrate: 50.000 Nm³/h.
- Estimates on fugitive emissions for dust (as PM10 and TSP) and VOC based on LDAR. If estimates require calculations, the calculation method has to be reported.

EPR Ambient air quality

- Ambient concentration ($\mu\text{g}/\text{m}^3$).
- For continuous monitors: graphically parameter vs time, $C_{x,avg}$, $C_{x,min}$, $C_{x,max}$.
- Meteo data during reporting period.
- Method of sample collection.

EPR Waste

- Industrial waste generated, stored, recycled, disposed or otherwise managed has to be reported in relation to the Consignment Note, No Objection, Basel Convention and other regulatory frameworks.
- Type of waste, tons on-site storage, tons disposed, tons recycled etc.
- Waste destination (name of disposal company, disposal site).
- Reporting of quantities: solid & sludge waste in ton and liquid waste in m³.
- Waste Quantities for the reporting period and for the whole year as estimate.

EPR Soil

- Contamination details (origin, components, concentrations).
- Sample location, time/period.
- Total amount involved, treatment or disposal details.
- Sampling method (composite sampling details).

EPR Marine water quality

- Concentration C_x (mg/l or $\mu\text{g}/\text{m}^3$) and PQL.
- Sediment C_x (mg/kg).
- Sample location, time/period, sampling details.
- Analytical method

EPR Water discharge

- Regular discharges: Cooling water, brine, process discharges volumes.
- One off discharges like deep excavation water, hydrotesting water etc..
- Concentration C_x (mg/l or $\mu\text{g}/\text{m}^3$) and PQL.
- Sample location, time/period.
- Sampling method (composite sampling details).
- Info: concentrations, standards, compliance test results.

EPR Noise

- Noise levels on site boundary or unit battery limit.
- Used measurement equipment.

EPR Radioactivity

- Identification of the qualified radiation protection officer.
- Any over-exposure incident or near over-exposure incident.
- Any relocation (temporary or permanent) of sources in process equipment (typical level sensors).
- Scrap metal radio active check gate: number of checks and number of pass and non-pass results. Note: non-pass results require immediate informing the authorities (SEU, Port Authority).
- Calibration details.

EPR Industrial safety

- Incidents/accidents with impact outside the battery limits have to be reported directly as part of the emergency response requirements. The EPR contains an overview of the incidents

with estimations of released components (type, quantity) to air, water, soil (including firefighting water if applicable).

- Accident generated products (e.g. waste absorbent, firefighting water).
- Implementation progress of the Safety Management System (SMS).

EPR Climate

- Reporting requirements for Climate Affairs are described in detail in Form No 2 issued by DG Climate Affairs.

4: Identifying and reporting exceedance

Exceedance of a standard and non-compliance are two different events. There are several mechanisms that cover the difference like a waiver condition, insignificance with respect to environmental risks or an agreement with CA.

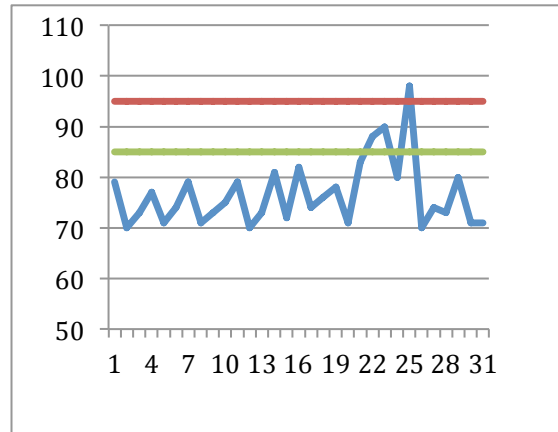
An incidental spike that results in standard exceedance will in general not be considered as a non-compliance. Structural exceedance will obviously result in non-compliance.

For continuous monitoring results or other data in time series, the exceedance of a standard can be registered as 'number of exceedance' or as 'time fraction' exceedance.

In the example: standard 95 is exceeded 1 time, standard 85 is exceeded 2 times and 10% of the reporting period.

Data averaging must be based on the standard (e.g. yearly average, 24h average, 8 hour average as per USEPA ambient air quality standards).

In the absence of a defined averaging period, a 'good practice' representation is expected.



A non-compliance can be based on Article (10) of RD114/2001 concerning the use of state-of-the-art techniques (Best Available Techniques as per IPPC) and Article (7) of RD114/2001 concerning polluting the environment in general.

In one-off situations (e.g. discharge of hydrotesting water) exceedance of the discharge standard is directly a non-compliance.

Ambient quality parameters (ambient air quality and marine quality) that are not directly attributable to a specific company will not lead to non-compliance but will give a more general concern.

Additional information is provided in the IPPC Reference Document on the General Principles of Monitoring (<http://eippcb.jrc.es/reference/>).

5: EPR data reporting format examples

- Use only significant decimal numbers.
- PQL should be lower than half the standard.
- Sampling methodology and frequency should be reported.
- Include accuracy if available.

Water reporting form example

Sample identification						
Sampling method (single/composite)			Sampling date/time Sampling location			
Component	Unit (mg/l)	Method	PQL (mg/l)	Result (mg/l)	Standard (mg/l)	Remarks
BOD						
COD						
pH						

Air emission reporting form example

Source ID			Upstream process ID			
Source location coordinates or area Stack height (m) Stack tip diameter (m)			Emission temperature (degC) Flowrate (Nm ³ /h)			
Sampling method (monitor, isokinetic, ..)			Sampling location in equipment (e.g. 2 m below stack tip,..) Sampling date/time			
Component	Unit (mg/Nm ³)	Analysis Method	PQL (mg/Nm ³)	Result (mg/Nm ³)	Standard (mg/Nm ³)	Remarks
PM10						
SO ₂						
NO _x						
VOC						

Ambient air reporting form example

Source ID						
Sample location coordinates						
Sampling method (monitor, diffusion tubes,...)			Sampling date/time			
Component	Unit (µg/Nm ³)	Analysis Method	PQL (µg/Nm ³)	Result (µg/Nm ³)	Standard (µg/Nm ³)	Remarks

PM10						
SO ₂						
NO _x						
VOC						

Monitor reporting form example

Source ID						
Sample location coordinates						
Measurement period			Percentage validated data Avg			
Component	Unit (mg/Nm ³)	Method	PQL (mg/Nm ³)	Avg result (mg/Nm ³)	Standard (mg/Nm ³)	Remarks

Industrial waste reporting form example

Waste Name	Actual quantity (ton)	Annual quantity (ton)	Source of waste Generated	Reuse/Recycle or disposal options	CN, REG or NOL number

33. Guidance Note Requirements for EIA, ER, IPPC and Seveso II

Guidance Note

Requirements for EIA, ER, IPPC and Seveso II

REP-147-11-DJ

January 2011

Acronyms:

<i>EIA</i>	Environmental Impact Assessment
<i>EIS</i>	Environmental Impact Statement
<i>IPPC</i>	Integrated Pollution Prevention and Control
<i>CA</i>	Competent Authority, here the SEU
<i>SFZ</i>	Sohar Free Zone
<i>SIP</i>	Sohar Industrial Port
<i>ER</i>	Environmental Review
Seveso II	EU Directive (96/82/EC)
<i>MAPP</i>	Major Accident Prevention Plan
<i>SMS</i>	Safety Management System
<i>EMP</i>	Environmental Management Plan
<i>SR</i>	Safety Report required for upper tier Seveso II companies

When a company establishes a new industrial activity or will implement a major change in its facilities, the Competent Authority (CA) has to assess the requirements for the initial environmental permit. This process has the following phases:

1. **Initial Assessment** resulting in a **No Objection Letter**, a declaration of the CA that there are no fundamental objections to establish the proposed activity on the proposed site.
2. **Screening**,
 - a. assess the need for an EIA, (EIA company)
 - b. categorize a company as IPPC, (IPPC company)
 - c. categorize a company as increased safety risk, (Seveso II company)
3. **Scoping**, identifying the topics that need to be studied in the EIA (the Terms of Reference for the EIA) and identifying requirements for IPPC and Seveso II.
4. **Reviewing**, assessment of the EIA and identification of lack of information.
5. **Permitting**, setting the conditions for the initial environmental permit.

Notes:

- Phases 1 and 2 will in practice be combined.
- In Phase 2 needs to be established if the company is an IPPC company and has to comply with the EU IPPC directive and must use Best Available Techniques. Also is to be established if the company is a Seveso II company, based on its safety profile.
- When an EIA is **not** required, the CA can require the submission of an Environmental Review that provides details on relevant environmental topics.
- The Environmental Impact Statement is the executive summary of the EIA report.
- All required submissions are to be made by the foreseen permit holder.
- The EIA must describe all possible future expansion scenario's, however the permit will cover only the activities that will currently be implemented.
- For new companies in the SFZ, the EIA can reference to the Baseline Study that was made for the Phase I SFZ.

Legal framework

The documents related to EIA are:

- MINISTERIAL DECISION No. (187/2001); Organizing Issuance of Environmental. Approvals and Final Permits
- Guidelines on Environmental Impact Assessment
- Annex on Climate issues
- IPPC and Seveso II are currently applied for companies in the SIP and the SFZ only. Although not included in any RD or MD yet, MECA/SEU will use the IPPC and Seveso II framework in the permit application process.

No Objection criteria: a No Objection is given when the proposed activity fits in the concept of spatial planning or industrial estate and the foreseen environmental impacts are not long term, on a large scale or affect the community. For large projects like the establishments of industrial estates, large infrastructural works, large scale industrial activities or activities with an exceptional risk profile (airport, nuclear plant), a No Objection is given after consulting the relevant ministries on the appropriate level.

The No Objection is based on preliminary information that might not fully reflect the final size of activities. In the assessment, all the environmental compartments (air, waste, water, marine, safety, ..) are taken into account.

EIA Criteria

For the petro chemical and metal sector activities in the port an EIA is required since there is a considerable impact on the environment and industrial safety issues are involved.

For logistic activities, the EIA requirement will be assessed on a case by case basis.

For the SFZ a framework EIA was made, that covers the whole concession area but was focused on the phase I of the SFZ development.

This means that the scope of an EIA for companies that are established on the SFZ, need to cover only the core environmental issues. For example habitat issues and impacts local community are already covered. However if the impact of the proposed activity is outside the SFZ area (e.g. hazard exposure, odour, noise etc) this issues need to be considered.

In the following table the EIA requirements for the SFZ are provided per industrial sector as guidance.

Proposed activity	EIA
Logistics involving non hazardous goods	no
Storage of fuels over 20 tons	EIA
Storage of chemicals > 20 tons	EIA
Waste Water treatment facility	EIA
Processing plants	EIA
Workshops metal/painting	no
Waste processing	EIA
Paper / pulp industry	EIA
Cement products	no
Metal casting > 10 ton/day	EIA

EIA Scoping

During the scoping phase of an EIA, the company will submit a scoping document that gives the content of the EIA to be made and any supporting studies. The CA can in this stage give directions for the EIA and has to approve the scoping document.

The scoping document contains:

1. Administrative information of the company
2. Information on the proposed activity
3. Information on the location
4. Identification of possible impacts
5. Proposed content of the EIA
6. Overview of supporting studies

Please note that the Environmental Management Plan (EMP) is required as a separate document and not as a chapter of the EIA.

IPPC Criteria

Not every industrial company is considered an IPPC company. The criteria for IPPC companies are provided by the EU IPPC directive.

Details to be found in annex 1 of Directive 2008/1/EC (IPPC directive).

Seveso II Criteria

The Seveso II companies are so called Tier 1 or Tier 2 companies, depending on the amount of particular substances a company has on-site. In the Tier 2 category, the companies are required to provide a Safety Report that describes the Safety Management System (SMS) and the Major Accident Prevention Plan (MAPP).

The Seveso II Directive (96/82/EC) will provide all the background information.

The practical implementation will be communicated in a separate Guidance Note.

Environmental Review (ER)

An Environmental Review is required for companies that do not need to make an EIA. The ER provides all technical details of the process, emissions and safety impacts.

Typical ER covers the following:

General issues

- Administrative details of the company
- Description of the activities and processes
- Description of the buildings, storage facilities
- Plot plan indicating dimensions
- Quantities of products, raw materials, process aid and other substances, used per year and stored.
- Inventory of boilers, process heaters etc
- Inventory of coolers, cooling principle and substance

Environmental management

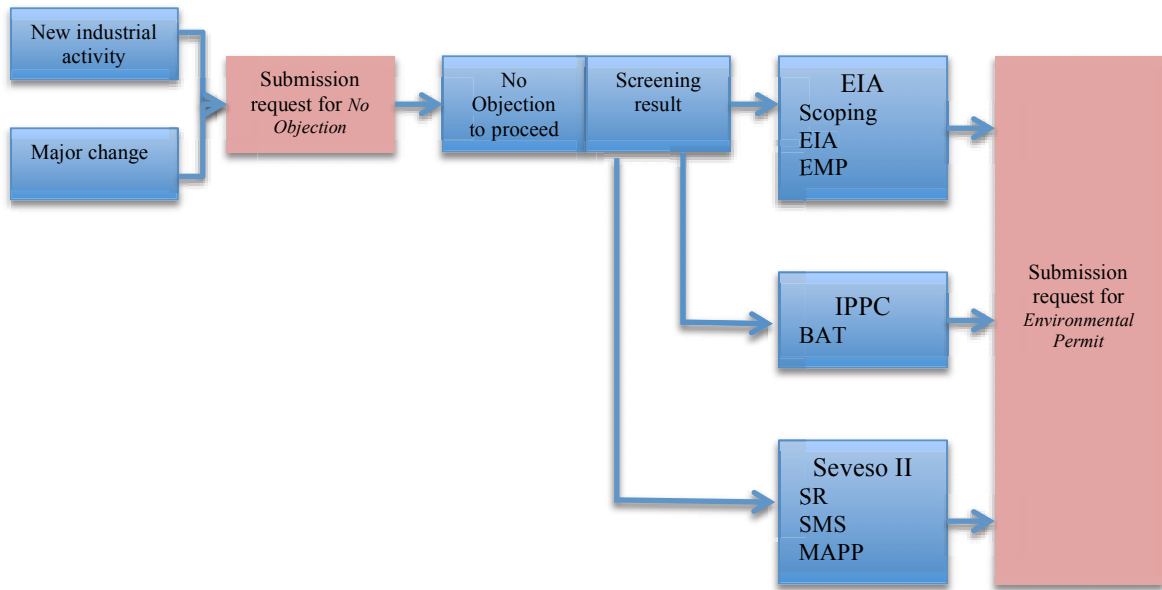
- Energy situation, type of power source, used power, fuel storage
- Waste management
- Environmental Management Plan
- Monitoring and registrations of accidents and incidents
- Mitigation measures
- Reporting to the authorities

Environmental issues

- Waste produced, type and quantities, foreseen recycling and disposal
- Waste water produced, water quality, amounts, disposal
- Air emissions, SO₂, NO_X, PM and specific emission related to companies activities
- Nuisance, odour, noise

Safety issues

- Inventory of activities (processes, storage chemicals etc.) that increased the risk exposure outside the plot.
- Emergency Response Plan
- Fire protection, alarm and fire-procedures



34. Guidance Note Waste Management @ SIP and SFZ

Guidance note

Waste management @ SIP and SFZ

REP-123-10-DJ
October 2010

Definitions:

<i>Non Hazardous waste:</i>	Waste that is excluded from the hazardous waste definition according to Basel convention.
<i>Consignment:</i>	A specific amount of one type of waste produced by one generator.
<i>No Objection Letter:</i>	(NOL) Document issued by SEU that permits transport to and disposal at the Sohar site for a specific consignment.
<i>Generator:</i>	Company that produces (generates) the waste.
<i>Receiver:</i>	Sohar Municipal Landfill, designated area for SIP Industrial Waste.
<i>Competent Authority:</i>	Sohar Municipality for disposal site; SEU for Generators
<i>Transporter:</i>	Company that transports a Consignment from Generator to Receiver.
<i>Manifest</i>	Document issued by Generator that accompanies every truck load
<i>Waste information:</i>	Characterization of the waste involved, physical appearance, origin.
<i>Off-site/On-site</i>	outside/inside the premises of the Generator.
<i>EMP</i>	Environmental Management Plan

Basic Approach towards SIP and SFZ Waste Management

- Polluter Pays principle.
- Priority order: reduction, recycling, energizing, controlled disposal.
- All generated/transported industrial waste has to be registered by SEU (by Permit or NOL).
- On-site storage hazwaste allowed (under Permit or NOL) when of-site solutions are not available.
- When off-site solutions are available, on-site storage hazwaste allowed (under Permit or NOL) for limited time and quantities.

