

HOW THE NUCLEAR APPLICATIONS LABORATORIES HELP IN STRENGTHENING EMERGENCY RESPONSE



Unmanned aerial vehicle designed by NSIL for remote environmental radiation monitoring.
(Photo: Steve Thachet, IAEA)

Safety is one of the most important considerations when engaging in highly advanced scientific and technological activities. In this respect, utilizing the potential of nuclear technology for peaceful purposes also involves risks, and nuclear techniques themselves can be useful in strengthening emergency response measures related to the use of nuclear technology.

In the case of a nuclear incident, the rapid measurement and subsequent monitoring of radiation levels are top priorities as they help to determine the degree of risk faced by emergency responders and the general public. Instruments for the remote measurement of radioactivity are particularly important when there are potential health risks associated with entering areas with elevated radiation levels.

The Nuclear Science and Instrumentation Laboratory (NSIL) — one of the eight laboratories of the Department of Nuclear Sciences and Applications (NA) in Seibersdorf, Austria — focuses on developing a variety of specialized analytical and diagnostic instruments and methods, and transferring knowledge to IAEA Member States. These include instruments capable of carrying out remote measurements.

One such instrument developed by NSIL is an unmanned aerial vehicle (or drone) that can be

rapidly deployed to areas potentially affected by elevated radiation levels. This drone carries out remote measurements of radioactivity and provides visual images of radioactive distribution. It can quickly provide accurate and vital data on radiation levels while limiting human exposure to potentially harmful radioactivity.

Member States also need laboratories capable of using nuclear analytical techniques for monitoring and measuring radioactivity in the environment and in potentially affected organic and inorganic materials that can affect human health. Another NA laboratory, the Terrestrial Environment Laboratory (TEL), provides Member States with high precision measurements as well as reference materials, proficiency tests, and regular workshops and training events for staff in their laboratories. This helps to ensure that Member States have the necessary analytical capabilities to accurately and reliably assess environmental radioactivity in emergency situations.

One of the most significant impacts of unintended radiation exposure can be the contamination of local food supplies. In the case of a nuclear incident, nuclear techniques are necessary to analyse food samples in order to ensure their safety for consumers and to reassure consumers of the safety of uncontaminated supplies. The TEL, the Food and Environmental Protection Laboratory and the Soil and Water Management and Crop Nutrition Laboratory combine their expertise to develop and transfer nuclear techniques and protocols to Member States that are designed to assess the impact of unintended radiation exposure on food sources.

This emergency response work carried out by the NA laboratories supports health and safety in Member States and supports the IAEA's mandate to promote the safe and peaceful use of nuclear energy.

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