

## **Developments in the field of ocean affairs and the law of the sea (Part II)**

The IAEA's Environment Laboratories are expanding their activities to support Member States in capacity building for the sustainable development of the oceans and coastal zones and the research capabilities to investigate and adapt to the impacts of pollution and climate change on the oceans.

These laboratories act as a focal point in areas of expertise such as certification of reference materials, marine radioactive and non-radioactive pollution monitoring and assessment, training and methodological development and harmonisation. To continue underpinning developments in Member States, these core areas have expanded during the past decade to include a wide range of radiotracer applications to marine studies, such as climate and environmental change, ocean acidification, harmful algal blooms (HABs), seafood safety and advanced analytical techniques. The laboratories provide support to regional networks of laboratories in the following areas of expertise: marine radioecology, marine pollution, advanced analytical techniques, analytical quality support, applications of radiotracer and stable isotope techniques, monitoring and assessment, climate and environmental change, HABs, ocean acidification and databases.

National, regional and inter-regional training courses are organized by the Environment Laboratories in collaboration with Member States and are devoted to supporting the IAEA Technical Cooperation Programme as well as Inter-Agency efforts to implement International Conventions, through e.g. the UNEP Regional Seas Programme. The areas covered include the applications of ecological risk assessment methodologies to the evaluation of impacts of radioactive and non-radioactive contaminants on ecosystems and marine organisms of relevance to fisheries, aquaculture and biodiversity as well as QA/QC of trace metals, organochlorine pesticides, PCBs and organotin compounds, marine radioecology, marine pollution, marine radiochemistry, applications of radiotracer and stable isotope techniques to studies related to climate and environmental change, HABs, ocean acidification and related socio-economic studies. These courses are complemented by individual highly specialised and focused training held in the Environmental Laboratories and Member States' laboratories, targeting sampling, radiometric, radiochemical, radioecological and other analytical techniques applied to pollution and climate change studies. Though the IAEA Technical Cooperation Programme, the Environment Laboratories also provide expert advices either directly or through international experts.

Continued support is being provided to Member States and regional collaborations in the area of analytical data quality through proficiency tests, interlaboratory comparisons and production of new reference materials. Such capacity building activities are highly needed by Member States, in order to comply with their international commitments, such as the UNEP Global Programme of Action to protect the marine environment from Land-based Activities [GPA], the Stockholm Convention on Persistent Organic Pollutants (POPs), the monitoring requirements of the Global Partnership for Oceans, their regional agreements (Regional Seas Conventions and LBS Protocols), as well as, to implement national legislation for the protection of their coastal and marine environment.

One of the major challenges faced by the ocean due to increased atmospheric levels of CO<sub>2</sub> is 'ocean acidification'. This 'ocean acidification' is likely to adversely affect many marine organisms, particularly corals and shell builders, such as oysters, mussels, and molluscs. Thus ocean acidification may affect entire marine food webs, impacting natural biodiversity, fisheries and aquaculture. The UNICPOLOS, 17-20 June 2013, is entirely dedicated to this major environmental issue. The IAEA-Environment Laboratories have developed experimental systems using nuclear techniques to help unravel the effects of ocean acidification on commercially important organisms such as fish larvae

and molluscs and key species in marine food webs in polar, temperate and tropical waters. These laboratory-based technologies are now being transferred to developing Member States to support their national assessments of ocean acidification impacts and adaptation strategies.

In collaboration with the major national and multi-national projects and programmes on ocean acidification, and with the support of several IAEA Member States through the IAEA Peaceful Uses Initiative (PUI), EL has launched during summer 2012 the project "Ocean Acidification International Coordination Center (OA-ICC)". The project aims at communicating, facilitating, and promoting international collaboration on ocean acidification. It constitutes a platform that serves all actors (scientific community, science users, decision makers, general public and media) in this field. It also intends to promote multidisciplinary, bridge scientific communities from developed and developing Member States and promote transfer of knowledge among them.