

International Atomic Energy Agency (IAEA)**IAEA Input to 2020 SG report on oceans and the law of the sea (RES 75/239)****Second part**

The International Atomic Energy Agency (IAEA), through its marine Environment Laboratories in Monaco, continues to provide support to its Member States to develop and improve nuclear and nuclear-derived tools and techniques to monitor the coastal and marine environment. The IAEA also provides safety guidance for the regulatory control of the releases of radioactive effluents into the marine environment, for the environmental monitoring and surveillance of nuclear facilities and for the assessment of radiological impacts on members of the public and the marine flora and fauna. The IAEA also provides oversight of radioactive discharges into the marine environment, and on the environmental monitoring and surveillance of nuclear facilities, including assessments of radiological impacts to the public and marine flora and fauna. Through this work, the IAEA supports international frameworks and conventions that support conservation and sustainable use of coastal and marine resources.

The IAEA is the only organization in the UN system with marine scientific laboratories. They support IAEA Member States to address marine environmental topics, including relevant nationally identified targets under SDG 13 (Climate Action), SDG 14 (Life Below Water) and the SAMOA Pathway. The IAEA thus assists its Member States in better understanding, monitoring, and protecting the marine environment, including such topics as microplastics, ocean acidification, deoxygenation, pollution (e.g. persistent organic pollutants, hazardous trace elements, radionuclides, and marine biotoxins), sustainable aquaculture, and sea level rise.

The IAEA has recently initiated a new project on coastal and marine Blue Carbon so Member States can contribute towards nature-based solutions and adaptation strategies to future climate change impacts.

Through this work, IAEA Member States are supported in the 2030 Agenda process to report on specific SDG targets, such as 14.3 on ocean acidification or 14.1 on pollution, including 14.1.b on plastic pollution. The IAEA also assists Member States fulfil their obligations in the framework of global Conventions, such as the Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury, and the Basel Convention to set controls on the transboundary movements of hazardous wastes.

Related to §§ 10, 11, 12, 13, 14, 15 of resolution 75/239.

The IAEA continued to support the Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA) network, a collaboration of 194 analytical laboratories from 90 countries that work together to address standardization and validation of radioanalytical methods. The network is supported through proficiency tests, interlaboratory comparisons, training and coordination. The capacity of network laboratories to report timely and reliable measurement results in case of radiological or nuclear emergency is thus enhanced and maintained.

The Monaco-based IAEA Environment laboratories develop capacity for Member States through various mechanisms, including the IAEA Technical Cooperation programme (TCP), coordinated research projects (CRPs), and Peaceful Uses Initiative (PUI) projects, such as Seafood Safety, Marine Plastics, and the Ocean Acidification International Coordination Centre (OA-ICC). Since its inception in 2012, the OA-ICC with its global partners has been involved in more than 850 capacity building opportunities with 750 scientists from more than 100 Member States. These efforts support Member States to build, strengthen, and maintain human expertise and institutional capacities to help define national needs, make informed decisions on action plans and measures to protect the oceans, assure the sustainable delivery of ecosystem services; and, ensure sustainable socio-economic development. Currently, the Monaco-based IAEA laboratories implements close to 50 TCP projects and CRPs which involve 18 of its 38 Small Island Developing States (SIDS) Member States.

Between 2014 and 2020, under a project entitled 'Marine Monitoring: Confidence Building and Data Quality Assurance', which was initiated as a follow-up activity to recommendations related to the decommissioning of the Fukushima Daiichi nuclear power plant in Japan, the IAEA organized ten (10) sampling missions to collect seawater, sediment and fish samples for interlaboratory comparisons. This effort confirms that the Japanese sample collection procedures follow appropriate methodological standards. The results obtained also demonstrate a consistently high level of accuracy and reliability in Japanese laboratories involved in the analyses of radionuclides in marine samples.

The IAEA has also provided analytical quality control services through the production of certified reference materials, the organization of interlaboratory comparison studies and proficiency tests. This assisted Member States in building quality-assured databases on radionuclides and hazardous contaminants in diverse marine samples, essential information for accurately assessing pollution status and trends in the coastal and marine environment, as well as facilitating the comparability of similar data worldwide.

