

THE CONVENTION ON NUCLEAR SAFETY

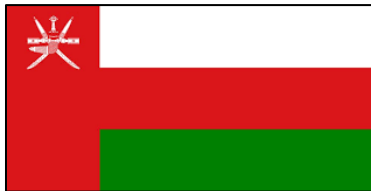
Ninth Review Meeting

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NATIONAL REPORT

OF

The Sultanate of Oman



27 July 2022

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A- INTRODUCTION

The Sultanate of Oman deposited the instruments of accession to the Convention on Nuclear Safety (Royal Decree 30/2013) with the Director General of the International Atomic Energy Agency on 28 May 2013 and the Convention entered into force for the Sultanate of Oman on 26 August 2013. Since this date, the Sultanate of Oman submitted two National Reports for the review of the Contracting Parties to the Convention at their 7th and 8th Review Meetings. This is the third National Report that is being submitted for review at the 9th Review Meeting.

As the 8th Review Meeting was not held due to the covid-19 pandemic and the decision was taken by the Contracting Parties to have a joint 8th and 9th Review Meeting, it was agreed that the National Report to be submitted for the 9th Review Meeting, should be a standalone comprehensive document reporting on fulfilment of obligations under the Convention on Nuclear Safety and highlighting the changes since the submission of the National Report for the 8th Review Meeting.

Following these decisions, this National Report has been prepared with reference to the “Guidelines Regarding National Reports under the Convention on Nuclear Safety” contained in the information circular (INFCIRC/572/Rev.6) dated January 2018.

It should be noted that the Convention applies to the safety of nuclear installations (Article 3) and, in accordance with Article 2 of the Convention, “Nuclear Installation means for each Contracting Party, any land-based civil nuclear power plant under its jurisdiction, including such storage, handling and treatment facilities for radioactive materials as are on the same site and are directly related to the operation of the nuclear power plant”.

Because the Sultanate of Oman has no nuclear installation and it has no plan nor intention, at this time, to embark in a nuclear power program, this National Report, like the two previous National Reports, present information on activities covered by Articles 7, 8, 9, 10, 15 and 16 of the Convention, in accordance with the recommendations for Contracting Parties without nuclear installations that can be found in paragraphs 26 and 27 of Section E of INFCIRC/572/Rev.6. All information provided is henceforth

related exclusively to radiological safety in relation to the use of radiation sources in peaceful applications of nuclear techniques in industry, health, agriculture, education and research.

There are presently four electron accelerators in the Sultanate of Oman, two more than previously reported in the National Report to the 8th Review Meeting. The two new accelerators that entered into service in July 2021 are used for cancer therapy at the new Sultan Qaboos Comprehensive Cancer Care and Research Center (SQCCCRC) in Muscat. The Sultanate of Oman has also a cyclotron for the production of short-lived radioisotopes used for Positron Emission Tomography/ Computer Tomography (PET/CT) by the Department of Nuclear Medicine of the Royal Hospital (Ministry of Health), the Department of Radiology and Molecular Imaging of Sultan Qaboos University Hospital and the Department of Nuclear Medicine of SQCCCRC, all these hospitals being located in Muscat.

Present organizations and companies with activities linked to the import, use, transport, storage and export of radiation sources, totaling 83 (in the previous National Report the total was 82 with the addition of SQCCCRC), are distributed as follows:

- Oil exploration (15)
- Industrial radiography (11)
- Construction industries (7)
- Petrochemical industries (6)
- Cement and steel industries (3)
- Medical applications (38)
- Education and research (3)

With respect to the Disused Sealed Radioactive Sources (DSRS), the policy of the Sultanate of Oman is to return them to their respective suppliers in the country of origin. There are no sealed radioactive sources being produced in the Sultanate of Oman.

The Sultanate of Oman, in joining the membership of the Convention, is committed to the achievement of the following two out of three objectives of the Convention, namely:

- To achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-operation including, where appropriate, safety-related technical cooperation; and
- To prevent accidents with radiological consequences and mitigate such consequences, should they occurs.

The third objective of the Convention is about effective defenses in nuclear installations against potential radiological hazards. The Sultanate of Oman has no nuclear installations.

B- SUMMARY

The Convention on Nuclear Safety entered into force for the Sultanate of Oman on 26 August 2013, that is after the Organizational Meeting for the 6th Review Meeting of the Contracting Parties. It submitted two National Reports for the review of the Contracting Parties to this Convention at their 7th and 8th Review Meetings. This is the third National Report that is being submitted for review at the 9th Review Meeting.

The Sultanate of Oman has **no** nuclear power plant or facilities used for activities directly or indirectly related to the operation of a nuclear power plant. Currently it has **no** intention to embark on a nuclear power program and has **no** plan to build any research or test reactor or a sub-critical assembly. The National Report therefore contains information on safety aspects related directly to the utilization of radiation sources in a variety of industrial, medical, educational and research applications.

Legislative and Regulatory Framework

The Sultanate of Oman does not have a dedicated nuclear law to govern all aspects of nuclear and radiological safety. There are however ten laws, issued by Royal Decrees, that contain provisions relating to nuclear and radiation safety.

The Sultanate of Oman is also party to nineteen international conventions and treaties relating to the peaceful uses of nuclear energy, and the safety and security of nuclear and radiation sources, including the Joint Convention on the Safety of Spent Fuel and on the Safety of Radioactive Waste Management (ratified by Royal Decree 27/2013). The Sultanate of Oman acceded very recently, on 14 April 2022, through the publication of the Royal Decree (22/2022), to the Amendment to the Convention on Physical Protection of Nuclear Materials.

A set of five regulations, issued by decisions of the respective ministers responsible for the implementation of the corresponding laws, are in place and provide the requirements and the rules that must be applied in dealing with radiation sources. The most relevant ones are the "Regulations for the Control and Management of Radioactive Materials" (Annex 1) (Ministerial

Decision 249/97, as amended by Ministerial Decision 281/2003) and the "Regulations for the Management of Hazardous Waste", issued by Ministerial Decision No.18/93 (Annex 2).

The Sultanate of Oman is continuing its efforts to further strengthen its radiation safety infrastructure, particularly the legislative and regulatory framework, through bilateral and international cooperation. The first draft of the nuclear and radiological safety and security Law has been developed. The Council of Ministers has given the green light for the finalization of the Law under the supervision of the Steering Committee for Peaceful Nuclear Technology, after the agreement given by the Ministry of Justice and Legal Affairs to continue the process. A new draft will be submitted to the review of the IAEA legal experts in the framework of the regional technical cooperation project RAS0090 "Establishing and Enhancing National Legal Frameworks". In parallel, draft radiation safety regulations are being developed by the Environment Authority, based on the IAEA General Safety Requirements Part 3 "Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards".

