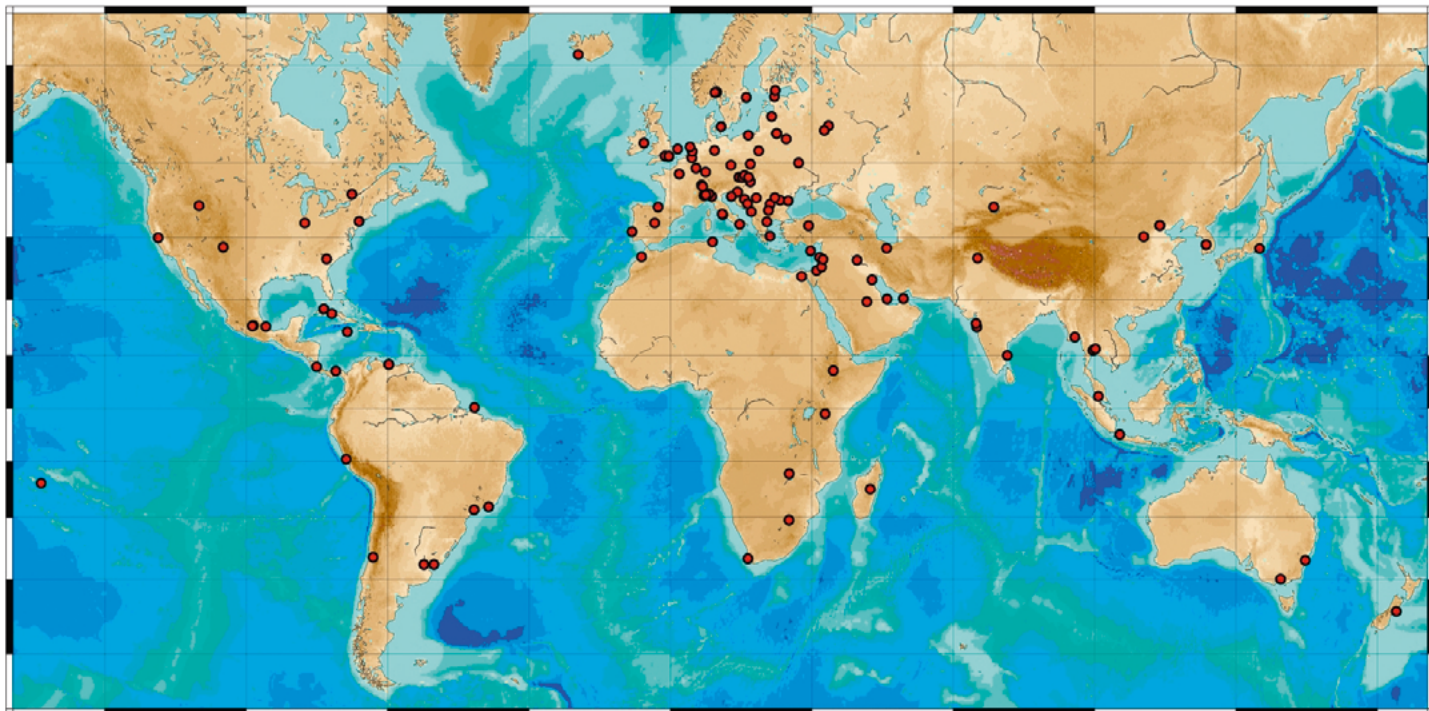


BUILDING AND BENEFITING FROM MEMBER STATE LABORATORY CAPACITIES



The global presence of the ALMERA network's 140 laboratories
(Image: Staff of the IAEA Terrestrial Environment Laboratory)

The Department of Nuclear Sciences and Applications implement a number of activities that are designed to enhance and capitalize upon the capacities of Member States' laboratories worldwide. The Nuclear Sciences and Applications (NA) laboratories strengthen Member States' analytical capacities through activities such as proficiency tests and inter-laboratory comparisons, and share the capacities of Member States' laboratories with other Member States through the coordination of relevant networks and participation in the IAEA Collaborating Centre scheme.

An example of these activities is the collaborative work carried out by the Terrestrial Environment Laboratory (TEL). The TEL cooperates with the IAEA Environment Laboratories in Monaco to distribute 92 types of reference materials for characterizing radionuclides, stable isotopes, trace elements or organic contaminants. These materials serve as international standards for establishing and evaluating the reliability and accuracy of analytical measurements.

The TEL also produces and characterizes several test materials annually that are sent out to around 400 Member States' laboratories for proficiency and intercomparison exercises. The Member States' laboratories use these materials to carry out their own analytical measurements

and then report on their results to the TEL. If they achieve the appropriate results, the reliability and accuracy of their analytical capabilities is confirmed. If they do not, then the TEL staff will review the results to identify potential sources of analytical error and will recommend corrective measures.

Similarly, the Soil and Water Management and Crop Nutrition Laboratory, in cooperation with Wageningen Evaluating Programmes for Analytical Laboratories (WEPAL), which is part of Wageningen University in the Netherlands, conducts test exercises with other laboratories in the use of stable isotope and radiation methods to measure and monitor the nutrients in plant, water and soil samples.

In addition, the NA laboratories coordinate and engage with global laboratory networks that pool resources and expertise for mutual benefit. The IAEA's Dosimetry Laboratory, together with the World Health Organization (WHO), coordinates the IAEA/WHO Network of Secondary Standards Dosimetry Laboratories (SSDL Network) to improve the safety and quality of radiation medicine. One of the principal goals of the SSDL Network is to guarantee that the dose delivered to patients undergoing radiotherapy treatment in Member States is in accordance with internationally



accepted standards to maximize the effectiveness and safety of treatment.

The Analytical Laboratories for the Measurement of Environmental Radioactivity (ALMERA) network is a global network established by the IAEA and coordinated by the TEL as a worldwide system for monitoring and measuring radioactivity in the terrestrial environment. ALMERA currently includes 140 laboratories in 81 Member States. Its main objective is to improve the reliability and timeliness of its members' analytical results for environmental radioactivity monitoring in routine and emergency situations.

The NA laboratories also work with IAEA Collaborating Centres to help Member States benefit from one another's capabilities. The Collaborating Centres are Member States' laboratories and research institutions that operate as formal partners to assist the Agency in implementing selected programmatic activities. These Centres often work with NA laboratories in organizing and hosting training courses on NA's behalf, contribute to the NA laboratories' efforts to develop new or improved nuclear techniques, and provide or support the provision of analytical services, such as the collection and preparation of candidate reference materials. Through this mechanism all Member States can potentially benefit from the advanced capabilities of each other's laboratories.



This collaborative work between NA laboratories, Member States and laboratories around the globe contribute to the IAEA's mandate of fostering scientific and technical exchanges for the peaceful use of nuclear science and technology throughout the world.

IAEA Department of Nuclear Sciences and Applications

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(Photos: IAEA)