The Helsinki Commission and the Oslo-Paris Convention Contracting Parties are being provided with analytical data quality support through annual proficiency tests for radionuclides in seawater samples. Marine radioactivity monitoring data from these two regional conventions are made available through the IAEA's online open-access database, the Marine Radioactivity Information System (MARIS). In addition, the Barcelona Convention – Mediterranean Action Plan (MAP) is being supported in the quality assurance of monitoring data for non-radioactive contaminants, such as persistent organic pollutants and hazardous trace elements. Since 2005, MARIS has hosted and shared the results of measurements of the levels of radioactivity in the marine environment undertaken in laboratories around the world. As of May 2021, MARIS contained 663,119 data items for over 100 different radionuclide concentrations or radionuclide ratios in seawater and in sediments, in over 800 species of biota, including commercially valuable species such as seafood, and in suspended matter from both the open ocean and coastal locations. These data can be traced back to scientific publications, reports and databases developed by institutes in Member States, regional and international collaborations and projects. In support of SDG 14 (Life Under Water), MARIS provides environmental scientists, policy makers and the general public with improved access to recent and historic marine radioactivity data from laboratories around the world.

Related to §§ 24 of resolution 75/239.

The IAEA supports its Member States by providing technical expertise on processes and mechanisms of impacts that may lead to marine biodiversity loss, such as pollution and climate and ocean change impacts. Research and development efforts focus on the effects of multiple stressors, such as ocean acidification and deleterious trace elements on the biological response in marine species. Such research helps Member States determine the vulnerability of oceanic resources, such as coral reef habitats and important seafood species, and thus can help evaluate the potential biological and socio-economic impacts of changes in ecosystems and ecosystem services (sustainable food security).

Related to §§ 22, 23, 211, 212, 213, 214, 215, 216, 276, 279 of resolution 75/239.

Since 2012, the IAEA has hosted the Ocean Acidification-International Coordination Centre (OA-ICC), which facilitates, promotes and communicates on this subject, including through targeted research activities that advance knowledge of ocean acidification impacts. The OA-ICC co-organizes or participates in several high-level symposia or events every year and with its global partners has been involved in more than 850 capacity building opportunities with 750 scientists from more than 100 Member States.

In collaboration with its regional partners, the OA-ICC co-organized two meetings in early 2021 to highlight new science and capacity building efforts that are underway in west Africa. The OA-ICC was also involved in a meeting on ocean acidification in the Mediterranean Sea that was organized by the Ocean Acidification Mediterranean Hub and held during the 2021 Monaco Ocean Week. This event provided a platform for a variety of stakeholders to discuss how to develop strategies for reducing impacts of ocean acidification and how to increase scientific capacity at the regional level.

The IAEA is co-focal lead of the UN Communities of Ocean Action on Ocean Acidification, a process to facilitate progress on more than 250 Voluntary Commitments that have been submitted by various stakeholders across the globe on SDG14.3. The Community of Ocean Action on Ocean Acidification is directly aligned with the goals and objectives of the UN Decade of Ocean Science for Sustainable Development (2021-2030).

Related to §§ 217, 219, 220, 221 of resolution 75/239.

The IAEA has recently set out ‘Nuclear Technology for Controlling Plastic Pollution (NUTEC Plastics)’ to assist Member States in integrating nuclear and isotopic techniques in their efforts to address plastic pollution. It builds on the IAEA’s efforts to deal with plastic pollution through recycling using radiation technology and marine monitoring using isotopic tracing techniques. NUTEC is closely aligned with UN organizations such as the United Nations Environment Programme (UNEP) and the Food and Agriculture Organization of the United Nations (FAO) and will contribute to global efforts and initiatives.

The IAEA’s NUTEC Plastics will strengthen and scale-up the development of nuclear and isotopic techniques to assess the spatial and temporal abundance and character of marine plastics to better understand their origin, transport mechanisms, as well as fate and impact. This includes the establishment of harmonized, standardized protocols to identify microplastics in environmental samples, analytical techniques that are in line with best practices and state-of-the-art science, and training for scientists and technicians.

Research to elucidate the effect that halogenated flame retardants have on the marine ecosystem has been pursued in the framework of two PUI initiatives on seafood safety and marine microplastics. New certified reference material is being developed, with low levels of halogenated flame retardants as one class of persistent organic pollutants being certified in marine biota.

The efforts of the IAEA’s marine laboratories on the analysis of mercury and its highly toxic species methyl mercury were recognised when the IAEA officially joined the UNEP Global Mercury Partnership in 2020. The IAEA is assisting countries in implementing the UNEP Minamata Convention on Mercury by providing certified reference material. All these efforts are strengthening the reliability of analytical monitoring data for contaminants in the marine environment.

Related to §§ 194, 201, 220, 356 of resolution 75/239.