Regulatory Body

The regulatory functions for nuclear and radiation safety have been assigned, in application of the "Law on the Conservation of the Environment and Prevention of Pollution" enacted by the Royal Decree 114/2001, to the Environment Authority that replaces the Ministry of Environment and Climate Affairs following the promulgation of the Royal Decree (106/2020) on 18 August 2020.

This law gives the authority to the Environment Authority to issue regulations for the control of radioactive material and nuclear establishments. Within the Environment Authority, and under the authority of its Chairman, the Department of Radiation Protection has been entrusted with tasks for the implementation of the laws and regulations governing radioactive materials.

The Department of Radiation Protection is constituted of three sections: i) the Permits Section; ii) the Inspection and Control Section; and iii) the Radiation Monitoring Section. The training of staff of this department has

taken place through IAEA National Technical Cooperation Projects and through regional training courses and workshops organized by the IAEA. The focus of the training is on: - notification and authorization procedures and processes; - inspection planning and conduct; - enforcement procedures; - radiation safety and accidents reports; - regulatory information management; - radiation safety assessment of practices and facilities.

The Environment Authority neither uses nor possesses radiation sources, nor does it promote their utilization. It is therefore an independent regulatory body. The Environment Authority addresses the reports on the protection of the environment, the public and the workers from all forms of pollution sources, including radiation hazards, to the Council of Ministers and the Council of Oman (the State Council and Majlis A'Shura). The reports of the Ministry are available for consultation by the public.

Radiation Protection

Radiation safety and radiation protection in particular have been given priority in all activities relating to radiation sources and radioactive materials. Radiation exposure of workers and workplaces are required to be monitored and reports submitted to the regulatory body on a regular basis. Procedures have been established for the review of license applications in order to ensure that the license holders have taken necessary measures to minimize radiation exposure and implement the as low as reasonably achievable (ALARA) principle. Training of Radiation Safety Officers (RSOs) for medical and industrial practices has been the subject of particular attention over the past few years. Training of RSOs has been organized through the IAEA national technical cooperation project OMA9005 "Strengthening the Radiation Safety Infrastructure and its Supportive Technical Capabilities".

The prime responsibility for safety is assigned to the license holders through dispositions contained in the laws and regulations. This responsibility will be more explicitly spelled out in the nuclear and radiation law that is in preparation.

Emergency Preparedness

A National Radiological and Nuclear Emergency Preparedness and Response (RNEPR) Plan has been approved on 27 February 2019 by the Council of Ministers. This RNEPR plan, which was developed with the assistance of the IAEA through a Technical Cooperation Project, is in conformity with the IAEA General Safety Requirements – GSR Part 7 – “Preparedness and Response for a Nuclear or Radiological Emergency”. A strategy for the implementation of the RNEPR plan was also approved by the Council of Ministers. It aims to establish the necessary capabilities and infrastructure for operationalizing the RNEPR plan.

The Sultanate of Oman is actively participating in the activities of the Gulf Cooperation Council Emergency Management Center, with headquarters in Kuwait. The Sultanate of Oman had previously participated in the preparation of the Gulf Cooperation Council Regional Radiological and Nuclear Emergency Preparedness and Response Plan which was approved by the Council of Ministers of the Gulf Cooperation Council on 25 November 2014.

In this context, it should be noted that the network of environmental radiation monitoring stations continues to be expanded and will count 38 stations by the end of year 2022, covering all parts of the Sultanate of Oman. No increase in the radiation level above the background level has been detected so far by any one of these stations.

The Sultanate of Oman participates in all exercises organized by the Incident and Emergency Center of the IAEA in the framework of the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency. Its latest participation was in the ConvEx-3 (2021) exercise at the Barakah Nuclear Power Plant of the United Arab Emirates. Radiological emergency drills are also organized periodically by the National Emergency Management Center.

Impact and Response to the Covid-19 Pandemic

Like all the countries around the world, the Sultanate of Oman felt the economic, social and health impacts of the covid-19 pandemic. The situation presently is practically back to normal. The decline of economic and production activities in the industrial sector could be noticed through the decrease in the number of permits issued by the Radiation Protection Department for the re-export of disused sealed radioactive sources. 211 permits were delivered in 2019 before the pandemic, while 137 permits were granted in 2020 and only 129 in 2021. No delay in shipping of disused sealed radioactive sources to the country of origin was notified to the regulatory authority by the licensees. Most of the operators adopted strategies and business continuity plans to mitigate difficulties in the transport and shipment of disused sealed radioactive sources, such as keeping radiation sources during longer period of time. The absence from work of some personnel of the regulatory authority and operators due to infection by the covid-19 virus and the restrictions on movements imposed by governments and authorities around the world had noticeable impact on the activities of all sectors. These restrictions did not stop the planned inspections of disused sealed radioactive sources storage locations by the Regulatory Authority, as most of the locations to be controlled are in Muscat and its vicinity.

C- REPORTING ARTICLE BY ARTICLE

ARTICLE 7: LEGISLATIVE AND REGULATORY FRAMEWORK

1. *Each Contracting Party shall establish and maintain a legislative and regulatory framework to govern the safety of nuclear installations.*
2. *The legislative and regulatory framework shall provide for:*
 - (i) *the establishment of applicable national safety requirements and regulations;*
 - (ii) *a system of licensing with regard to nuclear installations and the prohibition of the operation of a nuclear installation without a licence;*
 - (iii) *a system of regulatory inspection and assessment of nuclear installations to ascertain compliance with applicable regulations and the terms of licences;*
 - (iv) *the enforcement of applicable regulations and of the terms of licences, including suspension, modification or revocation.*

Article 7 (1) Establishing and maintaining a legislative and legal framework

There are in the Sultanate of Oman several legal instruments covering a wide range of issues relevant to nuclear and radiation safety. The legislative framework includes:

- L1. *The new Basic Statute of the State*, promulgated by Royal Decree 6/2021 and which replaces the previous Royal Decrees (101/96) and (99/2011). The Basic Statute stipulates, in its Article 15, that the State shall guarantee the health care of the citizens and endeavour to protect the environment and its ecological balance in order to achieve comprehensive and sustainable development for the generations.
- L2. *The Law on the Conservation of the Environment and Prevention of Pollution*, promulgated by Royal Decree 114/2001. This law outlines the fundamental rules and principles with regard to the safety of the environment and assigns tasks to the Environment Authority relating to the control of radioactive substances and wastes.
- L3. *The Civil Defence Law*, promulgated by Royal Decree 76/91, as amended by the Royal Decrees 75/99 and 27/2008. This law ensures

that the Sultanate of Oman has plans and measures in place to deal with any public disaster whether man-made or naturally occurring that causes, or is expected to cause, severe loss of lives or property. According to the Civil Defence Law, nuclear and radiological accidents fall under the definition of a public disaster.