SEU waste policy development

SEU develops an approach to waste management within its area of jurisdiction (SIP, SFZ, Liwa hazardous waste site) that is aimed at sustainability and controlled operations. In order to do that, detailed knowledge of the waste generated, recycled, transported, disposed is required. SEU will acquire this knowledge along the timeline as historic data, actual data and prognoses.

With the data a better planning of waste facilities can be made and port requirements can be better coordinated with OESHCO and integrated in the Oman National Waste Plan.

Facilities that generate, transport, recycle, treat, store, or dispose of waste are required to notify the SEU of their waste activities.

Waste categorization

The type of waste determines the allowed handling and the categorization is an important step in this process. Typical problems encountered are the lack of MSDS of the waste, non homogeneous composition and small contaminations. SEU expects the Generator to categorize the waste based on best practices for sampling and analysis.

In the schedule below, four basic categories are distinguished: household, non-hazardous and hazardous waste and construction excavation materials/waste. For the hazardous waste identification the Basel convention and the EPA tables are used.

Waste reduction

Waste reduction is the most efficient way to manage waste. Reduction can be realized by selecting raw materials, optimize processes or allow internal recycling. SEU expects companies to address the priority order for waste management in the EMP.

The Generator is the primary party to initiate programs on this.

Recycling

Recycling or reusing will add value to the waste and convert it into usable products. Recycling technologies are available for a variety of waste products but need careful development with respect to short term and long term environmental effects. Reusing of packaging by the supplier or reusing materials by supplier by regeneration/reactivation are some examples.

Basel option

Hazardous waste that is exported from Oman has to follow the 'Basel route'. The Basel desk is located in MECA Muscat office, however SEU will be the gateway for application.

Construction and Excavation waste/materials

Waste that is generated by building activities rather than industrial production processes can be categorized as non-hazardous if a 'statement of non contamination' is submitted with the NOL. This statement might be based lab result or a plausible explanation and should be verifiable by SEU.

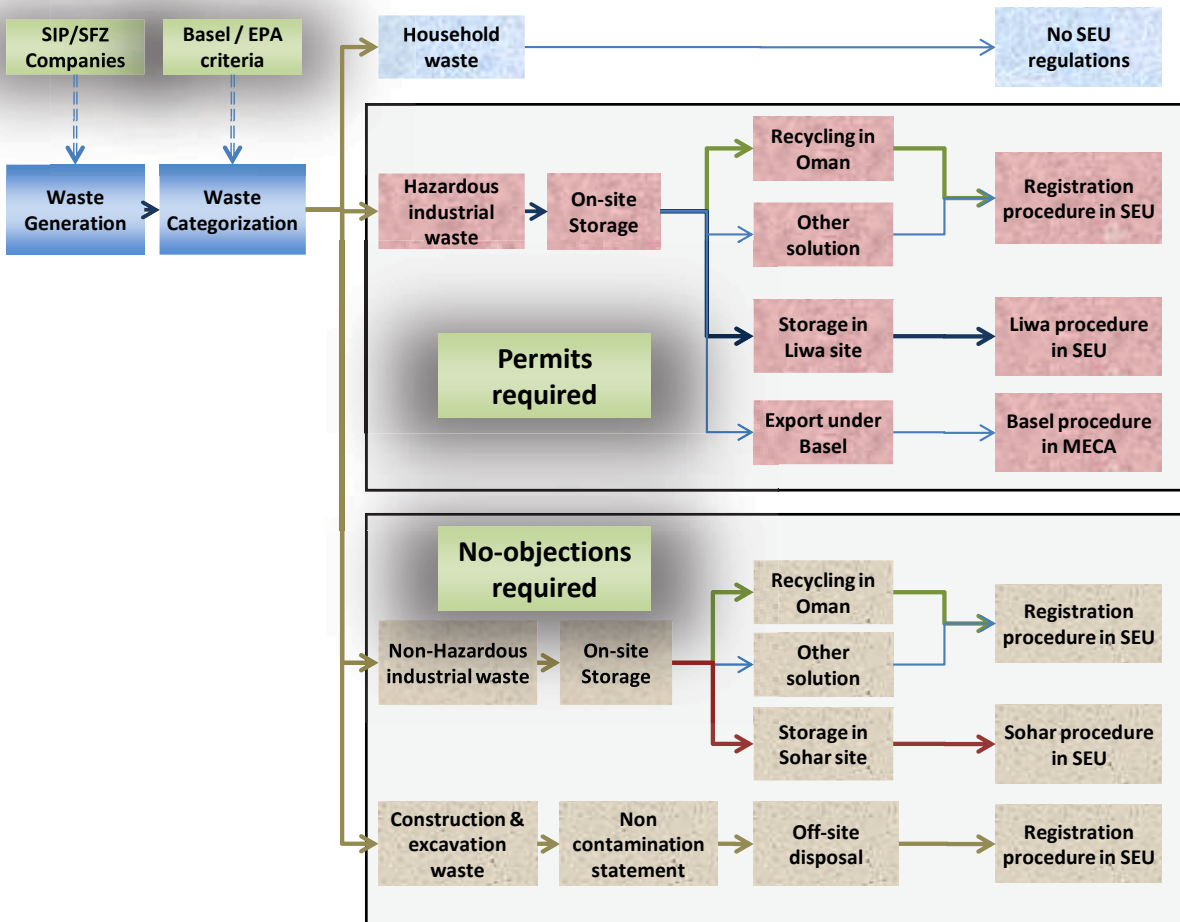
Responsibilities

SEU sees as responsible parties the Generators of the waste which are almost exclusively SIP/SFZ companies that possess an Environmental Permit. Service providers, subcontractors and transporters can only formally interact with SEU when they work on behalf of a SIP/SFZ company. SIP/SFZ companies will remain responsible as Generators for the waste stored in Liwa and for waste that is disposed illegally by subcontractors/transporters.

Transporters

Hazwaste transporters need the basic licenses from MECA, ROP etc to be registered. SEU will issue a NOL to transport consignments to the Liwa site if the framework licenses are present.

Sohar Industrial Port Waste Management Schedule



Related documents:

Guidance note: Non Hazardous Industrial waste storage @ Sohar
 Guidance note: Hazardous waste storage @ Liwa

REP-114-10-DJ
 REP-083-10-DJ

35. Guidance Note Environmental Review

Guidance Note

Environmental Review for Sohar Free Zone Companies

REP-131-10-DJ

April 2011

Definitions:

<i>EIA:</i>	Environmental Impact Assessment
<i>ER:</i>	Environmental Review
<i>EMP</i>	Environmental Management Plan
<i>SFZ:</i>	Sohar Free Zone
<i>NOL</i>	No objection letter
<i>IPPC</i>	Integrated Pollution Prevention and Control
<i>BAT</i>	Best Available Technique
<i>Bref</i>	BAT reference document
<i>ARWA</i>	Advanced Regulatory Wiki Application (produced by SEU)
<i>EMP</i>	Environmental Management Plan
<i>MECA</i>	Ministry of Environment and Climate Affairs
<i>SEU</i>	Sohar Environmental Unit

Background

The companies that will establish industrial activities in the Sohar Free Zone do need the environmental permits as per the requirements of the Ministry of Environment and Climate Affairs. The 'license to operate' is covered by the environmental permit. Depending on size and type of activity, companies are IPPC companies and/or EIA companies and/or Seveso II companies. IPPC companies do need to comply with the EU IPPC framework, Seveso II companies have to comply with the Seveso II Directive and EIA companies do need to submit an EIA.

For the SFZ an extensive framework EIA was made and a baseline on environmental impacts has been established. The availability of this baseline does relax the requirements for an EIA for individual companies that are established in the SFZ and an Environmental Review might be requested instead of an EIA.

More details on EIA, IPPC and Seveso II are provided in the Guidance Note EIA and the Guidance Note Safety.

SFZ Permit procedure

The environmental permit procedure for SFZ companies is as follows:

1. Company submits a request for a NOL to the SEU and provides basic administrative and technical information.
2. SEU will issue the NOL and clarifies if a company is and EIA and/or IPPC company. If so deemed necessary, SEU will advice on the topics and depth to be covered by the ER if substantial different from the generic requirements.
3. Company will request an Environmental Permit by submitting the green form and other documents (ER, EMP). The documentation submitted will be processed and results in a Preliminary Environmental Approval.
4. Company applies for a Final Environmental Permit and based on inspection results and compliance with requirements, the final permit will be issued.

Environmental Review framework for SFZ

The ER that is required for the environmental permit must cover (but not necessary limited to) the following issues:

<ul style="list-style-type: none"> • Process description (PFS) <ul style="list-style-type: none"> ○ basic process units ○ emission points ○ utilities ○ output 	<ul style="list-style-type: none"> • Environmental control equipment and instrumentation <ul style="list-style-type: none"> ○ Air filters, CEMS ○ Water treatment ○ Waste storage, hazwaste, non hazwaste generation ○ Noise reduction
<ul style="list-style-type: none"> • Usage of raw materials and process aids <ul style="list-style-type: none"> ○ On-site storage amounts ○ Controlled and not controlled chemicals amounts 	<ul style="list-style-type: none"> • Plant layout, process units, utilities, storage facilities of waste and chemicals, fence line, escape routes, access gates, hydrants etc
<ul style="list-style-type: none"> • Environmental Management Plan (as separate document) 	<ul style="list-style-type: none"> • Energy system <ul style="list-style-type: none"> ○ Type of energy supply and back-up ○ GTG's and boilers ○ LPG / diesel storage
<ul style="list-style-type: none"> • Air emissions, <ul style="list-style-type: none"> ○ flowrates ○ composition ○ temperature 	<ul style="list-style-type: none"> • Waste produced, type, tonnage, frequency
<ul style="list-style-type: none"> • Waste water management <ul style="list-style-type: none"> ○ Sewage disposal ○ Wastewater analysis and disposal ○ Water reuse systems 	<ul style="list-style-type: none"> • Noise emissions <ul style="list-style-type: none"> ○ Noise emissions and reduction
<ul style="list-style-type: none"> • Safety analysis <ul style="list-style-type: none"> ○ Maximum Credible Accident identification ○ Hazard analysis ○ Emergency response plan 	<ul style="list-style-type: none"> • Monitoring plan <ul style="list-style-type: none"> ○ Stack monitoring ○ Stack sampling, frequency and components) ○ Ambient monitoring

Estimating data

During plant design, the 'as is' environmental data are not available. Based on calculations, technical know-how and data from similar plants, a best guess can be made. These best guess estimates need to be replaced by actual data from measurements when the plant is operational.

Typical calculations can be used for energy conversion process and mass balances. Measurements can include usage of energy sources and raw materials/chemicals as well as stack sampling.

36. Guidance Note Industrial Safety

Guidance Note

Industrial safety for the Sohar Industrial Port and the Sohar Free Zone

REP-159-11-RMO
February 2011

Definitions:

<i>BAT</i>	Best Available Technique
<i>Dangerous substance</i>	a substance or mixture listed in Annex 1 of the Seveso II Directive and present as a raw material, product, by-product, residue or intermediate (including those substances of which it is plausible that they could be generated in the event of an accident). The technical definition of a dangerous substance is the (new) world wide used Globally Harmonized System of Classification and Labeling of Chemicals (GHS) (http://www.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html).
<i>EP</i>	Emergency Plan.
<i>ERP</i>	Emergency Response Planning.
<i>Hazard</i>	the intrinsic property of a dangerous substance or physical situation, with a potential for creating damage to human health or the environment.
<i>GHS</i>	Global Harmonization System
<i>Industrial safety</i>	Safety to prevent major accidents with hazardous substances.
<i>LOC</i>	Loss of Containment.
<i>LOD</i>	Line of Defense.
<i>MAPP</i>	Major Accident Prevention Policy.
<i>Major accident</i>	an occurrence such as a major emission, fire, or explosion resulting from uncontrolled developments, leading to serious danger to human health and/or the environment, immediate or delayed, inside or outside the establishment, and involving one or more dangerous substances.
<i>MCA</i>	Maximum Credible Accident.
<i>MECA</i>	Ministry of Environment and Climate Affairs.
<i>Risk</i>	the likelihood of a specific effect occurring within a specified period or in specified circumstances.
<i>SEU</i>	Sohar Environmental Unit.
<i>SMS</i>	Safety Management System.
<i>SIP</i>	Safety Improvement Plan

Legal framework

In Oman no legal framework is available for industrial safety. For this reason the Best Available Technique (BAT) of the EU is used: the Seveso II Directive.

