



**National Report on
Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its
Associated Guidance for
United Arab Emirates**

Executive Summary

The UAE's Federal Law by Decree No 6 of 2009 concerning the Peaceful Uses of Nuclear Energy (the Nuclear Law) has created a unified legal and regulatory structure for the UAE covering radioactive sources. The Federal Authority for Nuclear Regulation (FANR) was established by the law and given strong regulatory powers including being able to make regulations, undertake licensing, inspection and enforcement.

FANR has issued regulations stating the requirements for safety and for security of radioactive sources. The regulations follow the IAEA safety standards and nuclear security guidance publications. FANR initially licensed users of radioactive sources on the basis of radiation safety. Subsequently, the security requirements applying to category 1-3 radioactive sources came into effect and the relevant licences are being amended to reflect these requirements.

FANR has established an active inspection and enforcement programme from the safety perspective for licensees with radioactive sources with particular priority being given to sources of the highest hazard, notably industrial radiography. All users of category 1-3 sources have been visited to explain the security requirements and a formal inspection programme will be implemented in the near future.

Personal dosimetry services, both domestic and international are readily available in the UAE. A secondary standards dosimetry laboratory is being established with the support of IAEA.

There have been substantial efforts made to provide training to staff of FANR, law enforcement agencies and first responders.

The UAE's source register has been established using the RAIS database. It covers all licensed sources.

FANR has practical experience in the handling of orphan sources and is working towards a national orphan source strategy.

With regard to sources at the end of their life, the policy applied has been to require arrangements for return of sources to the manufacturer. Where disused sources have been located, FANR has facilitated the return of such sources.

The UAE is an importer of high hazard sources. Its export of sources is mainly return to manufacturer of decayed sources and some movement of well-logging sources by international companies around their operations. Imports and exports are closely controlled through a permitting system and there is strong cooperation between FANR and the Customs authorities.



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National Report on Implementation of the Code of Conduct on the Safety and Security of Radioactive Sources and its Associated Guidance for United Arab Emirates

Introduction

This is the first national report on its experience in implementing the provisions of the Code of Conduct and its associated Guidance that the United Arab Emirates has voluntarily submitted under the formalized process for exchange of information and lessons learned requested by General Conference in 2006. The UAE is particularly pleased to submit this report to the International Conference on the Safety and Security of Radioactive Sources that the Government of the UAE is hosting in Abu Dhabi in October 2013.

The format of the report follows the structure suggested in the International Conference announcement and that of the formalized process.

1. The infrastructure for regulatory control of safety and security of radioactive sources (paragraphs 8, 18–22 of the Code)

Legal Framework

The Federal Law by Decree No 6 of 2009 Concerning the Peaceful Uses of Nuclear Energy (the Nuclear Law) governs the 'nuclear sector' of the UAE, which is defined so as to include activities (use, possession, manufacture, handling, transport, import/export, storage and disposal) involving radioactive sources. The Nuclear Law prohibits any such regulated activities from being conducted by anyone in the UAE unless they are licensed by the Federal Authority for Nuclear Regulation (FANR). It addresses safety and security (as well as safeguards – a 3S approach).

The Nuclear law imposes broad requirements for management of safety on licensees and imposes substantial penalties on anyone conducting regulated activities without a licence or intentionally failing to comply with the law, regulations or licence conditions.

FANR is established by the Nuclear Law as a public organization with an independent balance sheet, independent legal personality, full legal competence and financial and administrative independence. The Authority is not a part of any other organization and has no legal or other relationship with any promotional body. Before 2009 the responsibility for radiation safety was previously held by a number of authorities in the Emirates, and FANR has taken over those responsibilities by the Nuclear Law.

The Nuclear Law provides that regulatory decision-making is in the hands of FANR. It has legal authority and competence through comprehensive provisions for the making of regulations and guides; licensing after assessment; inspection; and enforcement powers.



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The Board of Management of FANR, currently composed of nine UAE Nationals, has authority for all regulatory decision making (e.g. regulation and licence issuance). It has the sole power to make licensing decisions – it is an independent organization, with annual reporting requirements to the Minister for Presidential Affairs, a coordinating Minister. It is also required to apply a graded approach to its regulatory activities.

Regulatory framework for safety and security of radioactive sources

The regulation FANR-REG-24 “Basic Safety Standards for Facilities and Activities involving Ionizing Radiation other than in Nuclear Facilities” was issued soon after the creation of FANR. It imposes on licensees of radiation sources safety requirements consistent with GSR Part 3, the IAEA Basic Safety Standards. Through FANR-REG-24, FANR defines radioactive material for its regulation as being radioactive material above the activity and activity concentration levels established for exemption in the IAEA BSS, also FANR-REG-24 sets out the general grounds for seeking an exemption.