- L4. *The Labour Law*, promulgated by Royal Decree 35/2003, as amended. This law provides for the protection of radiation workers in different practices.
- L5. *The Law on Civil Aviation*, promulgated by Royal Decree 93/2004. This law addresses the air transport of goods in general, including nuclear and radioactive materials. The air transport of such goods is prohibited unless permission from the Authority for Civil Aviation is obtained.

Other relevant national laws include:

- L6. *The Law on the Protection of Drinking Water Sources from Pollution*, promulgated by Royal Decree 115/2001. This law penalizes the pollution of water sources and places an obligation on the polluters to remove such pollution and provides compensation for any damage caused.
- L7. *The Unified Customs Law of the Gulf Cooperation Council*, promulgated by Royal Decree 67/2003. This law governs the import and exports of goods in and out of the Sultanate of Oman. It has provisions regarding banned and restricted goods, and smuggling.
- L8. *The Law on Combatting Terrorism*, promulgated by Royal Decree 8/2007. This law lists the penalties for participation in terrorist activities and organizations, including terrorism by use of nuclear or radioactive materials.
- L9. *The State of Emergency Law*, promulgated by Royal Decree 75/2008. This law stipulates the procedure for declaring the state of emergency for any incident that affects society including public disasters such as nuclear accidents. The law also provides the National Security Council with the power to undertake a number of measures and procedures to protect public order and security (such as restricting the movement of people and goods) and imposes a number of obligations on the Royal Oman Police to carry out the measures set in accordance with this law.

- L10. *The Anti-Money Laundering and Combating Financing of Terrorism Law*, promulgated by Royal Decree 30/2016. This law lists the penalties for participation in financing terrorist activities and organizations, including financing terrorist involving nuclear or radioactive materials.

The Sultanate of Oman is party to the following international conventions relating to nuclear materials and facilities, in addition to the Convention on Nuclear Safety (ratified by Royal Decree 30/2013):

- IC1. *Treaty on the Non-Proliferation of Nuclear Weapons* (ratified by Royal Decree 91/1996).
- IC2. *The Convention on the Physical Protection of Nuclear Material* (ratified by Royal Decree 33/2003).
- IC3. *The Comprehensive Nuclear-Test-Ban Treaty* (ratified by Royal Decree 43/2003).
- IC4. *The Convention on Early Notification of a Nuclear Accident* (ratified by Royal Decree 32/2009).
- IC5. *The Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency* (ratified by Royal Decree 33/2009).
- IC6. *The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* (ratified by Royal Decree 27/2013).
- IC7. Recently, on 24 April 2022 and after the Sultanate of Oman submitted its National Report for the 8th Review Meeting, the Royal Decree (22/2022) approving accession to the Amendment to the Physical Protection of Nuclear Materials was published.

Other international instruments, to which the Sultanate is a party, include:

- IC8. *The Convention for the Suppression of Unlawful Acts against the Safety of Civil Aviation* (ratified by Royal Decree 41/1976).
- IC9. *The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter* (ratified by Royal Decree 26/81).

- IC10. *The Convention for the Suppression of Unlawful Acts against the Safety of Maritime Navigation* (ratified by Royal Decree 66/1990).
- IC11. *The Protocol for the Suppression of Unlawful Acts against the Safety of Fixed Platforms Located on the Continental Shelf* (ratified by Royal Decree 66/1990).
- IC12. *The Protocol for the Suppression of Unlawful Acts of Violence at Airports Serving International Civil Aviation* (ratified by Royal Decree 74/1992).
- IC13. *The Agreement with the International Atomic Energy Agency for the Application of Safeguards in connection with the Treaty on the Non-Proliferation of Nuclear Weapons with a Small Quantities Protocol* (ratified by Royal Decree 32/2006).
- IC14. *The Arab Agreement to Combat Terrorism* (ratified by Royal Decree 55/99 as amended by Royal Decree 14/2010).
- IC15. *The Amendment of the Arab Agreement to Combat Terrorism* (ratified by Royal Decree 22/2002).
- IC16. *The Convention of the Cooperation Council for the Arab Gulf States to Combat Terrorism* (ratified by Royal Decree 105/2005).
- IC17. *The Statute and Membership of the International Atomic Energy Agency* (ratified by Royal Decree 135/2008).
- IC18. *Basic Statute of the GCC Center for the Management of Cases of Emergency* (ratified by Royal Decree 56/2013).
- IC18. *Co-operative Agreement for Arab States in Asia for Research Development and Training Related to Nuclear Science and Technology (ARASIA)* (ratified by Royal Decree 68/2010).

Article 7 (2) (i) National Safety Requirements and Regulations

The national requirements for nuclear and radiation safety are to be found in the following regulations:

- R1. *The Regulations for the Management of Hazardous Waste*, issued by Ministerial Decision 18/93. The regulations define hazardous waste, which includes radioactive substances, and conditions for the conditioning, transport, storage and disposal of hazardous waste.

R2. *The Regulations for Civil Defence* issued by Decision 21/93, which establishes the rules to be applied at all facilities where radioactive substances are used, handled or stored.

R3. *The Regulations for the Control and Management of Radioactive Materials* issued by Ministerial Decision 249/97, as amended by Ministerial Decision 281/2003. These regulations impose obligations for obtaining permits, in particular:

- a. Notifying the Environment Authority prior to dealing with radioactive materials;
- b. Providing the Environment Authority and the Civil Defence and Ambulance Authority with information, maps, and plans indicating the locations where radioactive materials are used or stored; and
- c. Establishing an internal management system with staff structure, well defined responsibilities, quality assurance procedures, staff training and emergency procedures.

These regulations concern also the transport and storage of radioactive materials. They allow the introduction into the country of any radioactive materials only by air. Transport of radioactive materials within the Sultanate of Oman by any means other than by land is prohibited, with the exception of the transport by air from Muscat to Salalah of short half-life radioactive materials used in medical practices. These regulations require further the return of radioactive sealed sources to the manufacturer.

R4. *The Civil Aviation Regulations* issued by Ministerial Decision 44/N/2007, which describe the requirements and procedures to be adhered to prior to the air transport of dangerous goods, including radioactive substances.

These regulations have been adopted from the regulations of the International Civil Aviation Organization (ICAO-TI: Technical Instrumentations for the Safe Transport of Dangerous Goods) which are consistent with the IAEA Safety Standards “Regulations for the Safe Transport of Radioactive Materials”, (2018 Edition, SSR-6 Rev.1).

- R5. *The Regulations on Safety Measures and Occupational Health in Facilities Subject to the Omani Labour Law* issued by Ministerial Decision 286/2008.
- R6. Ministerial Decision 10/2017 amending some provisions of the Regulation for the Management of Hazardous Waste, which specifies the fees for granting permits for managing hazardous waste. In addition, it specifies the fines for violating the provisions of this regulation.
- R7. The Regulations on Land Transport issued by Ministerial Decision 2/20, in implementation of the Land Transport Law and which emphasizes the requirements for the transport by land of hazardous materials, including radioactive and nuclear materials, specified in the Regulations for the Control and Management of Radioactive Materials and the Regulations for Civil Defence.
- R8. Regulations on the Sea Transport of Dangerous Goods were issued by Ministerial Decision 101/2019 on 24 July 2019. These regulations make explicit reference to the International Marine Organization (IMO) Dangerous Goods Code for Sea Transport.

