

# International Atomic Energy Agency



Radiation is a fact of everyday life. Each day, cosmic radiation from space penetrates the Earth's atmosphere. Beneath the Earth's surface, there are natural radioactive substances, like uranium and radon gas. While scientific exploration of radioactive materials began just prior to the turn of the 20<sup>th</sup> century, it was not until World War II that the explosive potential of this new power source was first realized. But as a growing number of countries then acquired nuclear technology, it was recognized that while military applications might still be pursued by some, peaceful applications of this technology had the potential to contribute positively to human development worldwide.

The Vienna-based International Atomic Energy Agency (IAEA) was created in 1957, as an independent body in the United Nations (UN) family to "accelerate and enlarge the contribution of atomic energy to peace, health, and prosperity throughout the world". Today, nuclear technology is used in a wide range of peaceful applications in such fields as medicine, water management, manufacturing, nuclear power generation, and agriculture. The IAEA: assists its 131 Member States in the use of nuclear technology; promotes radiological and nuclear safety; and verifies, to the extent possible, that Member States who have pledged to use nuclear technology only for peaceful purposes respect that pledge.

The IAEA consists of the General Conference, the Board of Governors, and the Secretariat. Each Member State is represented at the annual General Conference, where international issues relating to nuclear technology are discussed and resolutions adopted to

*Top to Bottom:*

*Growing genetically improved banana plants in the Seibersdorf greenhouses. Credit: J. Perez Vargas/IAEA*

*Nuclear medicine diagnostics. Credit: AEA Technology*

*Training course at Fermi 2 nuclear power plant using special protective clothing. Credit: Flip Chalfant*

*Nuclear power plant in Trillo, Spain. Credit: UNESA*



improve, not just the availability of the technology, but also its safety and security. Representatives from 35\* of these Member States form the Board of Governors, responsible for overseeing the Agency's budget, programmes, and policies.

The Agency's day-to-day activities are undertaken by the Secretariat, which is headed by a Director General and divided into six departments:

***Technical Co-operation, Nuclear Sciences and Applications, Nuclear Energy, Nuclear Safety, Safeguards, and Management.***

With laboratories in Seibersdorf and Monaco, liaison offices in Geneva and New York, and field offices in Tokyo and Toronto, the IAEA shares its expertise with Member States and some 40 UN and partner organizations.

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\* This number is set to increase to 43 in the future.

## **Sharing the Benefits of Nuclear Technology**

Finding the energy sources to support economic growth and improve quality of life without contributing to global warming is a growing challenge. To assist Member States interested in generating electricity from nuclear power plants, the Agency offers a range of advisory and information-exchange services for planning, building, and operating such plants. But today's nuclear technology involves much more than nuclear power.

In co-operation with Member States, the IAEA yearly supports some 800 technical co-operation projects worldwide. What these diverse projects have in common is that they all make use of peaceful applications of nuclear technology. Whether using X rays to diagnose cancer, making specialized use of radiation to combat insect pests, or using radioisotopes to locate safe sources of drinking water, the IAEA



*Tsetse fly eradication using the nuclear-based Sterile Insect Technique eliminates the cattle plague 'nagana' and improves livestock productivity in Zanzibar. Credit: U. Feldmann/IAEA*

*Preparing water samples from Member States for analysis at the IAEA's Isotope Hydrology Laboratory in Vienna. Credit: P. Pavlicek/IAEA*

has experts to assist Member States in harnessing nuclear technology to feed and improve the health of the world's growing population and provide the energy needed for economic growth and development.

Funded through voluntary contributions from Member States, the Agency's assistance is targeted to priority needs and provided where: such technology is the most effective and appropriate; the recipient Member State has adequate infrastructure to adopt and sustain such technology; and this technology is transferred and employed safely. Experts are sent to counterpart institutions, and group or individual training is provided at leading research and technology institutes around the world.

The Agency also maintains the world's leading information system on the peaceful uses of nuclear science and technology. Using information supplied through a network of liaison offices in Member States, the International Nuclear Information Systems database contains over 2 million bibliographic references, as well as a collection of full-text information that may often be impossible to obtain elsewhere.

## Promoting Nuclear Safety

The IAEA promotes a comprehensive and effective worldwide safety culture. Its approach to nuclear safety consists of three elements:

*binding international conventions;*

*internationally accepted safety standards;*  
*and*

*measures to assist Member States to implement these conventions and standards.*

The Agency has developed safety standards covering such areas as nuclear power plants, radiation protection, radioactive waste management, and transport safety. These standards represent international consensus on safety requirements in these areas. Although not binding, the standards form the basis for nuclear-related regulations within individual Member States.