Background

Handling dangerous substances could result in unwanted events with consequences for men and environment. The consequence depends on the amount and type of substance. Some substances are already in small quantities dangerous while others becomes more dangerous in larger quantities.

In the European Union, legislation is in force to protect men and environment from major accidents with dangerous substances. This legislation is named by the Italian city were a major accident occurred in 1976. At this moment experts are working on the third edition of the Seveso II Directive. The current directive covers all necessary elements for the prevention of a major accident.

There are two kinds of so called Seveso companies: lower tier and higher tier (also named tier 1 and tier 2). The difference is based on the amount of dangerous substances. The tier 2 companies must provide a *safety report* to demonstrate that the company controls the chance of a major accident and its potential consequences.

Seveso requirements

Companies must demonstrate to the authorities that they have implemented appropriate technical and organizational measures with the following characteristics:

- covering the various activities in the company.
- to prevent major accidents.
- limiting the consequences of major accidents on-site and off-site.
- all submitted reports must adequately reflect the actual conditions in the company.

In order to implement the Seveso II policy in SIP and SFZ, two phases are defined.

The initial phase must result in:

- a Major Accident Prevention Policy (MAPP).
- a Safety Management System (SMS) to implement the MAPP.
- a Hazard Identification and Risk Assessment study.
- an Emergency Response Plan (ERP).
- a list of the hazardous substances in the company (HSL).

The following phase must result in:

- a safety report (if so required) (SR).
- incident investigation report.

The Seveso II classification of companies and the related requirements, will be implemented in SIP and SFZ for existing and new companies.

New companies will be classified during the No Objection stage (together with classification for EIA and IPPC).

Existing companies that are classified as Seveso companies, need to comply with the requirements based on the SMS-gap study by the SEU. This process is ongoing for the SIP companies that are classified as Seveso companies.

Seveso classification for SIP and SFZ companies

A company is considered a 'Seveso company' when production or storage of dangerous substances exceeds the limits as listed in Annex I of the Seveso II directive. An extract for some common hazardous substances and a more generic list are included in the following tables.

Dangerous substances (extract)	Qualifying quantity (tonnes)	
	Tier 1	Tier 2
Ammonium nitrate	350	2500
Bromine	20	100
Chlorine	10	25

Nickel compounds in inhalable powder form (nickel monoxide, nickel dioxide, nickel sulphide,	-	1
Fluorine	10	20
Formaldehyde (concentration > 90 %)	5	50
Hydrogen	5	50
Hydrogen chloride (liquefied gas)	25	250
Liquefied extremely flammable gases (including LPG) and natural gas	50	200
Acetylene	5	50
Methanol	500	5000
Methylisocyanate	-	0,15
Oxygen	200	2000
Toluene diisocyanate	10	100
Sulphur trioxide	15	75
Automotive petrol and other petroleum spirits	5000	50000

Categories of dangerous substances	Qualifying quantity (tonnes)	
	Tier 1	Tier 2
1. VERY TOXIC	5	20
2. TOXIC	50	200
3. OXIDIZING	50	200
4. EXPLOSIVE	50	200
5. EXPLOSIVE	10	50
6. FLAMMABLE	5000	50000
7 a. HIGHLY FLAMMABLE	50	200
7 b. HIGHLY FLAMMABLE	5000	50000
8. EXTREMELY FLAMMABLE	10	50
9. DANGEROUS FOR THE ENVIRONMENT in combination with risk phrases:	.	.
(i) R50: 'Very toxic to aquatic organisms'	200	500
(ii) R51: 'Toxic to aquatic organisms'; and R53: 'May cause long term adverse effects in the aquatic environment'	500	2000
10. ANY CLASSIFICATION not covered by those given above in combination with risk phrases:	.	.
(i) R14: 'Reacts violently with water' (including R14/15)	100	500
(ii) R29: 'in contact with water, liberates toxic gas'	50	200

Please note that the full text of the Directive should be consulted when a classification is made.

Safety Action Plan (SAP)

The Safety Action Plan of the SEU is aimed at the introduction of methods for safety management that are standardized and verifiable and are based on the Seveso II Directive.

The 2011 elements of the SAP are:

- conduct SMS-gap studies for existing SIP companies (implemented).
- conduct a safety workshop (implemented).
- organize a Safety Master Class.
- Issue a Guidance Note.
- Request a Safety Improvement Plan (SIP) for port companies.

Major Accident Prevention Policy (MAPP)

The company policy for prevention of major-accidents has the following main characteristics:

- proportionate to the major-accident hazards.
- includes the operator's overall aims and principles of action and the role and responsibility of management.
- addresses the safety culture with respect to the prevention of major-accidents.

The MAPP includes:

- a definition of the companies' own acceptable level of risk.
- tables for likelihood and severity, including a risk matrix.

The MAPP is signed by the CEO of the company to express his approval and to provide all necessary resources for the prevention of major accidents.

The MAPP is yearly reviewed and updated.

Safety Management System (SMS)

For implementing the MAPP a SMS must be implemented. The SMS has the following characteristics:

- Proportionate to the hazards, industrial activities and complexity of the organization.
- Based on the assessment of the risks.
- Is part of the general management system.
- Defines the organizational structure, responsibilities, practices, procedures, processes and resources.
- Procedures and working instruction shall be suitable, documented and implemented.

Suitable: technical, organizational and procedural components are state of the art science and are appropriate for the situation encountered.

documented: there is a proper and complete description:
 - reliable and solid: bright, clear, legible and current;
 - complete: all relevant aspects have been appointed.

implemented: the company works as described. There is a well-functioning management course, improvement activities in all components are structurally and inextricably linked to the business.

A useful tool for the SMS is the NTA 8620. This document is available in the SEU and is on request sent by email.

Hazard Identification and Risk Assessment (HIRA)

The identification and evaluation of major hazards is one of the elements of a SMS. The definition is: *'adoption and implementation of procedures for systematically identifying major hazards arising from normal and abnormal operation and the assessment of their likelihood and severity'*. The identification and evaluation should include:

- A detailed description of the possible major-accident scenarios and their probability or the conditions under which they occur including a summary of the events which may play a role in triggering each of these scenarios, the causes being internal or external to the installation; including in particular
 - operational hazard sources;
 - external risks and hazard sources, from domino effects and from other sites, areas and developments that could increase the risk or consequences of a major accident;
 - environmental risks and hazard sources, for example earthquakes or floods;
- Assessment of the extent and severity of the consequences of identified major accidents including maps, images or, as appropriate, equivalent descriptions, showing areas which are liable to be affected by such accidents arising from the establishment;
- A review of past accidents and incidents with the same substances and processes used, consideration of lessons learned from these, and explicit reference to specific measures taken to prevent such accidents;
- A description of technical parameters and equipment used for the safety of installations.

All the taken measures must be presented in scenario's. Purpose of the scenarios is to clarify what measures are taken to prevent major accidents or reduce the impact. Based on the risk assessment a Maximum Credible Accident (MCA) scenario can be identified.

Emergency Response Plan (ERP)

The ERP of a company must be based on a Maximum Credible Accident (MCA) scenario.

Emergency plans have the following objectives:

- containing and controlling incidents (so as to minimize the effects, and to limit damage to human health, the environment and property).
- implementing the measures necessary to protect human health and the environment from the effects of major accidents.
- communicating the necessary information to the public and to the services or authorities concerned providing for the restoration and clean-up of the environment following a major accident.

Emergency plans must be practiced at least 2 times in one year and one of the exercises is with the SIPC. Every exercise must be based on a realistic scenario, must be evaluated.

Hazardous Substance List (HSL)

An up-to-date list with all hazardous substances must be present at the company to ensure that emergency services have direct access to at least the following current information within an installation of the hazardous substance:

- the chemical name (CAS) or trade name;
- the maximum quantity present and in which facility (installation or storage tank, including a map)
- UN number
- the GHS category

Information sources

Information is also available of consultants, experts and on websites (<http://ec.europa.eu/environment/seveso/index.htm>) particularly of the Major Accident Hazardous Bureau of the EU. Other information could also be very useful for example The U.S. Chemical Safety Board (<http://www.csb.gov/>) and The Health and Safety Executive (<http://www.hse.gov.uk/comah/>) in the United Kingdom.

It is recommended also to search for information for the type of industry of the company.

Annex I gives some more details of the SMS.

A.0 Introduction

The intention of this NTA is to indicate how the legal requirements for the SMS can be complied with by the introduction or revision of a management system based on the plan-do-check-act cycle. For this reason the legal requirements from BRZO '99 (BRZO '99 is the condensation of the European Seveso II Directive into the Dutch legislative system) form an integral part of the requirements for the SMS described in the main text of this NTA.

In these annex guidelines and examples are given for the application of the requirements. How far these guidelines and examples actually apply for a specific company depends on the risks present there. Some of these guidelines are derived from legal requirements from BRZO'99 and the Regulations on Major Accident Risks 1999 (RRZO'99) that apply for the implementation of parts of the safety management system. Those guidelines are of a normative nature for users who with the application of this NTA wish to comply with all their legal obligations relating to the SMS and the interpretation of parts thereof. In connection with this

A.1 General requirements

Clause 4.1 states that a safety management system shall comply with all the requirements described in Clause 4 of this NTA. Many of these requirements will already be implemented within the organization's overall management system or via specific systems introduced for example for environmental, OH&S or quality management. In those cases the organization may choose to use those system elements already present and ensure that they are also suitable for application for the management of major accident risks. This is in line with the first requirement relating to safety management systems from BRZO'99, in accordance with which the organization shall state how parts of the overall management system are used to carry out the policy to prevent major accidents.

A.2 Policy to prevent major accidents

The principles of the policy should emphasize the importance of:

- the prevention of major accidents;
- ensuring the safety and protection of the health of employees and the public;
- protecting the quality of the environment.

The description of the policy in the Major Action Prevention Policy document (so-called PBZO-document) should in any case contain the following:

a declaration signed by the top management of the organization in which the overall objectives and principles of the policy to prevent major accidents are set out, showing the commitment with regard to implementation of the policy and clarifying who is responsible for the prevention policy;

a general description of the nature and extent of the risks of major accidents;

the criteria or principles applied in assessing the risks of major accidents, where a distinction shall be made between internal OH&S risks and external risks for man and environment. These criteria or principles should take into account both the probability and the consequences of major accidents. Consequences may relate to damage to installations, injuries, deaths, social disruption, environmental damage. Probabilities may be indicated in general terms a few times per year, once per year. One possible way of relating probabilities and consequences with one another is the so-called risk matrix where for each probability/consequence combination it can be indicated how the organization evaluates the relevant risk (see the example below);

a description of the way in which the policy is implemented within the organization:

what the underlying principles of the safety management system are, such that an idea is given of the relationship between the policy and the safety management system;

the principles and criteria for selecting preventive, protective and repressive measures, such that an idea is given of the relationship between the measures taken and the risks of major accidents.

Example – Criteria for the assessment of risks of major accidents using a risk matrix

A risk matrix consists of two axes. Along one axis the probabilities of major accidents are shown and along the other axis the severity of the consequences. In both cases the organization shall choose a (qualitative) classification. A sub-classification into 5 levels is often chosen. Tables A.1 and A.2 give examples of the classification of probabilities and consequences.

Table A.1 Possible classifications for the probability of a (major) accident

Example 1	Example 2	
<ul style="list-style-type: none"> - very low (very improbable) - low (not probable but possible) - average (rarely occurs) - high (occurs from time to time) - very high (occurs with some regularity) 	<ul style="list-style-type: none"> - never heard of in our industry sector - heard of in our industry sector - has occurred in our company - occurs a few times per year in our company - occurs a few times per year on our site 	

Table A.2 Possible classifications for the severity of the consequences of a (major) accident

Example 1 (combined 'man and 'environment')	Example 2 ('people')	Example 3
<ul style="list-style-type: none"> - negligible - slight - considerable - great - very great 	<ul style="list-style-type: none"> - no injury or damage to health - slight injury or damage to health - severe injury - deadly injury 	<ul style="list-style-type: none"> - slight - considerable - serious - very serious - catastrophic

These classifications provide a matrix with a number of cells in which each cell contains a combination of a certain probability of a major accident and the severity of its consequences. In the matrix the company can indicate for each cell how the risk in this cell is evaluated and what consequences are associated with it. Possible classifications are indicated in table A.3

Table A.3 Possible classification of risks of (major) accidents

Example 1	Example 2	Example 3
<ul style="list-style-type: none"> - very high risk; risk-reducing action is necessary - high risk; ALARA (As Low As Reasonably Achievable) should be applied - tolerable risk; no further action necessary 	<ul style="list-style-type: none"> - high risk; unacceptable; alternatives should be examined - risk; implement risk reducing action and then apply ALARP (As Low As Reasonably Practicable) - tolerable risk; continually improve performance 	<ul style="list-style-type: none"> - intolerable; direct action required - serious risk; urgent action desired (< 3 months) - moderate risk; plan action (within 1 year) - limited risk; action depending on costs/benefits - tolerable risk; no adjustment required

The result is for example a matrix as given in Table A.4 or Table A.5

Table A.4 Example of a risk matrix

	Very improbable	Not probable	Rarely occurring	From time to time	Fairly regularly
No effect					
Negligible effect					
Slight effect					

Considerable effect					
Great effect					
Very great effect					

Table A.5 Example of a risk matrix

	Very improbable	Not probable	Rarely occurring	From time to time	Fairly regularly
No effect					
Negligible effect					
Slight effect					
Considerable effect					
Great effect					
Very great effect					

NOTE to Table A.4 and A.5

grey: Tolerable risk

white: High risk (application of ALARA)

black: Very high (unacceptable) risk, risk-reducing action is necessary

A.3 Planning

A.3.1 Identification of hazards and risk assessment

The figures below indicate which aspects of managing risks of major accidents are covered by the various parts of the NTA.