In addition to all the above regulations, the Sultanate of Oman has made the commitment to implement the guidance contained in the Code of Conduct on the Safety and Security of Radioactive Sources (IAEA/CODEOC/2004) issued in 2004 on all operations relating to radioactive sources, through an official correspondence sent from H.E. the Minister in charge of Foreign Affairs to the Directorate General of the IAEA dated 28 May 2005.

Similarly, the Sultanate of Oman made also a commitment to implement the “Guidance on the Import and Export of Radioactive Sources” (IAEA/CODEOC/ 2012) issued in 2012 and the “Guidance on the Management of Disused Radioactive Sources” (IAEA/CODEOC/M6T-DRS/2018) issued in 2018 through an official correspondence from H.E. the Minister in charge of Foreign Affairs to the Directorate General of the IAEA dated 11 May 2020. This last commitment came after the submission by the Sultanate of Oman of its National Report for the 8th Review Meeting.

Article 7 (2) (ii) System of Licensing

The regulatory and supervisory framework, as entrenched in Oman's legal and administrative system, provides for a seamless process of licensing. This process governs the import, use, transport, storage and re-export of radioactive sources. Moreover, the licensing system regulates the disposal of radioactive waste. This system includes, inter alia, the following:

- The requirements for registration of parties handling radioactive materials;
- Permits for the import and use of radioactive sources in the industrial and economic sectors;
- Permits for the import and use of radioactive sources in the medical practices;
- Permits for the return (re-export) of disused radioactive sources to their manufacturers; and
- Permits for the operation of radioactive sources storage facilities.

All permits issued by the Department of Radiation Protection of the Environment Authority are valid for one year, except for the return of disused radioactive sources to their manufacturer for which the permit is valid for forty five days.

The licensing process is described in Article 2 of "The Regulations for the Control and Management of Radioactive Materials" as follows: "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 use shall be renewed within a maximum period of one month from the date of expiry."

The requirement for licensing of the transport of radioactive material is spelled out in Article 17 of these regulations: "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". Requirement for a permit for the storage of radioactive material is mentioned in Article 22 of the same regulations: "Permanent storage of radioactive materials shall be permitted only at locations approved by the Ministry. The Organization using these locations should have written procedures of operations, security facilities, dose rate limitations, notice and labels as per the enclosed design model".

Article 7 (2) (iii) System of Regulatory Inspection and Assessment

The inspection system in place aims to ensure that all persons and organizations dealing with radioactive materials act in conformity with the "Regulations for the Control and Management of Radioactive Materials" and in particular:

- Have radiological emergency plans and capabilities to implement the plans.
- Conform with the allowed radiation exposure limits, through the monitoring of radiation exposure.
- Enforce the use of personal dosimeters by radiation workers.
- Undertake leak test for all sealed radioactive sources.
- Maintain a log book of the movement of radioactive sources.
- Undertake work place monitoring to detect any radioactive contamination.

The above objectives of the inspection system are achieved through: i) the submission by radioactive material users of semi annual reports that include results of personal dose monitoring of workers, leakage test of sealed radioactive sources, results of measurement instruments calibration, workplace radiation monitoring results and movement of radioactive sources; ii) in-situ inspections in accordance with a predefined program.

The inspection program of the regulatory authority includes routine inspections as well as unannounced inspections. The inspections of this latter type are limited in number and concern in priority licensees possessing radioactive sources of relatively greater risks.

Article 7 (2) (iv) Enforcement of applicable regulations and terms of licenses

The regulatory authority, namely, the Environment Authority, is responsible for the enforcement of applicable regulations and terms of permits. The relevant permits may be extended, suspended, modified or revoked. Article (28) of the Law on the Conservation of the Environment and Prevention of Pollution states clearly that the Environment Authority “shall in cases where the violations leads to a serious damage 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 Environment Authority may review the suspension decision for another period if the violation continues.

The permits for the use of radioactive sources may be renewed within a maximum period of one month from the date of the expiry of the permit. In the event that a radioactive source is used beyond the remits of the permit expiry date, a fine will be imposed by the regulatory authority, Article 2 of “The Regulations for the Control and Management of Radioactive Materials” stipulated that: “ ... 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.”

To this date, there has been no violation of the laws and regulations relating radioactive materials in Oman.

ARTICLE 8 REGULATORY BODY

- 1. Each Contracting Party shall establish or designate a regulatory body entrusted with the implementation of the legislative and regulatory framework referred to in Article 7, and provided with adequate authority, competence and financial and human resources to fulfil its assigned responsibilities.*
- 2. Each Contracting Party shall take the appropriate steps to ensure an effective separation between the functions of the regulatory body and those of any other body or organization concerned with the promotion or utilization of nuclear energy.*

Article 8 (1) Establishment of the Regulatory Body

The role and responsibilities of a nuclear and radiation regulatory body were initially assigned to the Ministry of Environment and Climate Affairs by the Law on “Conservation of the Environment and Prevention of Pollution” promulgated in 2001 by the Royal Decree 114/2001. This role is now with the Environment Authority since its establishment on 18 August 2020 by Royal Decree 106/2020. Article 18 of Royal Decree (114/2001) stipulates that *"the owner of any nuclear establishment or any establishment dealing with radioactive material, whether through transportation, storage or usage, shall obtain a prior consent of the Environment Authority". The Environment Authority shall monitor nuclear radiation in coordination with regional and international centers".*

This law gives the authority to the Environment Authority Chairman to issue regulations for the management and control of radioactive material and nuclear establishments.

Within the Environment Authority, the Department of Radiation Protection has been entrusted with tasks to implement laws and regulations governing radiation materials. The Department of Radiation Protection registers and issues permits for entities and individuals dealing with import, transport, use, storage and export of radioactive materials. Any radioactive material with radioactivity concentration of 100 Becquerel per gram and above requires a permit. It should be noted that the licensing of vehicles for the transport of any radioactive material are granted by the Civil Defence and Ambulance Authority.

The Department of Radiation Protection is constituted of three sections: i) the Permits Section, ii) the Inspection and Control Section, and iii) the Radiation Monitoring Section. There are 12 staff members in the department.

A training program for staff of the Department of Radiation Protection has been developed and implemented through an IAEA technical cooperation project. The training program includes in particular the following: - notification and authorization procedures; - inspection planning and conduct; - enforcement procedures and reports; - quality management system of regulatory information; - radiation safety management practices and activities.