In general FANR-REG-24 gives the requirements for justification, optimisation and dose limits; management requirements; the prevention of accidents; emergency planning; reporting requirements; occupational exposure protection: controlled and supervised areas , local rules, personal protective equipment, workplace and personal monitoring, training; public exposure protection: optimisation, radioactive waste, monitoring of public exposure.

The Licensee is required to establish and implement a protection and safety programme derived from a safety assessment that: applies protection and safety measures commensurate with the nature and extent of the radiation risks associated with the activity; complies with the requirements of the regulation and licence conditions; and identifies and documents the role of the radiation protection officer. The Licensee is obliged to provide the necessary measures and resources to implement the protection and safety programme, including ensuring that personnel are appropriately trained.

A Regulatory Guide FANR-RG-007 [Radiation Safety] is issued to describe methods and criteria acceptable to the authority for meeting and implementing specific requirements in FANR-REG-24.

In October 2011, a regulation for the security of radioactive sources was issued [FANR-REG-23]. Its scope is to impose security requirements on all IAEA category 1 to 3 radioactive sources and their aggregation in use, storage and transport. This regulation is based on the IAEA Nuclear Security Recommendation on Radioactive Sources and Associated Facilities (NSS No. 14) and its implementing guides (NSS No. 9 and 11). It provides requirements to protect category 1 to 3 aggregation of radioactive sources.

FANR-REG-23 requires that each applicant/licensee using, storing and transporting IAEA Category 1 to 3 of radioactive sources or aggregation of radioactive sources shall submit to FANR for approval a security plan and/or a transport security plan. These plans are required describe the security system set in place or to be implemented, during use, storage and transportation of radioactive sources, to ensure the



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effective carrying out of the three security functions of detection (including assessment), delay and response to a security breach. Each Category of source requires security measures commensurate to the risk presented if the radioactive source is used in a malicious act (graded approach).

Requirements are also detailed in order to implement the security management for radioactive sources (e.g. access control, management of keys/badges/cards, inventories and records, training and security awareness) and procedural security measures (e.g. review and revise security plans and security system). All related information shall be protected from unauthorized access and person intending to grant access to radioactive sources shall have their identity checked and shall undergo a security background check, which includes a security assessment and criminal history checks.

Licensing

FANR's guidance on the format and content of licence applications included a standard application form and guide to making an application that expands on the requirements to submit plans and arrangements for managing both safety and security in the case of radioactive sources (category 1-3).

Review and assessment of regulated activities is conducted based on the information submitted with the licence application as supported by FANR Guide 'Applying for a Regulated Material Licence'.

FANR Regulations require the applicant to provide the following information to be reviewed and assessed:

A: Applicant Information

B: Information about Regulated Activities and Regulated Materials

C: Inventory of Regulated Material

D: Radiation Protection Arrangements (radiation protection program, radiation protection officer and his/her qualification, layout of the facility, program to ensure the control of the regulated materials, arrangement for transportation and waste disposal/management plan)

If the applicant intends to handle or use category 1, 2 or 3 radioactive sources the security plans for the facility and transport must be submitted to FANR for approval.

The licence stipulates requirements for radiation users to meet the provisions of FANR-REG-24 and FANR-REG-23 and their protection and safety and security plans.

Inspection and Enforcement

FANR has the authority to implement an inspection programme in relation to any regulated activity to assure itself that the operator complies with the applicable law and regulations and any conditions set out in the licence requirements.

Inspections are intended to assure FANR that:

- facilities, equipment and work performance meet all necessary requirements
- there is compliance with documents and instructions



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- individuals employed by the operator (including contractors) possess the necessary competence for the effective performance of their functions
- inadequacies and deviations are identified and corrected, or justified without undue delay
- the operator is managing safety in accordance with FANR safety requirements

The inspection is conducted based on the nature of the activity, and there are number of checklists (These checklists were derived from IAEA TECDOC 1526) for the inspection of regulated activities such as:

- Fixed Gauges
- Industrial Radiography
- Portable Gauges
- Radiotherapy
- Well Logging

FANR is implementing an inspection program for users of regulated material and create an internal process to conduct the inspection in systematic manner, both announced and unannounced are conducted on frequent basis depends on the risk of the practices, such as the industrial radiography practice should be inspected twice per year and the well logging practice inspected once per year (the priority is given to the users of category 1, 2 and 3).