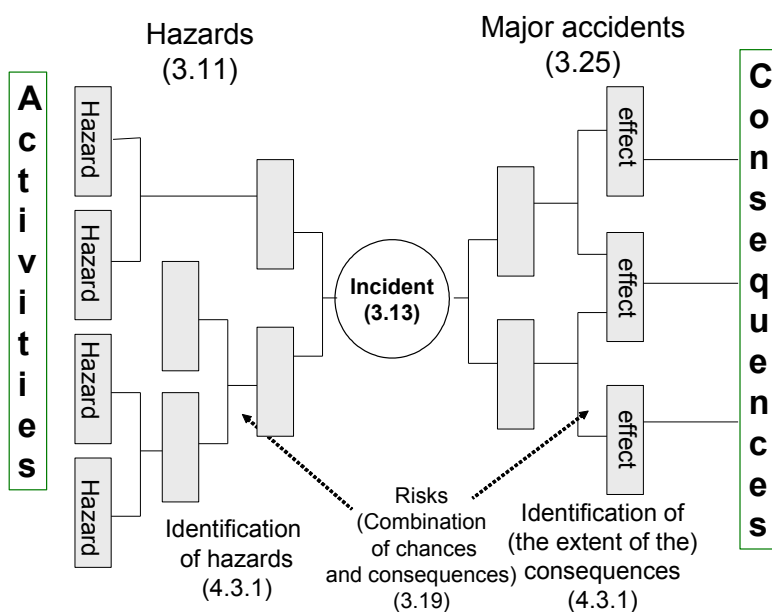


Figure A.1 - Bow-tie model for approaching risk

Figure A.1 shows how certain terms relating to major accident risks are related to one another. The activities (production, storage, transport) of an organization are associated with all sorts of hazards that may lead to an incident (loss of containment) with the consequence of the release of hazardous substances) which may possibly have serious consequences for man and the environment. When assessing risks the combination of the probability of an incident occurring as a result of hazards becoming manifest, and the extent of the possible consequences of this are looked at.

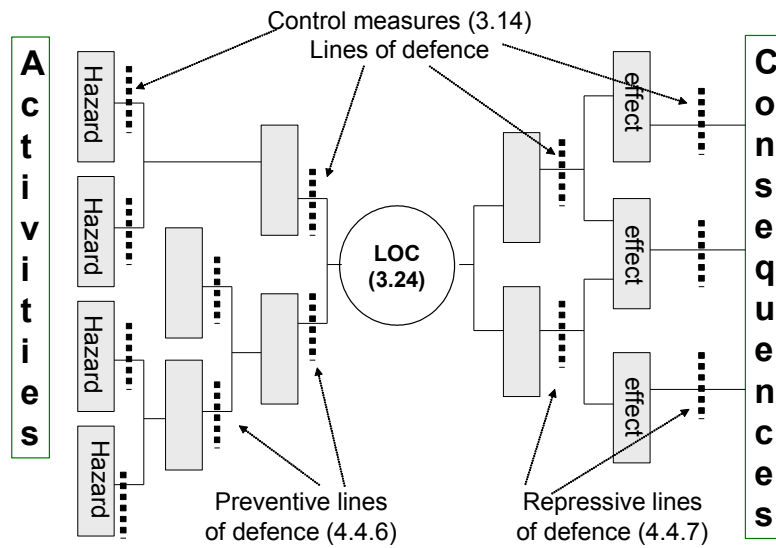


Figure A.2 – Bow-tie model for risk management

Figure A.2 shows where the different points of application are for managing and minimizing risks. An organization will take technical and organisational measures (lines of defence) to prevent incidents (potential or actual loss of containment), the so-called preventive measures. In this NTA, that comes under the 'operational control' (4.4.6). An organization will also take technical and organisational measures as far as possible to mitigate the consequences of an incident, in which dangerous substances are actually released (an emergency situation), so-called repressive measures. In this NTA, that comes under 'major accident preparedness and response' (4.4.7).

In the risk assessment in 4.3.1 when determining the probability and consequences of major accidents, the present preventive and repressive technical control measures (lines of defence) are taken into account. Based on the results of this assessment an organization will establish which risks can or must be further reduced. For this the organization establishes objectives (4.3.3) and a programme to develop and introduce either additional preventive or additional repressive control measures (lines of defence). The organisational measures that are necessary to carry out the operations such that processes are controlled and implemented technical Control measures function effectively are part of 4.4.6. The emergency plans in accordance with 4.4.7 are included in the organisational measure for optimal operation of the repressive (mitigating) technical control measures.

The procedures for identifying hazards and assessing risks should include the following:

- methods for the systematic identification of scenarios that may result in major accidents (for this the accident history should be used (case history)) ;
- criteria for the application of these methods (safety studies such as HAZOP, fault tree analysis, FMEA, process safety analysis, QRA) for the different phases in the life cycle of installations (design/change, construction, normal operation (including commissioning and shutdown) and maintenance (during normal operation and during so-called 'stops'));
- the criteria for applying these methods (when, for what situations);
- identification of the hazards that may lead to so-called Loss of Containment (LOC) and under what conditions these hazards manifest themselves; a check shall be made here as to whether the following direct causes possibly play a part in the unintentional release of hazardous substances: corrosion, erosion, impact, external load, vibration, high/low pressure, high/low temperature and human error
- methods to determine the probability of a certain LOC and determination of its consequences

the criteria or principles (that are also included in the prevention policy) to assess the risks (based on probabilities and effects) on the basis of which priorities can be set and preventive, protective and repressive (mitigating) measures can be selected;

documentation of the results of the safety studies used;

the organisational requirements laid down for carrying out safety studies (team composition; expertise);

the evaluation of the effectiveness of preventive, protective and repressive (mitigating) control measures (lines of defence);

the way in which future actions on studies and recommendations should be given.

the way in which results of analyses of near-misses lead to and are taken into account in revised identification of hazards and assessment of risks.

Sohar Environmental Unit



37. Guidance Note Handling Turtles

Guidance Note

Handling Turtles in Sohar Industrial Port

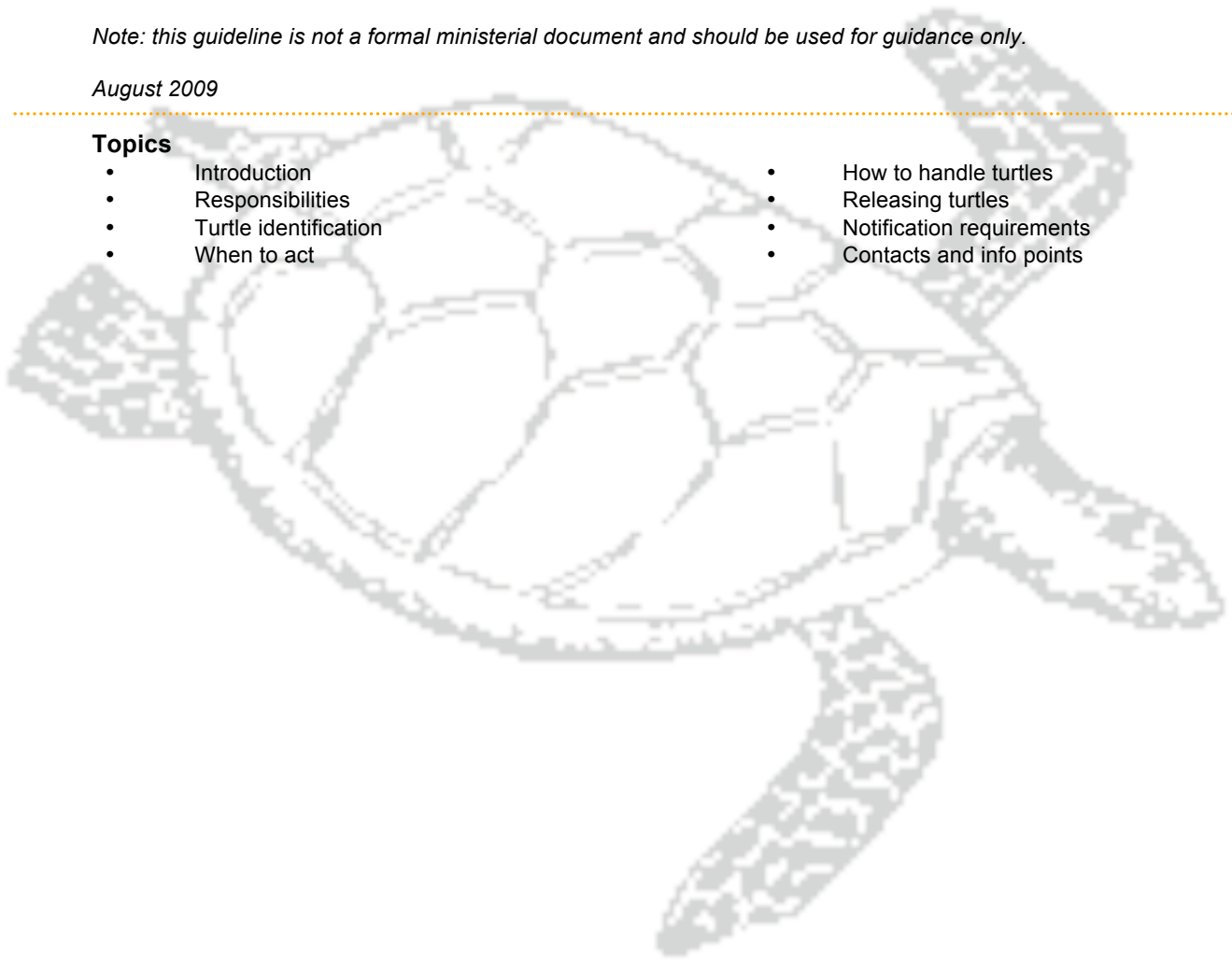
Practical Guideline on how to act in case a turtle is spotted in areas with industrial activities that on short term endangers the individual turtle.

Note: this guideline is not a formal ministerial document and should be used for guidance only.

August 2009

Topics

- Introduction
- Responsibilities
- Turtle identification
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Introduction

Today sea turtle populations around the world have become severely depleted. Saving the turtles is no easy task. Their habitat requirements range from undisturbed nesting beaches to feeding grounds such as sea grass beds, coral reefs, soft-bottom habitats and open ocean environments, where Leatherback turtles follow oceanic currents in search of jellyfish, and other seaturtle species also follow these currents in their migration routes between nesting and feeding grounds.

In the Sohar Industrial Port Area (SIPA), the industrial activities might result in a situation where there are immediate dangers for seaturtle, either by isolation in the harbor, damage by ships (collision, propellers), dredging works or jetty construction works.

Since turtles are endangered species, on sighting these individuals, anyone conducting works offshore must consider taking adequate action.

Common sense is the best advice in addition to compliance with certain regulations, and a sense responsibility.

Regulations

No seaturtle (including seaturtle carcasses) may be consumed or sold, regardless of its condition. A turtle that is caught during any operations may be landed, offloaded, transshipped or kept below the deck.

Such actions have several obvious benefits, including:

- Conserving endangered species
- Raising environmental awareness and credibility within the offshore industry.

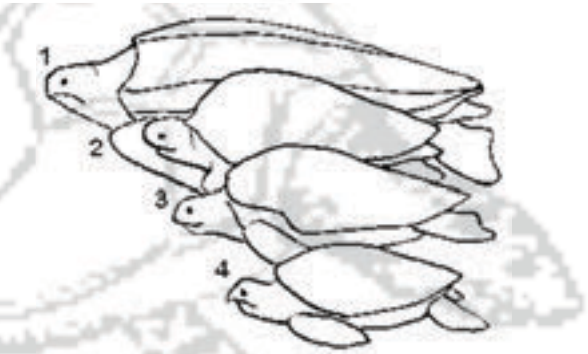
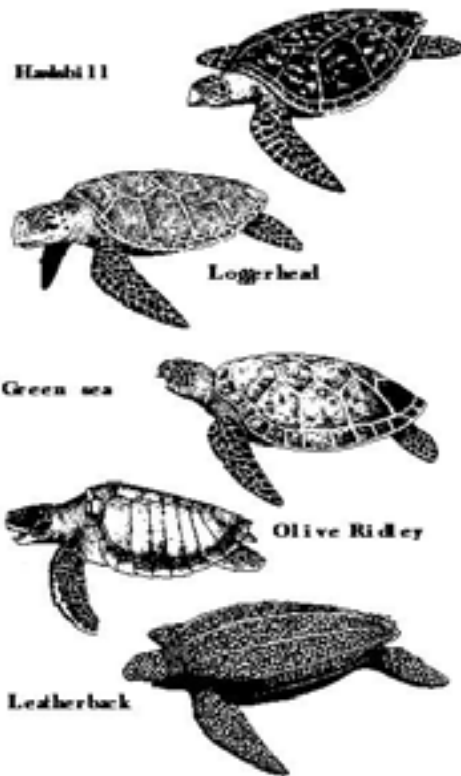
Responsibilities

The skipper of a vessel, especially the locally operating vessels like tug-boats, dredging ships should instruct his staff on procedures and their first responsible on-board.

For sightings (from the water or from land) that require actions inside the harbor area, the harbor authorities are to be notified. The harbor authorities are responsible and must assess the need for action.

Turtle Identification

Seaturtles observed in Omani waters are: Hawksbill; Loggerhead; Green; Olive Ridley; and Leatherback.



1. Leatherback *Dermochelys coreacea*
2. Loggerhead *Caretta caretta*
3. Green *Chelonia mydas*
4. Hawksbill *Eretmochelys imbricata*
5. Olive Ridley *Lepidochelys olivacea*

When to act

Main approach: Action is required when turtle needs care (e.g. when injured or entangled in net) or when there is eminent danger for the seaturtle (in harbor and not able to reach open sea, near dredging or near shore construction works).

How to handle turtles

If a seaturtle is hooked, owners and operators of longliners must use the required mitigation gear. Any hooked or entangled sea turtle must be handled in a manner that minimizes injury and promotes survival.

Sea turtles that cannot be brought aboard the vessel: In instances where a turtle is too large to be brought aboard, or the turtle cannot be brought aboard without causing further injury to the individual, the vessel owner or operator must disentangle and remove the gear, or cut the line as close as possible to the hook or entanglement to remove the maximum amount of the gear from the turtle, in order to ensure the turtle survival.

Seaturtles that can be brought aboard the vessel: In instances where a sea turtle is not too large (and therefore too heavy to handle) to be brought aboard, or the sea turtle can be brought aboard without causing further injury to the turtle, the vessel owner or operator must do the following:

- Immediately bring the sea turtle aboard;
- Disentangle and remove the gear, or cut the line as close as possible to the hook or entanglement, to remove the maximum amount of the gear from the turtle (avoiding removal of flippers, as bleeding would attract sharks);
- Resuscitate and release the sea turtle under the following regulations

Resuscitating turtles

If a sea turtle appears dead or in comatose, the following actions must be taken:

- Place the turtle on its belly so that its hindquarters are elevated at least 6 in from the ground for a period of no less than 4 hr and no more than 24 hr;
- Administer a reflex test at least once every 3 hr. This test is performed by gently touching the eye and/or pinching the tail of the turtle in order to determine if it is responsive; and/or
- Reanimate the seaturtle with cool water or wet sand.