The financial resources to adequately cover the program of activities of the Department of Radiation Protection come in part from the budget of the Environment Authority and in part from fees paid by licensees.

Article 8 (2) Status of the Regulatory Body

The Environment Authority Chairman addresses its reports to the Council of Ministers, the State Council and Majlis A'Shura (the last two constitute the Parliament or Majlis Oman) on its work and its plans for the protection of the environment and the public from all forms of pollution sources, including radiation hazards. Its reports are available for consultation by the public.

There has been so far no incident in the country involving radiation sources or any increase in radiation levels beyond the natural background that warranted reporting. If this turns out to be the case, the reports on the protection of the environment and the public from all forms of pollution will contain information on radiation incidents reported to and investigated by the Department of Radiation Protection of the Environment Authority. Any increase of the radiation levels in the environment that is measured by the Radiation Monitoring Network will also be part of the report.

In terms of independence and separation between the functions of the regulatory body and those of any other body or organization in the Sultanate of Oman concerned with the promotion or utilization of nuclear energy or radioactive material, the Environment Authority neither uses nor possesses any radioactive sources nor promotes their utilization. Its mandate is to ensure the protection of the environment from all kinds of pollution, the preservation of nature and the conservation of natural resources of Oman. In this respect, it exercises strict control on all radiation sources and activities associated with these sources in the Sultanate of Oman.

ARTICLE 9 RESPONSIBILITY OF THE LICENSE HOLDER

Each Contracting Party shall ensure that prime responsibility for the safety of a nuclear installation rests with the holder of the relevant licence and shall take the appropriate steps to ensure that each such licence holder meets its responsibility.

The responsibilities of the license holder with regards to the safety of radioactive sources management are defined in great details in "The Regulations for the Control and Management of Radioactive Materials" and "The Regulations for the Management of Hazardous Waste". The license holder has in particular the responsibility to provide qualified persons to monitor and control radioactive sources. In addition, it is the responsibility of the license holder to ensure that the provisions of these regulations are complied with.

It is also the responsibility of any organization dealing with radioactive materials to 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 Environment Authority' requirements.

The license holder has also the responsibility to provide the Environment Authority, the Civil Defence and Ambulance Authority and other concerned authorities with information, maps and plans indicating locations where radioactive sources are stored (Article 4). All this information is essential and taken into account during the process of licensing.

It is the responsibility of the license holder to ensure that "all classified workers receive adequate training in their field of work and be issued personal dosimetry badges (TLD) before dealing with radioactive materials. This shall be suitably recorded" (Article 10). The Department of Radiation Protection receives on a regular basis, in periods not exceeding six months, reports on doses received by workers. These reports are analyzed and whenever necessary followed up by the Department of Radiation Protection, particularly in cases of over-exposure of workers in order to ensure that the responsibility of the license holder in this respect is met.

The Department of Radiation Protection ensures that the license holder discharges its responsibilities, as defined in the laws and regulations relating to radioactive material, by reviewing the periodic reports it receives from the license holder and implementing an inspection program that includes routine and unannounced inspections. Any shortcoming identified is subject to the penalties specified by the law, including the revocation of the license.

ARTICLE 10 PRIORITY TO SAFETY

Each Contracting Party shall take the appropriate steps to ensure that all organizations engaged in activities directly related to nuclear installations shall establish policies that give due priority to nuclear safety.

The Oman Vision (2020 – 2040) of the Sultanate of Oman and all Five Year Development Plans assign a clear priority to safety and the protection of the public, the workers and the environment from ionizing radiation and any source of pollution. In this respect, "The Law on the Conservation of the Environment and Prevention of Pollution" (Article 18 Royal Decree 114/2001) imposes a strict-control on radioactive material and nuclear establishments for safety and security purposes.

The management system of the Environment Authority promotes the identification and frank discussion of all safety concerns through regular meetings and seminars. Any issue that may impact the safety of radiation sources in the country is analyzed and is the subject of open discussion and communication with line management. Safety is thus integrated in all regulatory activities and is recognized by all staff as a necessary value for the protection of people and the environment from any harmful effects of ionizing radiation.

The culture of safety is reinforced by the implementation of a training program for any persons dealing with radioactive material. This is spelled out in *Article 10* of "The Regulations for the Control and Management of Radioactive Materials" (Ministerial Decision 249/97): *"all classified workers must receive adequate training on their field of work, before dealing with radiation materials. This should be suitably recorded"*.

Article 8 of these regulations require that *"any organization 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 Environment Authority's requirements"*. All these requirements are part of the policy for the establishment and development of a radiation safety culture. In addition, these regulations, in *Article 9*, require that the *"organizations' internal rules 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 full description of the controlled and supervised areas and any associated restrictions;*
- Ordering and receipt of radioactive material;*
- Dealing with radioactive material;*
- Disposal of radioactive material;*
- Record keeping;*
- Procedure for contractor and visitors;*
- Actions to be taken in the event of accidents and emergencies;*
- Training."*

The Department of Radiation Protection ensures that the above measures are effectively part of a quality assurance program of the organizations dealing with radioactive material. Verification of the existence of these quality assurance measures is carried out as part of the licensing and inspection process.

Systematic safety assessment and environmental assessment are part of the reports that need to be presented to the Department of Radiation Protection of the Environment Authority before any permit is issued. These reports are required by the existing regulations. A safety assessment report is required for the renewal of permits as well.

ARTICLE 15 RADIATION PROTECTION

Each Contracting Party shall take the appropriate steps to ensure that in all operational states the radiation exposure to the workers and the public caused by a nuclear installation shall be kept as low as reasonably achievable and that no individual shall be exposed to radiation doses which exceed prescribed national dose limits.

Radiation Protection has always been the focus of attention for all activities dealing with radioactive materials. The external radiation exposure of radiation workers is monitored using passive dose indicators such as thermoluminescent dosimetry badges (TLD), as well as active dose indicators that provide instant reading of dose such as pocket ionization chamber. There are about 2200 radiation workers in the country, mostly in the health sector and the oil and gas industries. This number has not changed noticeably over the past few years. The personal dosimeters of approximately half of these radiation workers are serviced by the Medical Physics Unit of the College of Medicine and Health Science of Sultan Qaboos University. Personal dosimetry services for some radiation workers in the industrial sector are contracted to overseas service providers. Personal dosimetry services have also been established in the year 2020 in the Medical Physics Department of the Ministry of Health to cover the radiation workers of public hospitals.

Dose limits for exposure to ionizing radiation have been set explicitly in the “Regulations of Occupational Safety and Health for Establishments Governed by the Labor Law” (Ministerial Decision 286/2008), enacted in application of the provisions of the Labor Law (Royal Decree 35/2003). Dose limits are referred to in Article 38 (6) of the above regulations are provided in Table 5 of the same regulations. For persons working directly with radiation sources, the limits of exposure are: 20 mSv/year for the total body, 150 mSv/year for eye lenses and 500 mSv/year for skin and limbs. Dose limits are also set in this table for juvenile trainees and for female workers. It should be noted that the Environment Authority is revising the existing regulations on the basis of the IAEA Safety Standards document “GSR – Part 3 Basic Safety Standards”. The dose limits for the eye lenses will henceforth be revised as per the ICRP publication 103.