The program of inspections is provided to facilities to be inspected. An inspection comprises a preliminary meeting with the representative legal person and with the radiation protection officer. Inspections are undertaken and a preliminary report is established and discussed with the representative of the facility. The final version is sent with an indication of the actions which should be taken. The timetable for completing these actions depends upon the priority attributed to the findings made.

In the period from 2011 to June 201, FANR has carried out over 780 inspections. A formal inspection programme focusing on security of radioactive sources is being established and, in the meantime, all the relevant licensees have been visited by FANR officers who have explained the requirements imposed by FANR REG 23.

The fundamental legal framework for FANR's enforcement policy is established in the Nuclear Law. FANR is given explicit power to take enforcement action and to ensure that corrective actions are undertaken. The Board of Management of FANR is also able to impose administrative fines and penalties for breaching the terms or conditions of a licence. The operation of these administrative fines and penalties however, will be the subject of a regulation currently being drafted.

A procedure requires that an Order suspending or revoking an authorization/licence or to curtail activities and to direct the operator to eliminate unsafe conditions, must be approved by the Board or the Director General of FANR if so delegated.

FANR implements this legal framework through an enforcement procedure established as a part of its integrated management system.

Communication



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Communication with the applicants and the licensees is an essential tool to improve the safety and security infrastructure in the state, and to achieve the mission and the vision of the authority FANR has conducted a number of 'workshops' open to applicants and licence holders for regulated material to discuss its regulatory processes and expectations. In the workshop in 2012 FANR presented on topics including conditions of the Licence, safety requirements, reporting requirements, inspection findings, the security requirements for the sources of category 1, 2 and 3 and safe transport of radioactive materials.

In 2011 hosted a specific workshop explaining the provisions of FANR-REG-23 to an open audience of licensees.

Emergency Preparedness

FANR-REG-24 requires that the Licensee shall prepare and maintain an Emergency Plan for protection of people, commensurate with the nature and magnitude of the risk involved. The Emergency Plan is reviewed and assessed as part of the licensing review. The regulation also requires the licensee to report incidents and events to FANR with the timing of the report based on the category of the incident.

FANR is working with other entities such as National Emergency Crises and Disasters Management Authority (NCEMA) and Ministry of Interior to develop the National Emergency Plan. FANR has assessed the radiological emergency scenarios involving radioactive sources and equipment is being standardized and emergency procedures are being established.

In accordance with the emergency procedures FANR has established an emergency contact facility. A mobile telephone arrangement is coordinated by an Emergency Specialist and monitored continuously throughout the year by duty officers. The number is available to the public on the FANR website and is distributed to all government agencies including first responders. Accommodation has been designated in FANR's offices that is to be equipped as an emergency operations center to coordinate significant events.

2. The facilities and services available to the persons authorized to manage radioactive sources (paragraph 9 of the Code)

The UAE Government provides a personal dosimetry service through the Ministry of Health, Dubai Health Authority and a Government hospital and international providers of such services also operate in the UAE, FANR-REG-24 requires use of 'approved/licensed dosimetry services that operate under an adequate quality management system. FANR does not provide approval or authorisation of service providers for individual monitoring. In its regulatory guide RG-007, FANR has indicated that it relies on formal approval by recognized radiological health authorities, such as approval by the Health and Safety Executive in the UK, or accreditation by the National Voluntary Laboratory Accreditation Program (NVLAP) in the United States.



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There is an IAEA Technical Cooperation project to support the UAE in the process of establishing a Secondary Standards Dosimetry Laboratory (SSDL) in the country and plan to be operated in end of 2014.

3. Training of staff in the regulatory body, law enforcement agencies and emergency service organizations (paragraph 10 of the Code)

FANR has provided its staff with training and is equipped with radiation measuring instruments suitable for the purpose of managing radioactive sources; searching for and securing missing sources; assisting in the event of an accident or malicious act involving a radioactive source. Other training has been provided to the FANR Emergency Duty Officers; the other stakeholders such as Ministry of Interior, National Emergency Crises and Disasters Management Authority (NCEMA) and Armed Force have also taken part in some of these trainings.

Law enforcement agencies in the UAE have their training program to qualify their staff in response to any radiological emergency and FANR supports them in doing so. In addition there are different drills conducted with the Law enforcement agencies and other involved agencies such as Health Authority to test the capabilities of the involved authorities in response to radiological emergency.

