International Atomic Energy Agency (IAEA)

Input to 2015 SG report on oceans and the law of the sea

Second part

Executive Summary

As nuclear technologies are increasingly being used to monitor and to protect the environment, the International Atomic Energy Agency (IAEA) provides, inter alia, support to its Member States to **develop and improve the relevant nuclear and isotope-based techniques and capacities**.

As the only UN System Organization operating marine laboratories, the IAEA also assists its Member States **in building quality assured monitoring databases** on radionuclides and hazardous contaminants in marine samples, which is essential information for accurately assessing pollution status and trends in the coastal and marine environment, as well as facilitating the comparability of similar data world-wide. Quality assured data is a prerequisite for making informed decisions on action plans and measures to protect the oceans, to assure the sustainable delivery of ecosystem services and to enhance human health and prosperity.

To **improve the assessment capabilities** with regard to radiation exposure levels to the public and the environment, including flora and fauna, the IAEA organized a programme titled "Modelling and Data for Radiological Impact Assessments" (MODARIA) for its Member States which consists of ten working groups covering different radiation protection topics, including radiological protection of marine biota, dispersion of radionuclides in the marine environment and the transfer of radionuclides accidentally released from land-based facilities. The programme which also provides an international forum for the exchange of experience, ideas and research information will conclude in 2015.

The IAEA also contributes to the **safe management of radioactive materials** released into the environment, working closely with the International Maritime Organization (IMO), and with the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 and 1996 Protocol, the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention), and the Convention for the Safe and Environmentally Sound Recycling of Ships (the Hong Kong Convention).

In 2014, the IAEA updated the guidelines for the London Convention to determine radionuclide levels in materials that may be dumped at sea which have no radiological impact to the marine environment. This procedure is being considered for inclusion in the IMO Guidelines for the London Convention 1972. The IAEA also concluded the update of the database on the inventory of historical disposals, accidents and losses in the oceans involving radioactive materials.

Together with the IMO, the IAEA is also involved in the development of a safe regime for the environmentally sound recycling of ships.

As the only UN agency operating marine laboratories, the International Atomic Energy Agency (IAEA), works to implement activities, improve knowledge and develop methods in order to assist Member States laboratories and Regional Seas Conventions to accurately monitor radionuclides, organic contaminants (including Persistent Organic Compounds), hazardous trace elements, such as mercury, and Harmful Algal Blooms (HABs) related biotoxins, and mitigate their impacts. This support is provided by the IAEA Environment Laboratories as well as through the IAEA Technical Cooperation Programme.

Monitoring the concentrations of these contaminants in environmental matrices helps Member States enhance seafood safety, protect the marine environment and fulfil their obligations in the framework of Global Conventions, such as the Stockholm Convention on Persistent Organic Pollutants and the Minamata Convention on Mercury, as well as for the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land based Activities. Furthermore, the IAEA Environment Laboratories provide analytical quality control services to the Member States through the production of Certified Reference Materials, the organisation of Interlaboratory Comparisons and Proficiency Test exercises. The IAEA assists Member States in building quality assured monitoring databases on radionuclides and hazardous contaminants in marine samples, which is essential information for accurately assessing pollution status and trends in the coastal and marine environment, as well as facilitating the comparability of similar data world-wide. Quality assured data is also a prerequisite for making informed decisions on action plans and measures to protect the oceans, to assure the sustainable delivery of ecosystem services and to enhance human health and prosperity.

Since 2012, the IAEA has been hosting the Ocean Acidification International Coordination Centre (OA-ICC), supported through the IAEA Peaceful Uses Initiative (PUI), at its Environment Laboratories in Monaco. The OA-ICC serves all ocean acidification actors and stakeholders (scientific community, policymakers, media, and the general public) by facilitating, promoting and communicating global efforts on ocean acidification. With the support of the Government of Monaco, the OA-ICC co-organised in early 2015 the Third International Workshop "Bridging the Gap between Ocean Acidification Impacts and Economic Valuation", addressing ocean acidification impacts on livelihoods and economies of coastal communities through an interdisciplinary perspective.

The IAEA also assists a number of regional sea conventions with their respective marine monitoring and research programmes, such as the Barcelona Convention (Mediterranean Action Plan), the Black Sea Commission (Black Sea Environment Programme), Helsinki Commission, Oslo-Paris Convention or the Kuwait Convention (Regional Organisation for the Protection of the Marine Environment of the Gulf).

§§46, 173, 176, 200 and 202 of resolution 69/245:

The IAEA continued to contribute towards the safe management of radioactive materials released into the environment, cooperating with the International Maritime Organization (IMO), the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (London Convention) and 1996 Protocol, (the London Protocol), the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention), and the Convention for the Safe and Environmentally Sound Recycling of Ships (the Hong Kong Convention).