The Department of Radiation Protection has established procedures for the review of the licence applications in order to ensure that all the licence holders have taken the necessary measures to minimize radiation exposure and implement the “As Low As Reasonably Achievable” (ALARA) principle. In addition, the license holders are required to submit bi-annual reports containing:

- Personal dosimetry (TLD) readings of the radiation workers.
- Wipe or leak tests for equipment and containers of sealed sources.
- Survey meter calibration results
- Radiation monitoring data in the workplace and around the storage area of radioactive sources.

With respect to the storage of radioactive material, "The Regulations for the Control and Management of Radioactive Materials" (Ministerial Decision 249/97, as amended by Ministerial Decision 281/2003) require, in *Article 23*, that *“the dose rate outside the storage facility shall not exceed 2.5 $\mu\text{Sv hr}^{-1}$ ” and that “Regular measurements 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 sources storage facilities shall be regularly wipe-tested and the results to be communicated to the Environment Authority”*.

These regulations also require, in *Article 3*, for radiation protection purposes, that *“The organization shall, after the Environment Authority’s approval, provide qualified persons to monitor and control radioactive materials and ensure that the provisions of these regulations are complied with”*. It is also required by the existing regulations (*Article 5*) that *“The organization 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”*. In accordance with *Article 6* of these Regulations, *“A person under the age of 18 is not allowed to be a classified worker. Female workers should be subject to additional restraints in accordance with the terms and Guidelines set by the Environment Authority”*. Radiation protection measures are also enforced in light of the requirement contained in *Article 7* of the Regulations that *“The organization shall notify the Environment Authority 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 material 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."*

The only release to the environment in the Sultanate of Oman of radioactive substances is the disposal of low level liquid radioactive waste generated by the use of radiopharmaceuticals in nuclear medicine for diagnostic and treatment purposes, after allowing the radioactive waste to decay in delay tanks to permissible levels in accordance with the regulations and under strict control by the operator and the regulatory body. Any incident that is significant in terms of safety must be reported and investigated. No such incident has occurred since the nuclear medicine facilities in two hospitals (the Royal Hospital and the Sultan Qaboos University Hospital) started operations.

Regulations require that the Environment Authority monitor nuclear radiation in coordination with regional and international centers as per specified procedures (Article 18). The monitoring of radiation in the environment of Oman is undertaken through the network of gamma dose rate stations that has been established in the country. From the 25 stations that were installed prior to 2019 in different parts of the Sultanate of Oman, there are presently, as May 2022, 29 stations in operation. Installation of additional stations, particularly in the north of the country and along the coast, is being undertaken with the aim to bring the total number of stations to 38 by the end of 2022.

The monitoring stations are installed outdoors, powered with solar panels and use wireless telecommunication channels (4 G – LTE) to transfer data to the central station located in the premises of the Environment Authority. The network is operated by the Radiation Monitoring Section of the Department of Radiation Protection of Environment Authority. No radiation level the beyond background has been detected so far by any of the gamma dose rate stations.

ARTICLE 16 EMERGENCY PREPAREDNESS

1. Each Contracting Party shall take the appropriate steps to ensure that there are on-site and off-site emergency plans that are routinely tested for nuclear installations and cover the activities to be carried out in the event of an emergency.

For any new nuclear installation, such plans shall be prepared and tested before it commences operation above a low power level agreed by the regulatory body.

2. Each Contracting Party shall take the appropriate steps to ensure that, insofar as they are likely to be affected by a radiological emergency, its own population and the competent authorities of the States in the vicinity of the nuclear installation are provided with appropriate information for emergency planning and response.

3. Contracting Parties which do not have a nuclear installation on their territory, insofar as they are likely to be affected in the event of a radiological emergency at a nuclear installation in the vicinity, shall take the appropriate steps for the preparation and testing of emergency plans for their territory that cover the activities to be carried out in the event of such an emergency.

Article 16 (3) Emergency Preparedness for Contracting Parties without Nuclear Installations

The Civil Defence Law (promulgated by Royal Decree 76/91 and amended by Royal Decrees 75/99 and 27/2008) provide for plans and measures to be in place to deal with any natural and anthropogenic public disasters, including nuclear and radiological accidents.

The National Committee for Emergency Management (NCEM) the new name for the National Committee for Civil Defence, established by the Royal Decree (76/91) promulgating the Civil Defence Law, is the authority in the Sultanate of Oman responsible for the development, at the national level, of policies, strategies and plans for the management of all types of emergencies, including nuclear and radiological emergencies. The NCEM is placed under the authority of National Security Council and is chaired by the Inspector General of the Royal Oman Police. Its members are senior and high officials from the relevant ministries and organizations. It has an operational Emergency Management Center.

In addition, the Civil Defence and Ambulance Authority has been established in 2013 as a financially and administratively independent entity linked to the Royal Oman Police. It is responsible for setting up civil defence plans and for their implementation. It is also responsible for the implementation of the response plan to radiological threats of categories III, IV and V, as defined in the IAEA Safety Standard GSR-Part 7 (General Safety Requirements – Preparedness and Response for a Nuclear or Radiological Emergency).

The Environment Authority, as a regulatory authority, has the important role to ensure that all organizations and facilities with radioactive material being used, stored, transported or handled have emergency plans and procedures in place, in application of Article 18 of the “Law on Conservation of Environment and Prevention of Pollution” which stipulates that the owner of any nuclear establishment shall submit, for the approval of the Environment Authority, a contingency plan to deal with risks of radioactive pollution. The Environment Authority has also the responsibility to monitor and advise responders to any emergency on mitigation and urgent protective actions and on emergency workers protection.

The management of national emergency situations is done in accordance with the National Disaster Management Plan which was issued by the Director General of the Royal Oman Police in November 2003, as foreseen in the National Civil Defence Law.

A National Radiological and Nuclear Emergency Preparedness and Response (RNEPR) Plan has been developed with the assistance of the International Atomic Energy Agency through a Technical Cooperation Project. It has been approved by the Council of Ministers on 19 February 2019. On the same date, the Council of Ministers also approved the strategy for the implementation of the RNEPR plan. It should be noted that the RNEPR plan is an integral part of the National Disaster Management Plan.