Two basic categories of actions exists:

- 1: Free the animal from alien objects (hooks, nets) followed by release
- 2: Relocate the animal and release

The steps are as follows:

- Step 1 At sighting, assess the situation and conclude to take action or not to take action
- Step 2: Identify species
- Step 3: Check for obvious injuries
- Step 4: Consider relocation
- Step 5: Lift turtle on board with suitable materials
- Step 6: Release on suitable place
- Step 7: Report to authorities

During any transport keep turtle on its belly, as remaining long time on its back makes breathing difficult.

High freeboards of ships make it impossible to get a turtle on-board and assistance of smaller boats is required.

Releasing turtles

After handling a seaturtle in accordance with the requirements, the turtle must be returned to the ocean after identification. In releasing a turtle to the ocean the vessel owner or operator must:

- Place the vessel engine in neutral gear so that the propeller is disengaged and the vessel is stopped. Release the turtle away from deployed gear; and
- Observe that the turtle is safely away from the vessel before engaging the propeller and continuing operations.

Notification requirements

When a turtle is sighted and action is required, the harbor authorities have to be informed directly.

The SEU must be informed with a short notification that contains the following information: Date, time, contact details, actions taken, identified species, condition turtle, GPS coordinates, photo of the individual seaturtle (if possible: full body, head, tail).

Information

Contacts and notification points

Sohar Port Control: +968 26852777

SEU: meca.seu@gmail.com

MECA Natural Conservation:

Ali Al Rasbi 99346784

Ahmed Al Shukely 24404753

Oman turtles:

Ras Al Jinz Scientific and Visitor Centre:

<http://www.rasaljinz.org>;

environment@rasaljinz.org

Educational:

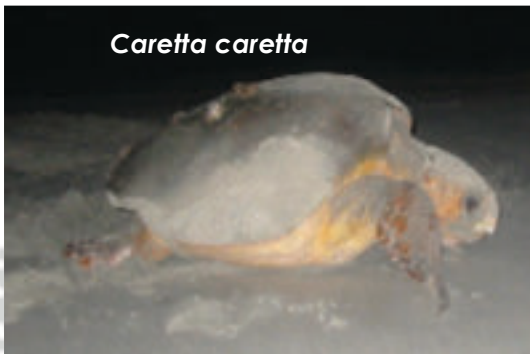
<http://www.ioseaturtles.org/>

<http://www.starfish.ch/reef/marine-turtles>

<http://www.nizwa.net/env/turtles/turtles.html>

and

SEATURTLE IDENTIFICATION KEY FOR THE NW INDIAN OCEAN



38. Guidance Note Metal Scrap

Guidance Note

Metal scrap quality management

REP-363-13-WP

version 1.0 May 2013

Purpose	Objective
<p>To regulate steel scrap import from the international market by vessel in the Sohar Industrial Port Area.</p> <p>To give guidance to the unloader and operator of scrap in order to comply with Omani regulations on import, handling and processing metal scrap.</p>	<p>Proper scrap quality management and emergency response is needed in order to prevent importing and processing of hazardous scrap with explosives, radio activity or other contaminations.</p>

This Guidance Note contains: I background information, II requirements, III permits and approvals, IV conditions and V technical documentation.

I Background

Steel scrap is processed in Electric Arc Furnaces for the production of recycled steel. The metal scrap supply in Oman and UAE market is not sufficient for the capacity in the Port area. Importing scrap by vessel from the international market is necessary. International metal scrap is classified, quality controlled and certified. Apart from the fact that scrap metal dealers themselves do not like to encounter radioactivity or explosives in their scrap, the receiver has to examine the incoming shipments and verify its quality. Although the chance is very small (on a world scale incidents occur only a few times a year) all parties: supplier, receiver and government should be prepared how to deal with contamination incidents situation because of the severe implications of contamination.

The **quality assurance process** starts at the International/European¹⁾ supplier and ends when the metal scrap is stored in the scrap yard of the operator:

Party	Quality control	Documents	Inspection authority
Generator/ supplier	Issuance of certificate by an accredited institute	Certificates	MECA/SEU
Transporter/ shipper	Control load and documents	Vessel documents	Customs
Unloader/ Shipper ²⁾	<ul style="list-style-type: none"> Control documents Visual control scrap grade and contaminations Radiation measurement in grab 	<ul style="list-style-type: none"> Standard Operation Procedure (SOP) Emergency Response Plan (ERP) 	<ul style="list-style-type: none"> Customs, MECA/SEU MECA/SEU, ROP/CD, SIPC
Operator ³⁾	<ul style="list-style-type: none"> Radiation measurement trucks at scrap yard 	<ul style="list-style-type: none"> Standard Operation Procedure (SOP) Emergency Response Plan (ERP) 	<ul style="list-style-type: none"> MECA/SEU MECA/SEU, ROP/CD, SIPC

¹⁾ Attached in annex for information: European and International steel scrap specification.

²⁾ Unloader/shipper: the company who unloads the vessel into trucks for transport to the operator.

³⁾ Operator: the company who owns/purchased the scrap and processes the scrap in a Melt Shop.

Related SEU Guidance Notes, SIPC procedures and MECA conditions.

- SEU issued a guidance note for incident reporting (REP-331-13-WP, March 2013).

- SIPC issued a Procedure Scrap and Radioactivity, which requires a Contingency Plan from the scrap importing party.
- MECA issued Environmental control conditions on the import of scrap metals.

II Requirements for metal scrap handling by SIP companies:

General

- Contamination of scrap is defined as per 'IV Conditions #4'.
- The metal scrap must be free of any contamination and must be certified.
- The operator/purchaser is responsible for the prevention of importing contaminated scrap and responsible for remediating the impact of contaminated scrap.
- The scrap must be shredded to a size that allows identification of contamination.
- On the specification and grade of the scrap a certificate must be issued by an accredited institute (a reputable international agent) that is approved by MECA/SEU.
- The operator/purchaser must have a MECA/SEU approved Environmental Management Plan (EMP) that includes a Scrap Management Plan and an Emergency Response Plan (ERP).
- All staff members shall be informed, provided with relevant written operating instructions, suitable trained in environmental controls and requirements of their role on site.

Handling and shipments

- The shipment load must be sealed and secured, to assure that during transport no contamination occurs.
- The company must have an MECA/SEU approved Standard Operation Procedure (SOP).
- The shipment scrap must be transported by truck to the scrap yard at the operator.

Inspection

- The companies are fully responsible for all inspections on possible contaminations.
- Customs approve the vessel documents and secured load together with MECA/SEU.
- After approval by Customs and MECA/SEU the unloader can start handling the metal scrap.

Radiation measurement

- If scrap is delivered by vessel the detection should be done in the grab ('orange peel grab').
- The truck radiation inspection is carried out using gate monitors. The truck drives slowly (less than 10 km/h) through a corridor equipped with detectors.
- Radiation measurement should not exceed 10 microSv/h over background level.
- For alarm and response different levels can be used:
 - Level 1 = 0 to 10 microSv/h over background level.
 - Level 2 = 10 to 20 microSv/h over background level.
 - Level 3 = > 20 microSv/h over background level.

Non conformities

- If radioactivity is detected and the alarm goes off or in case of visually identified non-conformity, the Emergency Response Procedure is activated by the company.
- In case of contaminated scrap or unknown load, Customs, in corporation with MECA/SEU, will issue a certificate for sending the vessel back.

III Permits and approvals

Before start operations the following approved documents must be available.

A. Permits, licenses and No Objection Letters by competent authorities.

- The operator/purchaser must have a valid:
 - Environmental permit to process the metal Scrap issued by MECA. Renewal differs from every year to every 2 years.

- No Objection Letter (an exemption) on importing metal scrap (waste) issued by MECA. Validity directly related to the environmental permit.
- License for importing scrap for process use (as raw materials) by Ministry of Commerce and Industry. Renewal every 5 years.
- The unloader must have a valid No Objection letter to unload the metal scrap issued by MECA/SEU, with a validity directly related to the environmental permit.

B. Approvals by permit correspondence issued by MECA/SEU

The companies have to send for approval to MECA/SEU the following documents:

1. Environmental Management Plan (EMP) including a Scrap Management Plan.
2. A Scrap Management Plan with the following.
 - Standard Operation Procedure (SOP) for scrap handling.
 - Plan for training, instruction and qualifications of staff.
 - Acceptance criteria (specifications and grades) of metal scrap by the purchaser/operator.
 - Registration system.
 - Measurement instruments for radioactivity that complies with international standards.
 - Specifications of the measurement facility/gate monitor and grab ('orange peel grab').
 - Maintenance and yearly calibration of instrumentation by an approved party.
 - Emergency Response Plan (ERP) (or contingency plan) for contaminated scrap with the following content:
 - What to do (flow chart / process)
 - Role and responsibilities of involved parties (SIP, ROP/Civil Defence, Customs, MECA/SEU)
 - Who to inform (Incident Notification within 15 minutes: Tel. 9777 0772 SEU)
 - Safe storage facility for temporary storage of quarantined hazardous scrap at the scrap backyard.

SEU will send an Approval or No Objection Letter.

IV Conditions

MECA will issue the following conditions on the importing of metal scrap in the SIP area:

- 1 Scrap in this context is classified as any ferrous and non-ferrous metal waste resulting from the manufacture or mechanical working of metals and metal goods not usable as such because of breakage, cutting-up, wear or other reasons, including off cuts and those that are surface treated or coated.
- 2 These conditions are issued by the Ministry of Environment and Climate Affairs (MECA) supplementary to the Regulations for Solid Waste Management and shall be applicable to all quantities of scrap imports to Oman. In any event, these conditions shall not negate or alter any obligation or requirement of compliance with, or application of, any of Oman's Environmental Laws and Regulations.
- 3 All scrap shall be shredded to reasonable size and/or pierced and ensured that it is free from any banned material and uncut scrap whose pieces cannot readily be inspected will not be allowed in any circumstances whatsoever
- 4 Import of any radioactive contaminated scrap or radioactive material mixed with the scrap is prohibited. Omani legislation defines radioactive material as any material having a radioactivity level greater than 100 Becquerel per gram. The scrap shall be totally free from any materials with a potential health, safety and environmental risk, explosives or radioactive material, such as and not limited to the following:
 - Any asbestos, oil and related products.
 - Any type of ammunition, explosives or their cartridges or containers.
 - Uncut gas cylinders or compressed or flammable liquid containers.
 - Any flammable or explosive chemicals or materials.
 - Any radioactive contaminated material.
- 5 All scrap consignments shall be free from any residues of any type of hazardous waste of any category in Annex (1) of the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal.

- 6 A certificate shall be issued by a reputable international agent, approved by MECA/SEU, in respect of any consignment of scrap. It shall certify compliance with the aforementioned conditions before shipment from the exporting State. The consignment under consideration shall be fully equipped (sealed and secured) so as to ensure not being opened or tampered with until it reaches the entry points in the Sultanate.
- 7 Import of scrap from known war zones is prohibited. The certificate mentioned (in 6) above shall include the quantity of scrap, the source and country of origin, the type and nature of the scrap in the consignment under consideration in addition to the results of all tests to ensure its compliance with the set specifications.
- 8 When entering through one of the Sultanate's entry points in the Sohar Industrial Port, the vessel and scrap shall be checked, initially in the presence of Customs and (if so deemed necessary) MECA/SEU authorized staff, to ensure it is free from any contaminants and is in compliance with the applicable conditions.
- 9a In case of truck loads: The operating company shall provide, install, operate and maintain radiation detection screens / sensors at suitably approved location so as to automatically screen the scrap consignment in passing. Scrap shall not be discharged until full and satisfactory screening is completed.
- 9b In case of vessel shipment: The operator (and/or unloader) shall measure the radioactivity of scrap in the grab. In case of alarm: No material shall put on shore and the grab shall remain in the vessel for further investigations and transport activities shall be stopped and the Emergency Response Plan shall be initiated. All discharged (available) scrap shall be rechecked. All contaminated scrap at the jetty shall be returned into the vessel.
- 10 In the event of non-compliant scrap or material reaching Oman, the operator shall be fully responsible and shall implement action, within 24 hours, to ensure the removal of such scrap or material which in any event shall not be allowed to remain in Oman.
- 11 The operator shall be liable and responsible for all remediation and costs in the event of any damage to the environment or public health resulting from handling the scrap.
- 12 MECA/SEU shall have the right to stop importation of scrap at any time in case of not complying with the specified conditions or whenever it deemed necessary for the public interest.
- 13 The operator (and unloader) shall develop and submit an Emergency Response Plan (ERP) for Approval by MECA/SEU and the ROP. The ERP shall be in place before any shipments are allowed. The ERP shall cater for all procedures and facilities in case that contaminated scrap is found. Elements of the ERP shall include, but not be limited to: containment, removal, transport, re-export and safe treatment and disposal, financial arrangements for aftermath, security bank guarantee and so forth.
- 14 All quality control documents, certificates, notification documents, inspection certificates and shall have copies formally submitted two weeks before the concerned shipment arrives in Oman to MECA/SEU. Immediately after the release the "vessel" documents must be submitted to Customs.

V Technical background information

The following technical information on scrap specifications and grades on which certificates can be issued are attached:

- European steel scrap specification
- Scrap specifications circular 2013 (International guidelines for Ferrous Scrap)

39. Guidance Note General Environmental Requirements

Guidance Note

General Environmental Requirements

REP-367-13-WP

version May 2013

Purpose	Objective
General and generic environmental requirements valid for all companies within the Sohar Industrial Port and Free Zone. MECA/SEU will use the latest version of the Guidance Notes in its work.	To make clear to companies which generic environmental requirements must be met. To enable MECA/SEU to focus on the key environmental requirements for the companies.

I Background

The Royal Decree RD114/2001 “Law on Conservation of the Environment and Prevention of Pollution” is the legal framework in Oman which includes important principals on how to deal with environmental issues. These principals are similar with the European IPPC approach.

A legal framework is not enough, for daily practice the law must still be elaborated in guidelines or directives. There are some Ministerial Decisions but, in general, legislation with directives and guidelines in Oman are not sufficiently developed to cover all environmental issues of industrial activities. To fill this gap MECA/SEU issues Guidance Notes that are applicable in the Sohar industrial areas. The Guidance Notes are based on legislation, guidelines and common international practice (mostly from Europe and USA).

The Guidance Note ‘General Environmental Requirements’ is considered as a regulatory document that provides generic requirements. MECA/SEU uses the Guidance Notes as guidelines for interpreting the regulations for specific environmental situations and compartments. MECA/SEU will inform companies on new or updated Guidance Notes.