4. Experience in establishing a national register of radioactive sources (paragraph 11 of the Code)

In accordance with the Nuclear Law, FANR has established and maintains a national register of radioactive sources. This register is based on the Regulatory Authority Information System (RAIS) database format which is being populated with data as licenses are issued. This national register covered the all categories of the radioactive sources (1 – 5), all details related to the sources are registered and the licensee is required update their inventory every six months.

The data base of the all sources which have been regulated under the previous authority shifted to FANR and manage under the current national register.

5. National strategies for gaining or regaining control over orphan sources, including arrangements for reporting loss of control over radioactive sources and for monitoring orphan sources (paragraphs 8(b), 12 and 13 of the Code)

The Nuclear Law gives FANR the power to develop a national strategy to ensure radiation protection from orphan sources. At present, FANR is preparing this strategy internally and it will be discussed later with other stakeholders who will work to implement the strategy along with FANR.

As part of the FANR Integrated Management System there is an Orphan Source. The purpose of the procedure is to provide a methodology for regaining control over Orphan Sources and improving control



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over vulnerable sources in order to meet the safety and security requirements established in the relevant FANR regulations and in accordance with Nuclear Law. It describes actions that must be taken by FANR to establish a national strategy and a system for regaining control over Orphan Sources and improving control over vulnerable sources. It recommends the application of a graded approach in accordance with the category of the source

FANR has provided their staff and other involved stakeholders with some training and radiation measuring instruments suitable for the purpose of managing radioactive sources; searching for and securing missing sources; and assisting in the event of an accident or malicious act involving a radioactive source.

FANR has practical experience of dealing with orphan sources. Also it has taken custody of number of orphan sources that are being held safely on FANR's behalf at a number of commercial premises as enquiries are made into the sources' details, histories and owners, and currently FANR working to find interim storage for these orphan sources in co-operation with other governmental stakeholders through the Radiation Protection Committee.

The UAE is party to the Convention on the Early Notification of a Nuclear Accident; and the IAEA Illicit Trafficking Database (ITDB) for which FANR has been designated as the UAE point of contact. For example, FANR provided a report to IAEA when a source was declared missing.

By organizing workshops and placing information on their website, etc. FANR has strived to promote awareness among industry, health professionals, and public and government bodies about the safety and security hazards associated with orphan sources.

Some major metal dealers in the UAE have installed portal monitors to detect radioactivity on scrap materials entering their site(s). FANR has been called to investigate several alerts from these operators, the details of the plan to communicate with metal dealer will be under the Orphan Sources Strategy. FANR is also currently working with Customs to develop the detection capabilities at borders and conducted different radiation awareness sessions for the customs staff.

6. Approaches to managing sources at the end of their life cycles (paragraphs 14 and 15 of the Code)

During the assessment phase of the application to Conduct Regulated Activity using Regulated Material, the applicant needs to provide FANR with the life cycle of the radioactive sources, the majority of the licensees declared that they plan to return the radioactive sources to the manufacture or the supplier when it became disused. Also FANR supporting other licensees to transfer their radioactive sources to other users when they don't need to use it any more or they can send it for recycle outside the country.



7. Experience with arrangements for implementing the import and export provisions of the Code (paragraphs 23–29 of the Code) and its supplementary Guidance

In association with the UAE Customs and with international cooperation, FANR works to ensure that sources enter the country to be used only by users that have submitted an application for a licence and been granted such a licence with conditions attached that are appropriate to the source(s) and its (their) intended application.

In determining whether to allow an import of any source, FANR checks the requested permit to establish that the end user of the imported source is licensed to use such sources and that the import is consistent with the allowed inventory of the licensee. In most cases of import of category 2 sources, FANR has received from export country the information related to the source as mentioned in the Guidance of the Import and Export of Radioactive Sources. The UAE does not manufacturer sealed source and exported radioactive sources usually are decayed sources send back to manufacturer for exchange and in some cases for recycling purpose. There I also some export of well-logging sources around the region by the international companies involved in this practice.

8. Any other issues relevant to the implementation of the Code and the Guidance, with a special emphasis on the progress made and challenges met over the last three years.

Since the passage of the Nuclear Law in September 2009, the UAE has established a legal and regulatory system consistent with the guidance of the Code of Conduct,. FANR has established itself as the new regulatory body dealing with both the safety and security of radioactive sources.

The challenges for the years ahead are to: fully implement the regulatory framework for the security of radioactive sources, particularly by establishing an inspection programme on security requirements; ensuring that licensees continue to effectively implement clearly established protection and safety programmes; and to establish and implement the national orphan source strategy.