In particular, the IAEA assisted the London Convention in further developing methodologies and procedures for performing radiological assessments to determine whether materials which are candidates to be dumped into the oceans contain negligible levels of radioactive materials, according to the definition of the London Convention, and, consequently, would have no radiological impact to the marine environment. This work is summarized in the report *Determining the suitability of materials for disposal at sea under the London Convention 1972 and London Protocol 1996: A Radiological Assessment Procedure* (IAEA-TECDOC-1759, Vienna, 2015), which presents a detailed radiological procedure to assess doses to workers and members of the public, and doses to representative species of marine flora and fauna, arising from disposal of materials at sea. The work was requested by the London Convention in order to appropriately address the new safety requirements of the IAEA Basic Safety Standards with regard to exposures to the public and radiological protection of the environment. The results of the report are expected to be used by

national regulatory authorities responsible for authorizing disposal of materials at sea, as well as by those companies and individuals applying to obtain permission to dispose of materials at sea. Currently this report is being used by the Contracting Parties of the London Convention to develop an update of the IMO's Guidelines for the Convention).

§§ 162, 200 and 202 of resolution 69/245:

Technical advice on the development of radiological environmental quality criteria for marine waters was provided by the IAEA to the OSPAR Convention in 2014. The derivation of these criteria is based on considerations of radiation doses estimated for members of public due to the presence of natural and man-made radionuclides in the marine environment; with the calculated radiation doses taking account of the consumption of seafood and human activities near the coast. Furthermore, radiation doses to representative species of marine flora and fauna are also considered. The radiological environmental quality criteria as proposed by the IAEA are under consideration by the OSPAR Contracting Parties, with the intention of them being adopted into the procedures of the Convention in order to assess the radiological impact due to radionuclide discharges to the North-East Atlantic from land-based installations.

§ 173 and § 200 of resolution 69/245:

In 2014, the IAEA also concluded the process of updating the database on the inventory of historical disposals, accidents and losses in the oceans involving radioactive materials. This database, developed in close cooperation with the IMO and IAEA Member States, includes records on dumped radioactive waste, nuclear submarines, cargo ships and planes transporting nuclear materials and weapons that suffered accidents and losses of industrial radioactive sources during transport or applications regarding oil and gas prospecting and extraction. The aim of this database is to provide an official record of artificial radioactive materials which have entered the seas. It is also intended to be used as an information base to assess the potential radiological impact from man-made radionuclides in the marine environment. A report on this database entitled *Inventory of radioactive materials resulting from historical dumping, accidents and losses at sea for the purposes of the London Convention 1972 and London Protocol 1996* is in the process of being published by the IAEA.

Preamble, § 184 and § 185 of resolution 69/245:

The IAEA assisted the IMO's Marine Environment Protection Committee (MEPC) and the Hong Kong Convention in developing recommendations on threshold levels of radioactive materials to be applied for the safe recycling of ships. These values are needed by the shipbuilding and recycling industries for the identification of radioactive sources that are widely used in ships such as lightning rods, high intensity discharge lamps, smoke detectors, self-luminescence signs and all kinds of industrial gauges. Types and characteristics of these radioactive industrial sources should be incorporated in the inventory list of hazardous materials during the whole lifetime of a ship and prior to recycling. The identification and separation of such sources before the recycling process begins is essential in order to ensure the radiation safety of workers, the public and the environment, and to avoid contamination of recycled steel and the radiation risks associated therewith.

§ 176 of resolution 69/245:

To improve Member States' capabilities of the assessment of radiation exposure levels to the public and the environment, including flora and fauna, the IAEA organized a programme titled "Modelling and Data for Radiological Impact Assessments" (MODARIA) which focuses on areas which still have existing uncertainties in the predictive capability of environmental models. Reliable assessments of radiological impacts are needed to ensure appropriate levels of protection from the effects of ionizing radiation associated with authorized radionuclide releases and from contamination resulting from past unregulated practices or accidents. The MODARIA programme consists of ten working groups covering different radiation protection topics, including radiological protection of marine biota, dispersion of radionuclides in the marine environment and the transfer of radionuclides accidentally released from land-based facilities. More than 150 experts from 42 IAEA Member States actively participate in this programme which also provides an international forum for the exchange of experience, ideas and research information. When the MODARIA programme concludes in 2015, reports with the result of the working groups will be published in the IAEA series supporting the IAEA Safety Standards.

§ 176 of resolution 69/245:

In 2014 and 2015, the IAEA has been working closely with the government of Japan to verify the quality of marine monitoring data following the Fukushima Daiichi nuclear accident. As announced during the IAEA General Conference in September 2012, the IAEA has prepared a report on the Fukushima Daiichi accident. The report is the result of an extensive international collaborative effort involving five working groups with around 180 experts from 42 Member States and several international bodies. One of the groups analyzed the radionuclide releases to the sea during the accident in 2011, and the subsequent oceanic dispersion and deposition, and assessed the resulting radiation doses to the public and the marine environment. The resulting *Report by the Director General on The Fukushima Daiichi Accident* was presented to the IAEA's Board of Governors in June 2015, with a view to taking note of it for its subsequent release at the 59th Regular Session of the IAEA General Conference in September 2015.