The RNEPR plan was reviewed by IAEA experts and found in conformity with the requirements contained in the IAEA Safety Standard Document GSR-Part 7 (IAEA General Safety Requirements - Preparedness and Response for a Nuclear or Radiological Emergency). The national entities that were involved in the development of the RNEPR plan included: - The Ministry of Defence; -

The Royal Office; - The Royal Oman Police; - The Civil Defence and Ambulance Authority; - The Emergency Management Center; - The Ministry of Health; - The Ministry of Economy; The Environment Authority; - The Ministry of Justice and Legal Affairs; - The Peaceful Nuclear Technology Office (Foreign Ministry); - Sultan Qaboos University Hospital.

The implementation strategy of the RNEPR plan includes the actions that need to be undertaken in the short-term, medium-term and long-term, in order to fulfill the requirements for all aspects of the state of preparedness and for all steps of the response process to a radiological or a nuclear emergency. The different actions relate to: - legislative and regulatory aspects; - organizational and management aspects; - procedures; - physical infrastructure, instruments and equipment; - training, exercises and drills. The development of the Standard Operating Procedures (SOPs) for the RNEPR plan is an important element of the implementation plan. The SOPs have been prepared in 2021 with the participation of all entities concerned by nuclear and radiological emergencies, namely: - the Emergency Management Center; - the Civil Defence and Ambulance Authority ; - the Environment Authority; - the Ministry of Health; - the Ministry of Information; - Sultan Qaboos University Hospital; - the Royal Hospital; - the Authority for Public Services Regulations; - the Ministry of Agriculture, Fisheries and Water Resources; - Food and Safety Agency; - the Ministry of Defence; - the Civil Aviation Authority; ; - the Peaceful Nuclear Technology Office (Foreign Ministry).

The Sultanate of Oman participated in the preparation of the Gulf Cooperation Council (GCC) Regional Radiological and Nuclear Emergency Preparedness and Response Plan which was approved by the Council of Ministers of the GCC at their summit meeting held in November 2014, after review by the International Atomic Energy Agency. The Sultanate of Oman ratified the statute of the GCC Emergency Management Center and is actively participating in its activities. The mission, role and responsibilities of the GCC Emergency Management Center (EMC) are defined in its Statute. An important role of the center is to ensure the sharing and coordination of resources for the preparation and response to a radiological or a nuclear event and to ensure consistency in the response of the various Member States of the GCC following such event. It should be noted that the EMC carries out risk assessment and hazard mapping for the GCC region and

develops regional mitigation and disaster management plans for all kinds of emergencies (natural disasters, pandemics, radiological and nuclear emergencies, etc ...). Collecting data and dissemination of information are part of its prerogatives and well.

The Sultanate of Oman participates in the IAEA ConvEx exercises organized by the Incident and Emergency Center of the IAEA in the framework of the Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency, in particular:

- ConvEx 1a (organized yearly to test that National Warning Points – NWP- for necessary notifications are available continuously)
- ConvEx 1b (organized yearly to test that NWP are available continuously and the National Competent Authorities – NCAs- can promptly response to received notifications)
- ConvEx 1c (organized yearly to validate the Administrators’ access to the Unified System for Information Exchange in Incidents and Emergencies –USIE)
- ConvEx 2b (organized to test arrangements for a request and provision of assistance)
- ConvEx 3 (organized to evaluate response to a major nuclear or radiological emergency and to identify capabilities that need improvements)

The Sultanate of Oman participated in the ConvEx-3 (2021) exercise hosted by the United Arab Emirates (UAE) based on an exercise at the Barakah Nuclear Power Plant. The Sultanate of Oman took part also in the meetings of the Task Group set up for the preparation of the exercise, as a UAE neighboring country. This exercise was an opportunity for testing and evaluating the National Nuclear and Radiological Emergency Plan, particularly the roles and responsibilities before, during and after a nuclear or radiological incident, of all entities in the Sultanate of Oman concerned by such emergencies, in particular the National Warning Point (the National Emergency Management Center).

Radiological emergency drills are also conducted on a regular basis. The latest drill was conducted on 20 December 2021 at the Port of Sohar and involved all the companies and organizations there dealing with radioactive sources.

D-ANNEXES

Annex 1: Regulations for the Control and Management of Radioactive Materials issued by (MD-249/97), and amended by (MD-281/2003)

Annex 2: Regulations for the Management of Hazardous Waste issued by a Ministerial Decision (MD-18/93)

Annex 3: Law on the Conservation of the Environment and Prevention of Pollution (RD-106/2020)

Annex 4: Establishing the Environment Authority, Determining Its Competences, and Adapting Its Organizational Structure (RD-106/2020)

Annex 1:

REGULATIONS FOR THE CONTROL & MANAGEMENT OF RADIOACTIVE MATERIALS

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 per-

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manently 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- **Bequerel (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 (12) : 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

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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 mini-

imum 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 fulfill 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.

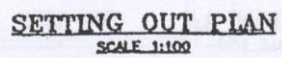
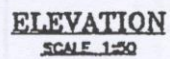
Article (25) : Liquid radioactive waste shall be disposed of in drain in accordance with the Ministry's regulatory conditions.

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

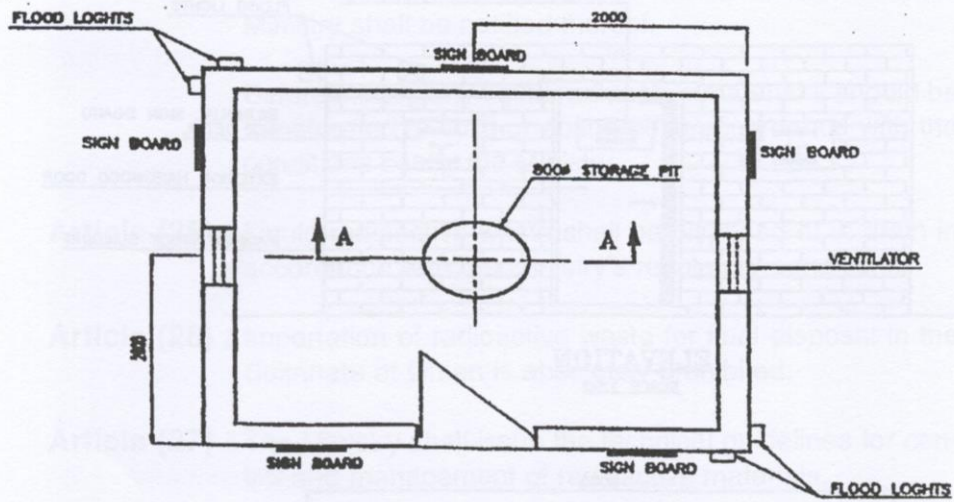
Article (27) : The Ministry shall issue the technical guidelines for control and management of radioactive materials.

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 the event of continuous violation.

