

**IAEA**

# TO ADDRESS THE BIG CHALLENGES WE MUST START SMALL

**IAEA ENVIRONMENT LABORATORIES**  
Unlocking the planet's secrets at an atomic scale



## IAEA Environment Laboratories

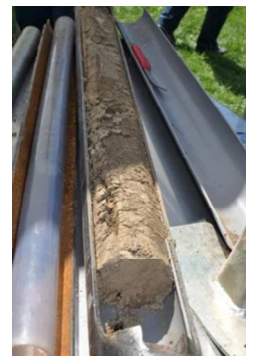
The IAEA Environment Laboratories work at the level of atomic particles to understand the natural world. They develop tools to support mitigation strategies for the environmental impacts of radionuclides, trace elements and organic contaminants, as well as climate change, habitat destruction and biodiversity loss.

The IAEA Environment Laboratories use atomic-scale techniques to monitor and trace the movement of pollutants in the environment and their transfer up the food chain and onto our plate.



To assist laboratories around the world in their analysis of environmental contaminants, the IAEA Environment Laboratories organise proficiency tests and training programmes. They also support coordination activities, method development, data quality and emergency preparedness for the global network of Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA).

Stable isotopes can be used to source the origin of a variety of goods, such as oil, timber and ivory. The Environment Laboratories have developed a reference material library which can be used to support such activities.



Various techniques at the scale of the atom are used to study the rates of biological processes in marine organisms such as mussels, oysters and corals.

Calcification, the creation of shells and skeletons, can be measured using calcium-45, and the growth of phytoplankton can be studied using carbon-14.

## IAEA Environment Laboratories

The IAEA Environment Laboratories are located in Monaco and Seibersdorf, Austria. As the only environment laboratories in the United Nations system, their work strengthens the capability of IAEA Member States to develop science-based strategies for the sustainable management of terrestrial, marine and atmospheric environments and their natural resources. The Laboratories assist Member States to effectively address their environment-related development priorities.

**The Radiometrics Laboratory** focuses on marine radioactivity measurements, monitoring and assessment. It maintains MARiS, an online open-access database of marine radioactivity measurements and produces certified reference materials, which are distributed to laboratories worldwide.



**The Terrestrial Environment Laboratory** provides expertise, training and support for the assessment, monitoring and remediation of radioactive, industrial and other pollution on land. It assists Member States in preparing for environmental emergencies and develops and distributes reference materials for both radionuclides and stable isotopes to laboratories worldwide.



**The Marine Environmental Studies Laboratory** assists Member States in monitoring coastal and marine pollution and in minimising the impact of contaminants such as trace elements, methyl mercury, persistent organic pollutants and petroleum hydrocarbons. It studies pollution processes, fingerprints pollutants' sources, and produces reference materials.



**The Radioecology Laboratory** uses nuclear and isotopic techniques to address Member States' coastal and marine ecological challenges and needs. These include studies on biomagnification, ocean acidification, carbon cycling, seafood safety and biotoxins, often in the context of future climate-change scenarios. It also hosts the Ocean Acidification International Coordination Centre.





Photo credits: R. Cassi, S. Jones-Couture, D. Osborn, JL Teyssie.

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