II SEU Guidance Notes for the Sohar Industrial Port and the Free Zone

- REP-083-10-DJ Hazardous Industrial waste storage @ Liwa.
- REP-114-10-DJ Non-hazardous Industrial waste storage @ Sohar.
- REP-115-10-DJ Chemical Substances: Import, export, using, handling and storage
- REP-123-10-DJ Waste management.
- REP-131-10-DJ Environmental Review.
- REP-147-11-DJ Requirements for EIA, ER, IPPC and Seveso II.
- REP-159-11-RMO Industrial Safety.
- REP-197-11-DJ Environmental Performance Reporting.
- REP-211-11-DJ Flaring.
- REP-225-11-DJ Water management.

- REP-230-12-MJ On-site storage of industrial waste.
- REP-331-13-WP Incident reporting to SEU.
- REP-363-13-WP Metal scrap quality management.

III MECA/SEU environmental permit policy

When a company establishes a new industrial activity or will implement a major change in its facilities, MECA/SEU will assess the activities and formulate requirements for the environmental permit. This process has the following phases (as per Guidance Note "Requirements for EIA, ER, IPPC and Seveso II", REP-147-11-DJ and "Environmental Review for Sohar Freezone Companies", REP-131-10-DJ):

1. Initial Assessment resulting in a Green Light Statement (GLS), a declaration of MECA/SEU that there are no fundamental objections to establish the proposed activity on the proposed site. The GLS is issued after a screening procedure as follows:
 - a. assessment of the need for an EIA or alternatively an Environmental Review (ER)
 - b. categorize a company as IPPC,
 - c. categorize a company as giving an increased industrial safety risk.
2. Scoping, identifying the topics that need to be studied in the EIA (the Terms of Reference for the EIA) and identifying requirements for IPPC and Seveso II.
3. Reviewing, assessment of the EIA and identification of lack of information.
4. Permitting, setting the conditions for the environmental permit.

MECA/SEU will issue environmental permit conditions based on Omani legislation and the European Directive on Integrated Pollution Prevention and Control (IPPC) and Best Available Techniques (BAT) documentation. The permit conditions will be specific for each company taking into consideration BAT in order to limit and manage the impact of the key environmental issues.

The General Environmental Requirements are generic and applicable to all companies and industries in the Port of Sohar and the Sohar Free Zone. Compliance with this Guidance Note is a condition in the environmental permit.

Omani legislation

Royal Decree (RD)114/2001 Law on Conservation of the Environment and Prevention of Pollution: Article 10: *"the owner take the necessary measures and adopt the **state-of-the-art techniques**, approved by the Ministry in coordination with the concerned bodies, to minimize generation of waste at the source and the use of clean production techniques to prevent pollution of the environment and protect its natural resources. The owner has to submit a **contingency plan** for approval by the ministry. The plan shall be **reviewed periodically**".*

Implementation of Omani legislation

MECA/SEU makes two major principals of the RD 114/2001 operational:

1. 'State-of-the-art techniques'.

The European Directive on Integrated Pollution Prevention and Control (IPPC) is adopted as a guideline for environmental permitting. Best Available Technology reference (BAT, BREF) documents available for a great number of large scale production processes are kept up-to-date by the European Commission. BAT is a dynamic concept and so the review of the BREF is a continuously process. BREF documents give an overview of potential and proven environmental control techniques and makes BAT equal to State-of-the-art techniques.

MECA/SEU issues permits taking into account BREF documentation to manage the environmental impact for the facilities and processes in the light of the local circumstances. This approach leads to tailor-made (specific) conditions.

2. A periodically reviewed environmental management plan.

The MECA/SEU approach requires a dynamic environmental management and continuous improvement of the environmental performance. The operator must submit for approval to MECA/SEU an Environmental Management Plan (EMP) and yearly updated with environmental control actions (Environmental Improvement Plan).

An EMP is to be based on quality management principals of plan, do, check and act. The EMP should include:

- a) Specific management plans (such as for air quality, waste, water, climate change, soil, noise, safety, monitoring and emergency response) with objectives and targets for the following year.
- b) An overview and a proposal to meet the changes in Omani legislation, Directives and (MECA/SEU) Guidance Notes and developments in Best Available Techniques.
- c) Procedures for implementation of general environmental requirements, permit conditions, mitigating measures, monitoring and reporting.

IV General Environmental Requirements issued by MECA/SEU

Paragraph 1. Overall

- 1) The operator shall operate according to, in order of priority:
 - a) Royal Decrees.
 - b) The environmental permit.
 - c) Permit correspondence with additional requirements, approvals and exemptions.
 - d) MECA/SEU Guidance Notes and Best Available Techniques (BAT) conclusions.
 - e) Ministerial Decisions and other applicable legal Omani Directives and Guide lines.
 - f) The Permit Application documents including 'green form', Environmental Impact Assessment (EIA), Environmental Management Plan (EMP) etc.
- 2) In carrying out any work by the operator all reasonable and practicable measures must be taken to prevent and/or minimize environmental impacts. For all industrial facilities, the environmental and safety provisions should be in a good state of repair and maintenance and operated according to Good Operating Practices.
- 3) The operator shall adopt the IPPC approach as a guiding principle for environmental management.
- 4) All MECA/SEU issued Guidance Notes (current, updates and future issues) need to be implemented within one year of being issued, or earlier if requested by MECA/SEU.
- 5) Starting from application documentation, construction and operating a facility, the operator has to submit for approval to MECA/SEU an Environmental Management Plan (EMP) and yearly update of the Environmental Improvement Plan (EIP) with environmental control actions.
- 6) Prior to changes of the permitted activity MECA/SEU shall be officially notified.
 - a) Minor changes which can have an impact on the environment in the permitted activities shall only be allowed to become operational after approval from MECA/SEU.
 - b) Major changes which can have an impact on the environment have to be permitted before becoming operational. Major changes are considered to be changes that involve new equipment, substantial changes in layout, substantial changes in design basis or detailed design and changes in volumes or types of hazardous substances stored or handled.

- 7) MECA/SEU can modify any conditions in an environmental permit at any time when required by changes in Omani legislation or Best Available Techniques (BAT) or from results of environmental performance.
- 8) All staff members, including 3rd party contractors shall be informed, provided with relevant written operating instructions, suitable trained in environmental controls and requirements of their role on site.
- 9) The operator is responsible to comply with all environmental requirements.

Paragraph 2. Reporting requirements

- 10) Emergency response:
 - a) The operator shall comply with the Guidance Note Incident reporting to MECA/SEU, REP-331-13-WP or other approved procedure.
 - b) The operator is responsible for reporting and remediating the impacts of any incident.
- 11) Final design:

The operator has to submit for approval to MECA/SEU ultimate 3 months before commissioning the final design of the technical installations and indicate any changes with respect to previously submitted information. This would typically include but not limited to Process Flow Sheets, Plant layouts, environmental control measures, utilities (power sources, water sources and waste water routing).
- 12) Environmental Performance Report (EPR):
 - a) Within 3 months after start of construction the first Environmental Performance Report (EPR) shall be compiled and submitted to MECA/SEU. The first EPR must include the results of measurements and must enable the authorities to verify the emission data that are presented in the permit application documents.
 - b) Calculation methods must be approved by MECA/SEU.
 - c) The frequency and content of the EPR shall comply with Guidance Note "Environmental Performance Reporting" issued by SEU: REP-197-11-DJ.
 - d) The frequency and content of the reporting can be changed by MECA/SEU, based on historical data, process control history and environmental risk.
- 13) The operator shall record all the underlying and necessary data needed to compile the reports as mentioned in the conditions. These data shall be kept for at least three years for verification by MECA/SEU.
- 14) The operator is responsible for delivering correct, reliable and reproducible data and information.

Paragraph 3. Construction site

- 15) The construction site has to be managed based on 'good housekeeping' with respect to nuisance by noise or dust, safety and waste management, such as:
 - prevention of dust due to heavy vehicles by wetting the temporary roads on the construction site and sweeping the permanent roads;
 - prevention of soil contamination by using drip trays for fluids storage;
 - waste collection facilities.
- 16) Handling and storage of hydrocarbons (e.g. diesel), gases and other hazardous materials, has to comply with safety standards and measures to prevent soil contamination, marine contamination or fire risks. Additional permits or licenses could apply and need to be acquired before activities start.

Paragraph 4. Emissions to air

- 17) IF not mentioned otherwise in specific permit conditions, MECA/SEU Guidance Notes or IPPC/BAT documents, the operator has to comply with the MD 118/2004 "Air pollution from stationary sources", issued by MECA (August 7, 2004).
- 18) All emissions to air shall be minimized, controlled and monitored where required by MECA/ SEU.
- 19) All the monitoring activities shall be based on the principles of BAT Reference document "General Principles of Monitoring".

Paragraph 5. Waste-water discharge

- 20) The operator has to comply with the Guidance Note "Water management" and zero discharge policy, issued by MECA/SEU: REP-225-11-DJ.
- 21) The zero discharge policy must be implemented per 1st January 2014.
- 22) Water discharge has to be prevented, controlled and monitored.
- 23) Any waste water including incidental water such as firewater or groundwater during construction or sewage has to be collected and proper disposed of as per requirements.
- 24) Sewage (household water) shall not be mixed with other streams and shall be treated or collected in a septic tank of sufficient size as per MD 421/1998, and the septic tank will be emptied regularly and to be disposed of, preferably to MISC or another approved receiver. Bio treatment of sewage with mixed other streams is only allowed after disinfection and approved by MECA/SEU.
- 25) The waste water treatment sludge shall be removed regularly, reused and appropriate stored. The sludge storage must have the approval of MECA/SEU.

Paragraph 6. Soil, groundwater and marine protection

- 26) Handling and storage of hydrocarbons (e.g. diesel), and other hazardous materials, shall comply with required measures to prevent soil, groundwater and marine contamination. Liquid storages shall have a second containment with an impermeable floor and walls.
 - a) MECA/SEU can apply groundwater monitoring for specific activities.
 - b) Additional permits or licenses could apply and need to be acquired before activities start.
- 27) In case of soil and groundwater contamination the operator shall:
 - a) take all necessary actions to prevent further contamination;
 - b) remediate to a by MECA/SEU approved level.

Paragraph 7. Industrial Safety

- 28) The operator shall comply with the Guidance Note " Industrial Safety for the Sohar Industrial Port and the Sohar Free Zone", issued by MECA/SEU: REP-159-11-RMO.
- 29) The storage and all equipment for substances like gasses; liquefied gasses and/or flammable liquids which can cause fire and/or an explosion or toxic vapor clouds, shall be constructed, installed and operated in a safe manner to avoid these causes.

- 30) Adequate and dedicated firefighting systems around all storage areas, handling and production units have to be implemented. Sufficiently large catchment volume for contaminated firefighting water is required.
- 31) Storage facilities shall be protected against collision by vehicles.
- 32) Within 25 meter of tanks and piping, the heating installations, open fire or smoking is prohibited. These areas shall be marked with good visible notice boards.

Paragraph 8. Hazardous and non-hazardous waste

- 33) Hazardous waste treatment shall comply with the Regulations of the management of hazardous waste, MD 17/1993.
- 34) Non-hazardous waste treatment shall comply with the Regulations of the management of non-hazardous waste, MD 18/1993.
- 35) The operator shall comply with the Guidance Notes issued by MECA/SEU:
 - a) "Waste management @SIP and SFZ", REP-123-10-DJ.
 - b) "On-site storage of industrial waste", REP-230-12-MJ.
 - c) "Non-hazardous Industrial waste storage @ Sohar", SEU: REP-14-10-DJ.
 - d) "Hazardous Industrial waste storage @ Liwa", REP-088-10-DJ.
- 36) The operator shall take all required steps to reduce the generated waste and identify technologies to recycle or reuse the waste.
- 37) The operator shall have a suitable waste-registration-system and report in the Environmental Performance Report all the generated, stored and disposed waste types and quantities.
- 38) All waste that is produced shall remain the responsibility of the operator (as a waste generator) and only be stored, transported, treated, reused, recycled or disposed of by companies that are authorized to do so and have a permit from MECA if this concerns hazardous waste.
- 39) The operator shall only accept waste from other generators for reuse in its production process with the approval of MECA/SEU.

Paragraph 9. Chemical substances

- 40) For using and storage chemicals a permit shall be obtained at MECA according to MD 248/97.

When chemicals are used that are Extremely Hazardous Substances (as per US EPA), Substance of Very High Concern (as per European Chemical Agency ECHA) or in any other way regulated, the operator has to notify the Competent Authority and provide information on how safe handling, storage and use is established.
- 41) The operator shall comply with Guidance Note "Chemical Substances: Import, export, using, handling and storage @ Sohar Industrial Port and Sohar Free Zone", issued by MECA/SEU: REP-115-10-DJ.

Paragraph 10. Noise

- 42) The noise caused by the activity must be controlled and adhere to MD 79/80/1994.
- 43) A measurement report must be provided within three months after start up as a verification of compliance with the relevant standards of MD 79/80/1994 and be submitted to MECA/SEU for approval.

Paragraph 11. Stockyard/Storage

- 44) Each substance (raw materials, fuels, chemicals, wastes, intermediates, products, etc.) shall have:
- Its own dedicated location in the stockyard for storage.
- A suitable flooring under all the storage and handling areas.
 - A suitable second containment with (at least) 110% capacity for liquid storage.
 - In a stockyard lay-out plan the following current information shall be indicated for every substance:
 - the type of substance;
 - the amount per substance;
 - the position of each substance, on a gridded base.
 - A procedure to keep the stockyard lay-out plan actual.

Paragraph 12. Maintenance and inspection

- 45) All equipment shall be operated and maintained properly in order to prevent environmental impact and hazards.
- The operator shall have an updated and operational maintenance and inspection plan for (environmental control) all the technical installations on site.
- Important equipment such as fire extinguishers e.g. tanks, safety valves, high pressure equipment, shall have maintenance certificates.
- Monitoring equipment such as continuous measurement of gas emissions shall be (periodically) calibrated.
 - The maintenance and inspection plan shall be included in the site Environmental Management Plan.

Paragraph 13. Decommissioning of an activity

- 46) a. Three months before an activity, partly or fully, ceased to be in operation, a closure plan needs to be submitted to MECA/SEU. In the closure plan the following information shall be included in order to have this activity decommissioned and its location cleared and be left afterwards in an environmentally sound, save and responsible manner:
- how the decommissioning will take place;
 - how all the substances (especially chemicals, fuels, hazardous and non-hazardous wastes) will be disposed of;
 - how the soil will be examined and remediated when necessary;
 - how the environment will be protected during decommissioning and clearing of the location;
 - the time schedule.
- b. After decommissioning of the activity and clearance of its location the operator needs to apply for a full clearance at MECA/SEU for finalization.