The IAEA also offers a variety of safety services on request, including:

### ***International Regulatory Review Teams***

on how national authorities oversee nuclear-related activities;

### ***Operational Safety Review Teams***

on how operational safety performance at individual nuclear power plants is assured and how any shortcomings may be remedied; and

### ***Transport Safety Appraisal Service***

on how countries implement international regulations for the safe transport of radioactive material.

The Agency is also undertaking a major 50-country project to improve the safety and infrastructure in the use of nuclear technology in the fields of medicine, agriculture, and research.

In the event of any abnormal occurrence, the International Nuclear Event Scale is used to rate the degree of severity, both at the source and beyond. By rating nuclear events on the 1 to 7 event scale, as e.g. anomaly (1), incident (3), or a major accident (7), countries concerned and the Agency can better share information internationally about the potential implications.

## Verifying Non-Proliferation of Nuclear Weapons

IAEA Safeguards Agreements are designed to verify that states are complying with their nuclear non-proliferation obligations. Parties to the Nuclear Non-Proliferation Treaty and other regional nuclear weapon free zone treaties have agreed not to acquire nuclear weapons and to conclude a comprehensive Safeguards Agreement with the IAEA. Agency inspectors regularly visit declared nuclear facilities to check records, install monitoring and surveillance equipment, and confirm physical inventories of declared nuclear material. These activities are most intensive at facilities using nuclear material most susceptible to diversion for making explosive devices.

This role was strengthened in 1997, notably as a result of the discovery of clandestine nuclear activities in Iraq after the 1991 Gulf War. Under the new Model Protocol, additional to existing Safeguards Agreements, parties must provide more information on all nuclear activities, as well as infrastructure which could support future nuclear activities. The Protocol also gives IAEA inspectors greater access to nuclear and nuclear-related sites to verify the absence of clandestine nuclear activities.



*Compliance inspection at a nuclear plant.  
Credit: M. Faugere/Intercontrole*



*IAEA/UN Inspectors at work in Iraq following the 1991 Gulf War.  
Credit: IAEA Action Team*

Today, Safeguards Agreements have been concluded with 139 states and 45 Additional Protocols have been approved.

Through information exchange, training, technical assistance, and other support services, the Agency also assists Member States prevent, detect, and respond to theft and diversion of nuclear and radioactive material.

## **Protecting the Public and the Environment**

Linked to two international conventions dealing with early notification and assistance in the

event of emergencies, the Agency maintains a 24-hour on-call service. Once notified, it is thus able to co-ordinate sharing of information about abnormal situations.

Along with the UN Environment Programme and the Government of Monaco, the IAEA operates the Marine Environment Laboratory in Monaco. This laboratory, devoted to protecting the marine environment, helps Member States use nuclear techniques for monitoring contamination and controlling pollution and has special joint projects to track the effects of man-made radiation on marine life.

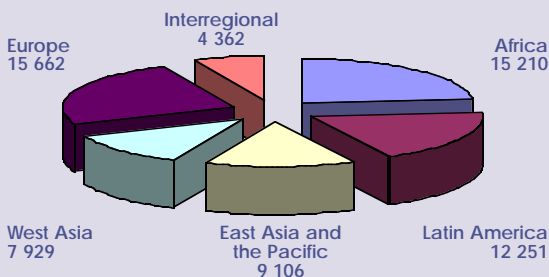
The IAEA has developed advisory regulations for the safe transport of radioactive materials on land, by air, and by sea. These requirements are updated regularly and have been adopted by many countries, as well as by the International Civil Aviation Organization and the International Maritime Organization.

The potential environmental and health hazards posed by radioactive waste have always been recognized by industry, regulators, and the IAEA. In addition to a convention on waste and spent fuel management, the Agency produces standards and guidance documents on the safe handling, processing, and storage of waste, assists Member States with the planning and technology required to manage waste safely throughout the nuclear fuel cycle (from uranium mining to eventual disposal), and provides information and advice on alternatives for final disposal of radioactive waste.

For more than 40 years, the IAEA has been the international focal point for nuclear co-operation and has provided a wide range of innovative services and activities summarized in this pamphlet. The Agency stands ready to assist Member States and the global community in confronting both the challenge and the promise of nuclear technology in the next millennium.

## Technical Co-operation Disbursements by Regions: 1998

(in thousands of dollars)



## Multilateral Treaties for which the IAEA Director General is Depositary

Vienna Convention on Civil Liability for Nuclear Damage

Convention on Physical Protection of Nuclear Material

Convention on Early Notification of a Nuclear Accident

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency

Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention

Convention on Nuclear Safety

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage

Convention on Supplementary Compensation for Nuclear Damage





Further information on the Agency and its activities and programmes is available on the IAEA Internet home page: <http://www.iaea.org/worldatom>

or by writing directly to:

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Photo: Vienna International Center.  
Credit: G. Leidenfrost