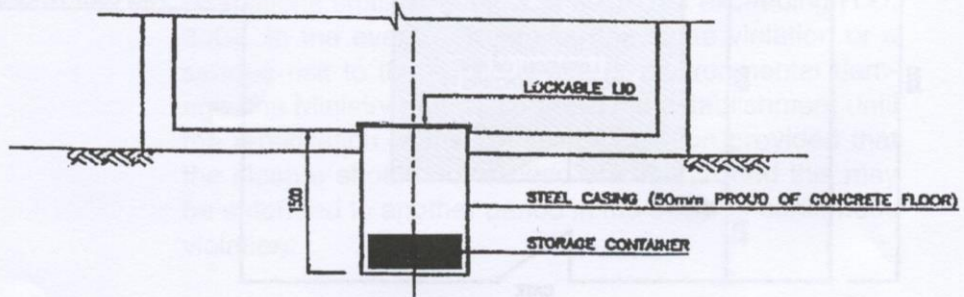
A) EXTERNAL STRUCTURE



B) STORAGE PIT

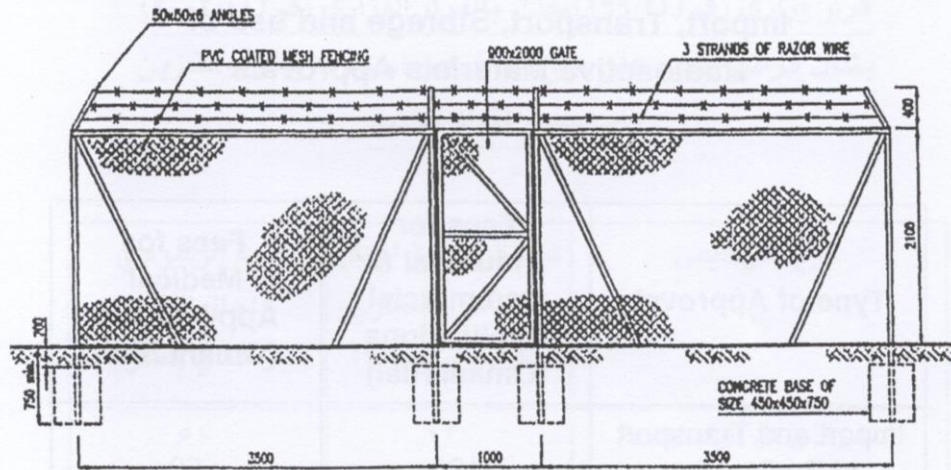


PLAN OF STORAGE PIT
SCALE 1:50



SECTION AA
SCALE 1:50

C) FENCING AND LABELING



ELEVATION OF FENCE AND GATE

SCALE 1:50



MD (21/99) Amended by MD (81/2002)
Relating to the fees structure of
Import, Transport, Storage and use of
Radioactive Materials Approvals

Type of Approval	Fees for Industrial & Commercial Applications (Omani Rial)	Fees for Medical Applications (Omani Rial)
Import and Transport of Radioactive Materials	100	50
Use and Storage of Radioactive Materials	100	15
All	200	65

Annex 2:

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 Organisation 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 SHAWAYN AL-HOSNI
MINISTER OF REGIONAL
MUNICIPALITIES & ENVIRONMENT

ISSUED ON : 10 Shaaban, 1413 H
C.T. : 02 February, 1993

REGULATIONS FOR THE MANAGEMENT OF HAZARDOUS WASTE

Article 1

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

1. The Minister

The Minister of Regional Municipalities and Environment.

2. The Ministry

The Ministry of Regional Municipalities and Environment.

3. 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.

4. Recycling

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

5. Transporter

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

6. Hazardous Waste Generator

A. The owner (and/or his agent) of any land or premises of any type where hazardous waste is generated.

B. Any person (and/or his agent) trading in hazardous materials having hazardous residues of any kind or from any source.

7. Consignment Note

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

8. Storage Facility

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

9. Pretreatment

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.

10. Pretreatment Facility

The site for the pretreatment of hazardous waste that has been licensed by the Ministry.

11. Hazardous Waste Landfill Site

A landfill site licensed by the Ministry where hazardous waste are permitted to be disposed of.

12. 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 licenced 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 facility if it is accompanied by a Consignment Note in accordance with Article (5).

Article (12)

The owner of any site for the pretreatment 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, pretreatment and disposal of hazardous waste.

Annex 3:

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 DECREED AS FOLLOWS

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.

**Issued on 28 Shaban 1422AH
Corresponding to 14 November 2001**

**QABOOS BIN SAID
SULTAN OF OMAN**

LAW ON CONSERVATION OF THE ENVIRONMENT & PREVENTION OF POLLUTION

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: <ul style="list-style-type: none">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, recycled 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: 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 its 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 minimise 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 rueppelii	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

Annex 4:

Royal Decree 106/2020

Establishing the Environment Authority, Determining Its Competences, and Adopting Its Organisational Structure

We, Haitham bin Tarik, the Sultan of Oman

after perusal of the Basic Statute of the State,

Royal Decree 90/2007 Establishing the Ministry of Environment and Climate Affairs,

Royal Decree 18/2008 Determining the Competences of the Ministry of Environment and Climate Affairs and Adopting Its Organisational Structure,

and the System of the Administrative Apparatus of the State promulgated by Royal Decree 75/2020,

and in pursuance of public interest,

have decreed as follows

Article I

A public authority named the "Environment Authority " is hereby established. It shall have legal personality, shall enjoy financial and administrative independence, and shall be subordinate to the Council of Ministers.

Article II

The headquarters of the Environment Authority shall be in the Governorate of Muscat, and branches of it may be established in the other governorates by a decision of the board of directors.

Article III

The competences of the Environment Authority are hereby determined in accordance with the attached Annex 1.

Article IV

The organisational structure of the Environment Authority is hereby adopted in accordance with the attached Annex 2.

Article V

Without prejudice to the provisions of Royal Decree 85/2020 Regarding the Public Authority for Civil Aviation, all allocations, assets, rights, obligations, and holdings of the Ministry of

Environment and Climate Affairs relating to the environment are hereby transferred to the Environment Authority.

Article VI

The employees of the Ministry of Environment and Climate Affairs, with the exception of employees concerned with climate affairs, are hereby transferred to the Environment Authority with their same financial grades, in accordance with the rules determined by the Council of Ministers.

Article VII

The phrase "Ministry of Environment and Climate Affairs" wherever it occurs in laws and royal decrees relating to the environment is hereby replaced with the phrase "Environment Authority."

The phrase "Minister of Environment and Climate Affairs" wherever it occurs in laws and royal decrees relating to the environment is also hereby replaced with the phrases "Chairman of the Board of Directors of the Environment Authority" or "President of the Environment Authority" as the case may be.

Article VIII

The Ministry of Environment and Climate Affairs is hereby abolished, and all that is contrary to this decree, or in conflict with its provisions, is hereby repealed.

Article IX

This decree shall be published in the Official Gazette, and comes into force on the date of its issuance.

Issued on: 28 Dhu Al-Hijja 1441

Corresponding to: 18 August 2020

Haitham bin Tarik
Sultan of Oman