Paragraph 14. Climate Affairs

- 47) The Regulations for Climate Affairs Management issued by Ministerial Decision No. 18/2012 shall be adhered to.
- 48) The Regulations for Monitoring and Management of Ozone Depleting Substances issued by Ministerial Decision No. 243/2005 shall be adhered to.
- 49) Chlorofluorocarbons, halons, carbon tetrachloride, methyl chloroform and methyl bromide that deplete the ozone and that are listed in Annexes A, B and E and in groups two and three of Annex C of attachment (1) of the Regulations for Monitoring and Management of Ozone Depleting Substances issued by Ministerial Decision No. 243/2005 shall not be used and amendments to Montreal Protocol in this regard shall be adhered to.

- 50) The volume of greenhouse gas emissions, mainly carbon dioxide CO₂, methane CH₄ and nitrous oxide N₂O, generated during the project's processes shall be estimated using the guidelines of the Intergovernmental Panel on Climate Change IPCC.
- 51) The Regulations for Issuing Approvals for Clean Development Mechanism (CDM) projects under Kyoto Protocol issued by Ministerial Decision No. 30/2010 shall be adhered to if the company wished to implement a CDM project under Kyoto Protocol and the relevant approval shall be obtained from the Directorate-General of Climate Affairs.
- 52) A periodical report on the company's commitment to the above mentioned climate affairs conditions in accordance with the requirements of Form (2) regarding climate affairs information and data in the periodical environmental reports submitted to the Ministry. This report shall be included in the Environmental Performance Report (EPR).

Paragraph 15. Research

- 53) MECA/SEU can require from the operator to investigate and report on further environmental protection, to fill information gaps, to reach (new) environmental objectives and/or to solve environmental issues, with the following requirements:
 - a) The terms of reference shall be approved by MECA/SEU.
 - b) Feasible measures have to be implemented.

40. Guidance Note Incident Reporting to SEU

Guidance Note

Incident reporting to SEU

REP-331-13-WP

March 2013

Purpose	Objective
Reporting procedure for planned and unplanned, not-normal operational conditions (incidents, accidents and near incidents) to SEU. Who to inform in case of a Minor and/or Serious incident or crisis.	To enable the SEU to assess industrial activities, incidents and accidents on the direct and indirect impact on safety, health and environment. To enable the SEU to transfer correct information to community or other parties. SEU can decide on direct follow-up, request additional information or request a detailed investigation and implementation of mitigating measures.

Attention: Instructions issued herein do not preclude any other requirements from other Oman authorities such as SIPC, ROP or the National emergency organization (which are leading in case of a Serious incident or crisis).

Definitions:

- **Planned not-normal operational conditions:** foreseen process conditions mostly due to regular maintenance resulting in a higher impact on health, safety or environment.
- **Unplanned not-normal operational conditions:** not foreseen infrequently occurring situation that is a not-normal operating condition, due to incidents or accidents resulting in an actual or potential health, safety or environmental impact.
- **Emission:** a release (loss of containment) of a substance or mixture of substances to the environment (e.g. ambient air, water, soil).
- **Tier 1, 2 and 3:** a ranking of (serious) incident and crisis categories within the Sohar Industrial Port area as defined in the SIP Emergency Response Plan. The purpose is to mobilize an appropriate Emergency Response Organization and to require assistance from local or national emergency services.

Related SEU Guidance Notes and Sohar Industrial Port (SIP) procedures:

- SEU issued related Guidance Note Environmental Performance Reporting, REP-197-11-DJ.
- SIP issued an Emergency Response Plan, latest version, see: www.portofsohar.com



When to inform the SEU:

- **Planned not-normal operation:**
When a not-normal operating condition is planned (e.g. shut-down, start-up, feedstock change) that give rise to observable impact like black smoke or high flare activity.
- **Un-planned not-normal operation:**
 - If an incident/accident or emission did occur with an impact and/or visible outside the company fence line.
The impact can be nuisance, health, environmental or safety related.
The substances can be hazardous or non-hazardous.
The release can be diffuse or through a regular stack or discharge point.
 - If an incident/accident did not give an actual emission but there was a substantial risk on a release (a near incident).

When to register in the Environmental Performance Report (EPR):

- All planned and un-planned, not-normal operating conditions with an actual and a substantial risk on an emission and an impact on health, safety or environment.

Timing:

- **Planned not-normal operation:**
Information on planned shut-down start-ups or changes in operating conditions needs to be submitted preferably 4 weeks or ultimately 48 hours before the event.
- **Un-planned not-normal operation:**
SEU requires an Incident Notification from the operator directly (within 15 min) as the incident is identified by the operator. A draft Incident Report is expected within 48 hours and a final report ultimately within 2 weeks after the incident when requested by SEU.

Information that must be submitted to SEU:

Incident Notification	Incident Report:
<ul style="list-style-type: none"> • Time stamp incident • Expected duration • Expected impact (air, water, soil) • Any health/ environmental risks • Observable impact (e.g. black smoke, odour, noise, ...) • Type of substances • Estimated released amount 	<ul style="list-style-type: none"> • Location and nature of the incident • Quantity and nature of released substances • HSE Exposure risks (on-site and off-site) • Injured/casualties (if any) • Emergency response (if any) • Direct and indirect measures taken • Prevention follow-up • Relevant back ground information.

How to inform the SEU

(and in some cases also ROP, National Emergency Centre and SIPC Port Coordination Centre)

Minor Incident Notification (MIN):	
incidents with a negligible to minor impact (Tier 0 - 1):	
Call SEU: 9777 0772	directly
SMS SEU: 9777 0772	
Email SEU: meca.seu@gmail.com	

Serious Incident Notification (SIN):	
Incidents, accidents and crisis's with a minor to major impact (Tier 1 - 3):	
Call PCC: 2685 2777 9934 2699	directly (PCC informs SEU)
Call ROP OGIS: 9991	directly
Attention: <i>An English speaking response cannot be guaranteed</i>	
Call NEN: 9999	directly National emergency number

How to report SEU

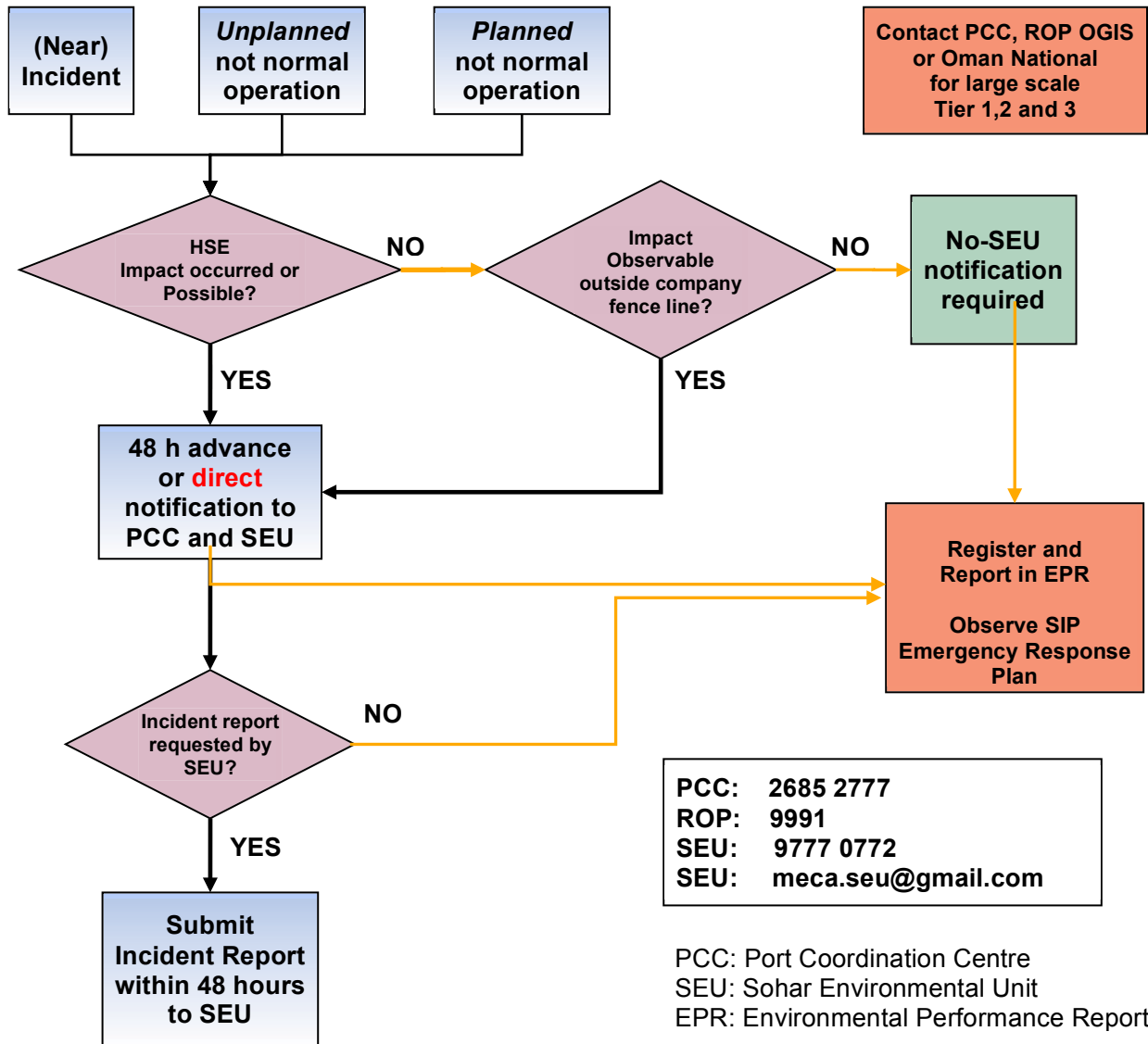
Incident Report	
Email to: meca.seu@gmail.com	within 48 hours and 2 weeks ^{*)}
Remark	
<ul style="list-style-type: none">• The incident report can be followed by a more detailed investigation if the nature of the accident give rise to ongoing concerns that requires technical, organizational and legal attention.• ^{*)} within 48 hours a draft report and ultimately within 2 weeks a final report. Also reporting a summary in the next Environmental Performance Report (EPR).	



SEU incident & accident report procedure flowchart

negligible to minor impact (Tier 0 - 1):

minor to large impact (Tier 1- 3):



Version March 2013



41. Guidance Note Water Management

Guidance Note

Water Management

REP-225-11-DJ
April 2012

Definitions and abbreviations:

<i>Brine:</i>	<i>Waste-water coming from desalination plants from RO or MSFE</i>
<i>EPR:</i>	<i>Environmental Performance Report</i>
<i>GN:</i>	<i>Guidance Note</i>
<i>MD 159:</i>	<i>Ministerial Decision "Discharge of Liquid Effluent to the Marine"</i>
<i>MECA:</i>	<i>Ministry of Environmental and Climate Affairs</i>
<i>MISC:</i>	<i>Majis Industrial Services SAOC</i>
<i>SEU:</i>	<i>Sohar Environmental Unit</i>
<i>SIP:</i>	<i>Sohar Industrial Port</i>
<i>SFZ:</i>	<i>Sohar Freezone</i>
<i>Straight run cooling water:</i>	<i>Cooling water that has one pass only through a heat exchanger and is not mixed with any other waste water stream</i>
<i>SWIRS:</i>	<i>Sea Water Intake and Return System</i>

1. Objective and approach

SEU/MECA wants to stimulate an efficient water balance in the Sohar port area and seeks a sustainable water management system that protects the marine environment, soil and ground water and optimizes the water usage by stimulating suitable matches between generated water streams and reuse options.

The cooling water return channel (SWIRS) in the Sohar Industrial Port was designed to accommodate the discharge of cooling water and brine from the desalination units, to the marine. In the first years of port development there are no facilities planned and developed and the effluents from the industrial waste water treatment (WWT) or sewage treatment plants (STP) and process streams use the SWIRS for discharge. Also incidental discharges (e.g. hydro testing, excavation water etc.) use the SWIRS.

MISC is the state owned company in the SIP/SFZ that is currently operating the cooling water intake and discharge (MISC IOP), the SIP Sewage treatment plant (MISC STP), an RO plant (MISC ROP, under construction) and a waste water effluent collection & treatment system (MISC ETP, under construction). The SWIRS itself is part of the SIPC infrastructure however the users of this infrastructure are the discharging tenants. MISC is developing facilities that are aimed at improving the current water management in the port by collection/treating/re-use of water streams. Since the collection system is expected to be in operation from July 2013, this is the planned date to ban any discharge (except cooling water and brine).

The consequences for permitting discharge water to the SWIRS for each tenant will be as follows:

- no new permits will be issued by MECA/SEU for discharging water other than straight run cooling water and brine from desalination plants, from July 2013 onwards.
- the existing permits for discharging water other than straight run cooling water and brine from desalination plants, will be withdrawn as per July 2013.



This means that all tenants are currently discharging waste water other than straight run cooling water and brine from desalination plants, have to have alternative solutions as per July 2013. These solutions have to be compliant with Omani regulations.

Discharges from works of subcontractors are considered to be under the responsibility of the tenant that holds of the environmental permit.

