



# Nuclear Sciences and Applications Laboratories

## Science supporting development

The twelve laboratories of the IAEA's Department of Nuclear Sciences and Applications are a unique feature in the United Nations. The laboratories support and implement activities that respond to the developmental needs of Member States in a range of subject areas, including in food and agriculture, human health, environmental monitoring and assessment, as well as the use of nuclear analytical instrumentation.

The laboratories conduct applied research and development, deliver training and capacity building to Member States and provide technical and analytical services.

Five of the laboratories in Seibersdorf are agricultural and biotechnology-based and are an integral part of the Joint Division managed by the IAEA and the Food and Agriculture Organization of the United Nations (FAO). They are a unique collaborative model in the UN system and assist Member States in the following ways:



### **Insect Pest Control Laboratory**

Fighting key insect pests through the Sterile Insect Technique (SIT), a method of birth control applied to target insect pest populations.



### **Animal Production and Health Laboratory**

Strengthening food security and livelihoods through improved livestock productivity and control of transboundary animal and zoonotic diseases.



### **Plant Breeding and Genetics Laboratory**

Strengthening food security and resilience to climate change through high-yielding crop varieties resistant to disease, drought and other harsh conditions.



### **Soil and Water Management and Crop Nutrition Laboratory**

Optimizing soil management and agricultural water use efficiency for climate-smart agriculture. Assessing and tracing the fate of radionuclides in soils, crops and agricultural water resources.



### **Food and Environmental Protection Laboratory**

Establishing effective systems to support food authenticity, food traceability and contaminant control, to enhance food safety and international agriculture trade.

Three Seibersdorf laboratories are working in the following areas:



### **Dosimetry Laboratory**

Ensuring the safe and effective use of radiation in cancer treatment and supporting radiation dosimetry by providing calibration and audit services worldwide.

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## By the Numbers

MORE THAN

**160** COUNTRIES  
HAVE RECEIVED SUPPORT FROM  
THE LABORATORIES



**12 LABS** IN THREE LOCATIONS

8 IN SEIBERSDORF, AUSTRIA

1 AT IAEA HQ IN VIENNA, AUSTRIA

3 IN MONACO



Nuclear  
Sciences and  
Applications



#### **Nuclear Science and Instrumentation Laboratory**

Developing, adapting and transferring nuclear instrumentation as well as accelerator applications to Member States for a wide range of operations from environmental monitoring to materials science to the preservation of cultural heritage.



#### **Terrestrial Environment Laboratory**

Providing environmental assessments and ensuring high quality analytical measurements for radioactive, industrial, and other pollution in Member State laboratories by providing laboratory reference materials and conducting worldwide proficiency tests.

The IAEA maintains three marine environment laboratories in Monaco dedicated to the understanding and preservation of a healthy marine environment and the sustainable development of environmental resources, they assist Member States in the following ways:



#### **Radiometrics Laboratory**

Supporting reliable marine radioactivity measurements, monitoring and assessments. It maintains low-level counting facilities and produces certified reference materials to improve the quality of measurements worldwide.



#### **Radioecology Laboratory**

Studying the movement of contaminants and bio-toxins in marine ecosystems, including their accumulation in seafood species; the carbon cycle and the marine impacts of global warming and ocean acidification.



#### **Marine Environmental Studies Laboratory**

Accurately monitoring contaminants in the marine environment by developing and transferring analytical methods, providing reference materials and conducting international proficiency tests, and applying stable isotopic methods for environmental forensics.

One laboratory is located at IAEA Headquarters in Vienna:



#### **Isotope Hydrology Laboratory**

Mapping availability and sustainable management of freshwater and the impact of climate change on rivers, lakes and groundwater aquifers.

## **ReNuAL**

Renovation of the Nuclear Applications Laboratories

Since their opening in 1962, the Nuclear Applications Laboratories (NA) in Seibersdorf have not received a comprehensive renovation or significant upgrading of equipment, and in recent years they have increasingly struggled to meet Member State demands.

The modernisation of the IAEA nuclear applications laboratories began in 2014 with the aim of significantly enhancing the services and infrastructure that the IAEA can make available to Member States and to position the laboratories to better adapt to future needs. The Renovation of the Nuclear Applications Laboratories (ReNuAL) project consists of new building construction, the acquisition of new laboratory equipment to replace ageing instruments, and infrastructure upgrades. The project is scheduled for completion by mid-2018. A follow-up project, known as ReNuAL+, will provide for additional construction, the refurbishment of the remaining laboratories, and further equipment needs.