The IAEA continues to cooperate with the International Maritime Organization (IMO) and the contracting Parties of various international and regional Conventions related to the prevention of pollution and the sustainable use of the marine environment and its resources, such as: the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 and its corresponding Protocol (the ‘London Convention’ and the ‘Protocol’), the Convention for the Protection of the Marine Environment of the North-East Atlantic (the ‘OSPAR Convention’), and the Hong Kong Convention for the Safe and Environmentally Sound Recycling of Ships (the ‘Hong Kong Convention’).

The IAEA is assisting the Radioactive Substances Committee of the OSPAR Convention in the definition and application of the concept of ‘close to zero’ concentrations of artificial radionuclides in the marine environment. This is in support of the OSPAR declaration that discharges, emissions and losses of radioactive substances should be reduced by 2020 to the extent that additional concentrations in the marine environment above historic levels resulting from such discharges, emissions and losses, are close to zero. The IAEA is also assisting the HELCOM Expert Group on Monitoring of Radioactive Substances in the Baltic Sea on the same topic.

Related to §§ 240 of resolution 75/239.

The IAEA provides support to its Member States for oil spill response by building capacity and assessing impacts related to the accidental discharge of hydrocarbons into the marine environment. In collaboration with OSINet, the Oil Spill Identification Network of experts, the IAEA develops new analytical methods to assess the potential provenance of contaminants during an oil spill.

Upon the request of the Government of Mauritius in July 2020, the IAEA provided an emergency response to help the country to address potential environmental consequences of an oil spill accident occurred very close to the country shoreline. With the procurement of dedicated laboratory equipment and training of local staff, the Agency helped the national laboratories to increase their capacity to monitor the effects of the oil spill in the marine environment and associated volatile organic compounds in the air and to assess their potential toxicological impacts.

Related to §§ 332 of resolution 75/239.

The IAEA provides science-based information and solutions to Small Island Developing States (SIDS) to address pressing marine topics, such as coastal pollution, habitat degradation and nuisance algal blooms, such as sargassum and ciguatera. In November 2020, a technical meeting with representatives of 13 SIDS nations from the Caribbean and South Pacific regions was held in Kingston, Jamaica, to discuss environmental characteristics and drivers of these new sargassum bloom events. Participants also explored ways in which science, and nuclear and nuclear-derived techniques in particular, may help in enhance understanding and improve the situation.

As of 2021, 18 Small Island Developing States (SIDS) Member States are involved in Technical Cooperation programme (TCP) projects and Coordinated Research Projects (CRPs) implemented by the IAEA Monaco based laboratories.

Related to §§ 353, 357 of resolution 75/239.

The IAEA is collaborating with the UN Environment Programme Mediterranean Action Plan to assist with quality assurance of the monitoring of contaminants in the marine environment as part of the Programme for the Assessment and Control of Marine Pollution in the Mediterranean. In the biennium 2019-2020, two training courses and two proficiency tests were organized on the analysis of organic and inorganic pollutants in marine samples. Since the beginning of this collaboration with UNEP, the IAEA has jointly organised over 60 training courses and proficiency tests to strengthen regional pollution monitoring.

The IAEA-Monaco laboratories are supporting the effectiveness evaluation of the Minamata and the Stockholm Convention through the provision of matrix matched certified reference materials.

Related to §§356 of resolution 75/239

The IAEA continues to contribute towards the protection of people and the environment — including but not limited to the marine environment — against the risk of exposure to ionizing radiation from the operation of nuclear installations and the disposal of radioactive waste. In 2018, the IAEA published Safety guides on Regulatory Control of Radioactive Discharges to the Environment (IAEA Safety Guide GSG-9) and Prospective Radiological Environmental Impact Assessment for Activities and Facilities (IAEA Safety Guide GSG-10).

Under the IAEA's programme "Modelling and Data for Radiological Impact Assessments II" (MODARIA II), aiming at improving Member States' scientific knowledge and capabilities for the assessment of the level of protection to the public and the environment (including flora and fauna) from releases of radionuclides in the environment, the assessment of the fate and transport of radionuclide contaminants within the marine environment is considered. A technical report on modelling of marine dispersion and transfer of radionuclides accidentally released from land-based facilities has been published in 2019 based on the work of international scientists working in this field and a further report is due for publication in 2021.

Related to §§ 204 of resolution 75/239.

The IAEA provides technical support to its Member States to address climate and ocean change impacts, such as the ubiquitous presence of marine microplastics, ocean acidification, pollution (e.g. persistent organic pollutants, hazardous trace elements, radionuclides, and marine biotoxins), and deoxygenation.