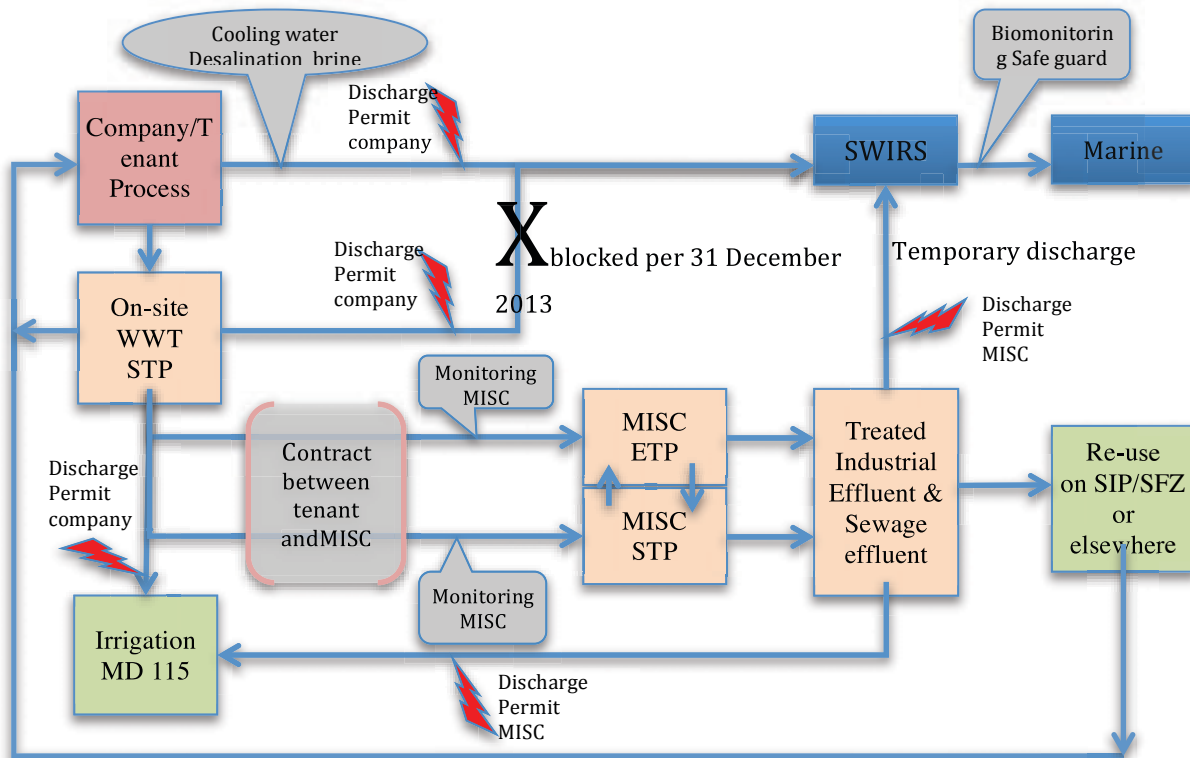
In preparation of the situation after July 2013, discharge permits for cooling water and brine will be separated from all other discharges.

Please note that it is currently not allowed to treat sewage in a waste water treatment plant. The sewage must be treated in a dedicated sewage treatment plant (for example the MISC STP).

2. Water systems

The schedule below identifies the various permit requirements for locations in the water system.

Sohar SIP/SFZ water management schematic



Tenants are the main generators of waste water and the categories are:

- Cooling water and brine from desalination installations
- Waste water from processes either after on-site treatment or not
- Sewage (note that it is not allowed to treat sewage together with process water)

- Incidental sources like run-off, firefighting, hydro testing, deep excavation, etc.

Re-use (or discharge) options that are available are:

- MISC collection system
- Irrigation/dust control
- SWIRS
- sewage treatment plant (on-site, MISC, off-SIP)

3. Permit situation

The permitting structure will include the permits that regulate the normal discharges, permits that regulate incidental discharges and No Objection Letters that regulate incidental discharges as a quick and tailor made instrument.

Incidental discharges are assumed foreseeable, meaning that a proper discharge permit can be applied for (e.g. hydro testing, deep excavation). NOL can be issued in cases where the permitting process would take too long, while direct action is required (e.g. firefighting water). Note that in line with the SIPC-tenant contract the tenant is not allowed to use the SIPC infrastructure for storm water discharge.

In the transition period until July 2013, discharges on the SWIRS will be allowed but not encouraged.

Discharges to the SWIRS because a suitable sink (or client) for a treated effluent that can be produced on spec for re-use, is not allowed after July 2013 (in other words: 'nobody wants my water' is not an argument for discharge in to the marine).

Each tenant would enter into an agreement with MISC for online monitoring, wastewater and sewage collection. SEU/MECA is basically regulating the water streams that leave the SIP water system (passing the 'permit barrier'), but likes to have assured that the tenant-MISC agreements offer sufficient environmental security under normal and non-normal circumstances.

A permit application for discharge (new or renewal) of cooling water/brine to the marine must include a statement that the tenant assures that no contamination with any source (liquid/solid/oily/sludge, treated/untreated etc.) can take place or risk to that is acceptably low. However the tenant will remain responsible for any contamination that is found and can be traced back to the tenant. The application does not require effluent measurement of free chlorine and hydrocarbons however the applicant must provide these data within 3 months.

4. Monitoring& reporting

As a consequence of the post July 2013 situation, the monitoring requirements will be rationalized.

For the discharge of cooling water/brine, the following parameters need to be monitored (continuous) by tenants that discharge on the SWIRS:

- Throughput (intake, discharge, continuous)
- Temperature (continuous)
- Free residual chlorine(continuous)

The point of sampling is at the discharge to the SWIRS to ensure that any contamination source between the point of sampling and the discharge (before July 2013 the sampling point should be before effluents are mixed) is included.

Every 6 month a sample has to be checked on hydrocarbons with a PQL that is as low as possible with state of the art analytical equipment.

All results have to be reported in the EPR.

MISC will continuous monitor the SWIRS outfall quality on the following parameters:

- Bio-toxicity
- Temperature



- Free residual chlorine
- Turbidity
- COD
- Hydrocarbons

If so deemed necessary, an extended parameter list will be used, based on MD159.

The point of sampling is at the outfall before mixing with any seawater.

MISC will install a monitoring system that provides early warning in case of contamination with on-line facilities. If any measured parameter falls outside an acceptance range, the cause will be traced by MISC.

Tenants have to ensure that no mixing with other streams (either process or waste water) is possible and tenants have the legal responsibility implement measures for the non-mixing assurance. In case of a contamination, either imported through the water intake or caused by on-site malfunctions or incidents, a notification has to be sent immediately to the SEU.

Discharges from MISC treatment system to the marine will be allowed under strict control and has to comply with the MD 159. Monitoring efforts have to include parameters as per the discharge permit.

Water re-use as irrigation water or dust control have to comply with the MD 145/93.

The used monitoring equipment must comply with international standards with respect to methodology, hardware and data management.

The EPR has to include the monitoring results based on daily averaged values.

5 MISC-tenant relation

MISC and a tenant can enter into a contract that concerns the services that are offered by MISC and the obligations of the tenant. Major issues is the specifications of the water that is offered to MISC in terms of quantities and quality. SEU likes to see assured that the contract arranges not only the regulars waste amount and qualities but also the 'of-spec' waste water, in order to prevent a situation that MISC will not accept the waste water and the tenant does not have facilities for treatment.

SEU/MECA requires a copy of the contract in order to comment on it before signature.

SEU/MECA requires a full overview of measures that will be taken by the tenants in order to be compliant with the zero discharge policy by October 2012.

42. Guidance Note On-site Storage of Industrial Waste

Guidance Note

On-site storage of industrial waste

REP-230-12-MJ
January 2012

Definitions:

<i>EPR</i>	Environmental Performance Report
<i>MECA</i>	Ministry of Environment and Climate Affairs
<i>SEU</i>	Sohar Environmental Unit
<i>SIP</i>	Sohar Industrial Port area
<i>SFZ</i>	Sohar Free Zone

Objectives

Industrial waste is the waste that generated from industrial process activities. There are two types of industrial waste: hazardous and non-hazardous. The main goal of this guidance note is to give requirements for on-site storage of hazardous and non-hazardous industrial waste. In addition information is given on what should be included in license application for the storage area of hazardous industrial waste.

1. General

On-site storage of non-hazardous industrial waste is allowed when there is no off-site solution after explicit no-objection of MECA/SEU.

If off-site solutions are available, the total amount of on-site waste for a specific waste type may not be larger than a logistically feasible amount (typically one month production).

2. Hazardous industrial waste

Legal frame work

No hazardous waste should be stored on-site without environmental license. Refer to RD 114/2011 article 19, 20, 22, 31, 34 and 37 and MD 18/1993.

License application for on-site storage of hazardous waste should include the following:

- Hazardous waste license form (filled in properly).
- Request letter with details like: area in m², name of hazardous waste which will be stored and maximum waste quantities.
- A sketch of the area with the detailed design which prove the minimum requirements for example: impermeable floor and protection against unauthorized access
- A waste management plan.



The minimum requirements of on-site hazardous waste storage area are:

Floor requirements:

- Impermeable floor lined with impermeable concrete or any other impermeable material which is suitable for storing hazardous waste.
- The floor should handle the weight of the hazardous waste and the vehicles can move on it without any cracks.
- The floor should erode over time and inspections must be included in maintenance plan.
- The floor should be smooth, easy to clean and do not absorb liquids (consider a chemical resistant coating)
- The floor material should not ignite sparks with friction or static.
- The maximum allowed load on the floor should be clearly presented.

Area:

- The area should have a collection system and slope if necessary to contain any spill or leakages.
- The area should not be too low that can lead to storm water collection.
- If the area is totally closed a proper ventilation system should be provided.
- If the stored hazardous waste gets affected with weather conditions, a proper fire resisting shelter should be provided.
- Proper signing shows the properties of the stored hazardous waste should be provided.
- Restricted access for authorized persons only.
- Proper safety and fire fighting equipments should be provided.
- Communication system to the main office or the responsible persons in case of any emergencies.
- The MSDS of all stored hazardous waste should be available.
- The storage area of hazardous waste should be always clean and well maintained.

Waste:

- The hazardous waste should be stored in stable and sealed containers which can not fall or collapse.
- The hazardous waste with flash point less than 32°C should be stored in a separated area.
- Minimum amount of recyclable hazardous waste should be stored.
- Database of all stored hazardous waste should be available upon request from the authority.
- All hazardous waste stored on-site should be reported in each EPR as per SEU reporting guidance note (REP-197-11 DJ).
- No hazardous or non hazardous waste should be disposed or transported off-site without SEU consignment note or registration consignment note.



Persons managing the storage:

- Employee who may deal with hazardous waste should be properly trained on how to deal with the stored hazardous waste.
- Spill kit has to be available and staff must be trained on when and how to use it.
- Personal protection equipments need to be available and used.
- The area requires regular inspections to insure that all requirements are met.

SEU will conduct an inspection to make sure that the minimum requirements are in place after the license's application is submitted.

SEU chemical guidance note (REP-115-10-DJ) gives more details on how to store chemical substances. Because chemical substances and hazardous waste are related to each other (example: an expired chemical can be waste).

3. Non-hazardous industrial waste

The legal frame work of non-hazardous waste are RD 114/2001 and MD 17/1993. SEU has a dedicated area for non-hazardous, solid, non-dusty and non-recyclable industrial waste at Sohar Municipality landfill. SEU guidance note REP-114-10-DJ explains the procedures of utilizing this area. Although storing non-hazardous industrial waste does not need a license, all non-hazardous industrial waste should be reported in each EPR as per SEU reporting guidance note.

Minimum requirements for storing non-hazardous industrial waste on-site: are as follows:

- Control the dusty non-hazardous waste by water spraying or installing wind fence to minimize the dust.
- Mixing hazardous waste with non-hazardous waste is NOT allowed in any case.
- Non-hazardous waste should not be disposed off-site without SEU approval.
- The quantity of recyclable non-hazardous waste stored on-site should be minimal.



43. Guidance Note Flaring

Guidance Note

Flaring

REP-211-11-DJ
September 2011

Definitions:

<i>BAT</i>	Best Available Technique
<i>BRC</i>	Beyond Regulatory Control
<i>Bref</i>	BAT reference document
<i>CA</i>	Competent Authority
<i>EIA</i>	Environmental Impact Assessment
<i>EMP</i>	Environmental Management Plan
<i>EPR</i>	Environmental Performance Report
<i>ER</i>	Environmental Review
<i>FlaCon</i>	Flaring Consignment
<i>FlaP</i>	Flaring Plan
<i>IPPC</i>	Integrated Pollution Prevention and Control
<i>MECA</i>	Ministry of Environment and Climate Affairs
<i>SEU</i>	Sohar Environmental Unit

1: Objective and Approach

Flaring is the release of unprocessable components, mostly hydrocarbons, by open burning. In the Sohar industrial area there are two types of flares: high elevated flares on 80 to 120 m in the petrochemical industry and low flares to 15m mostly in natural gas systems.

The burning process in flaring is rather uncontrolled and the resulting emissions consist of hydrocarbons (methane and NMVOC), NO_x, SO₂, CO₂, CO, soot and other components that result from incomplete combustion.

A flare is considered as a safety device that is used when an upstream process shows failure and equipment has to be purged. Burning-off the gases is a better option than venting the gasses unburned, but still there are environmental concerns.

Although the usage of flaring must be restricted to incidents (shut-downs, start-ups, trips), in practice the flare is used in operational cases and there is little incentive to limit flaring. Considering the releases to the atmosphere, the light nuisance, the black smoke when not sufficient steam is used, the occasional sound/vibration and climate issues, SEU/MECA wants to regulate the flaring in a more protocolled way as described in this Guidance Note.

2: FlarePlan (FlaP)



In order to know the specific backgrounds and operational details of the flares and the flaring, the SEU requires the submission of a Flaring Plan (FlaP). Based on the FlaP SEU will allocate to each flare a Flare Consignment (FlaCon) that defines the conditions under which flaring is allowed like the process condition, the maximum yearly amount that can be flared and/or the maximum number of hours per year that flaring is allowed.

The information to be included in the FlaP is:

- Overview of the construction details of all operated flares, including the design basis (e.g. API 521), plotplan location, coordinates, height, safety footprint etc.
- Process details, including PFS, pilot load, max load, measuring/monitoring equipment.
- Operational details, flared amounts (in ton/h) over the last 12 month on daily basis, composition of flared gasses, calorific value, steam/HC ratio.
- Control details, analysis of reasons for flaring, prognoses of flaring requirements for the next 12 month's.

Flaring Consignment (FlaCon)

The Flaring Consignment consists typically of the following:

- Administrative information including identification of the flare, the environmental permit under which the flaring is allowed, etc.
- Reporting requirements. Typically the reporting will be integrated into the regular environmental performance report (EPR).
- Allowed flaring profile that consist of one or more of the following elements:
 - Process conditions under which flaring is allowed (or not allowed).
 - Maximum number of flaring occasions per year.
 - Maximum amount of flaring hours per year.
 - Maximum amount flared in tons/yr of hydrocarbons, sulphur components, etc.
 - Minimum steam/hydrocarbon ratio to be used.

Emissions

Flare emissions can be estimated based on emissions factors. In EPA references (<http://www.epa.gov/ttnchie1/ap42/ch13/final/c13s05.pdf>), the following factors are used: NO_x: 0.68; CO: 0.37; THC 0.14 lb/10⁶ BTU but other sources can be used for estimating the emissions from the flaring operations.

Enforcement

Enforcement will be considered if and when flaring occurs that is not according to the FlaCon. Flaring occasions must be reported with reasons why and amount flared in such way that can be verified if the flaring is within the FlaCon restrictions.

Flaring that is not compliant with the FlaCon can result in a fine.