

ANNUAL REPORT

Synthesis

Regulatory Authority

The NUCLEAR REGULATORY AUTHORITY (ARN) was established as an autonomous body reporting to the President of Argentina by Act 24,804 known as the Nuclear Activity National Act, which came into force on April 25, 1997, and is empowered to regulate and control the nuclear activity with regard to radiation and nuclear safety, physical protection and nuclear non-proliferation issues. It must also advise the Executive on issues under its purview.

The objective of the Nuclear Regulatory Authority is to establish, develop and enforce a regulatory system applicable to all nuclear activities carried out in Argentina. The goals of this regulatory system are:

- ❑ To provide an appropriate standard of protection for individuals against the harmful effects of ionizing radiation.
- ❑ To maintain a reasonable degree of radiological and nuclear safety in the nuclear activities performed in Argentina.
- ❑ To ensure that nuclear activities are not developed with purposes unauthorized by the law and regulations resulting therefrom, as well as by the international agreements and the non-proliferation policies adopted by Argentina.
- ❑ To prevent the commission of intentional actions which may either have severe radiological consequences or lead to the unauthorized removal of nuclear materials or other materials or equipment subject to control.

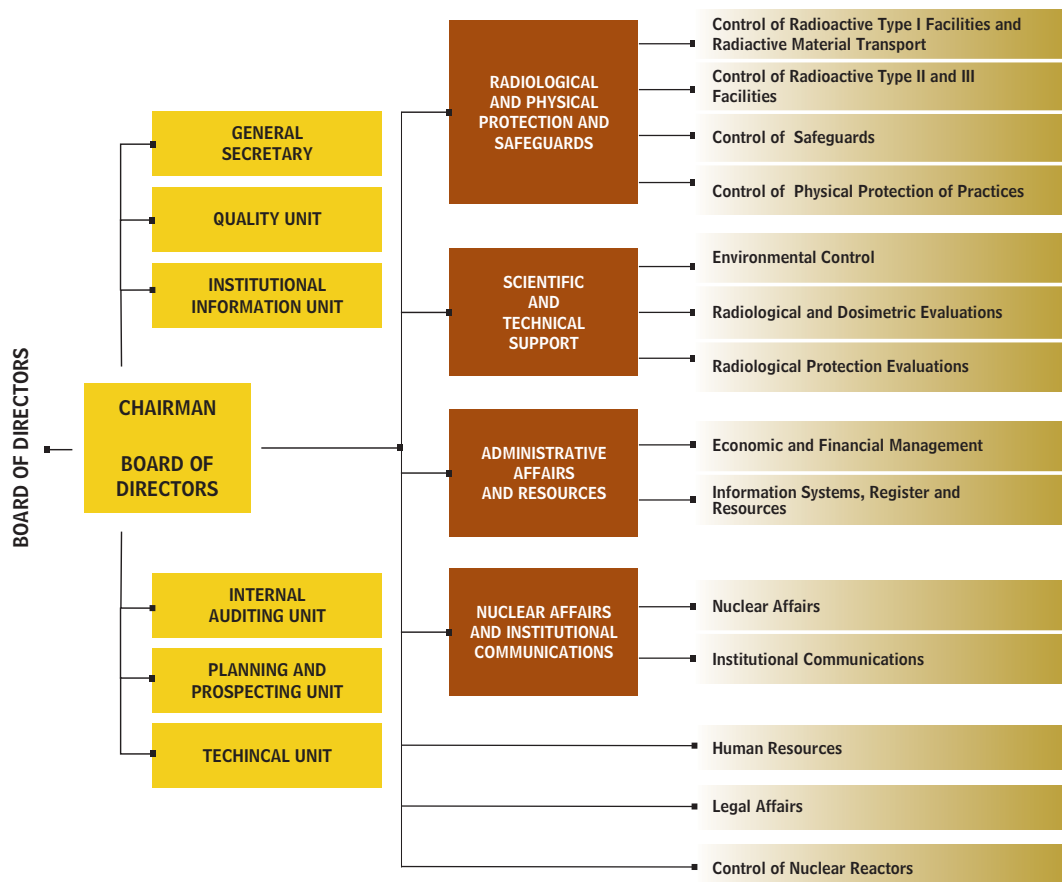
Articles 1, 7, 14, 15, 16, 18, 25 and 26 of Act 24,804 provide a detailed description of the functions, powers and duties vested in the ARN. Decree 1390/98 regulating said Act defines its scope and procedures facilitating its enforcement.

ARN Board

The direction and management of the ARN is performed by a Board of Directors; this Board was composed during 2007 of the following members appointed by the Executive:



The organization chart below shows the ARN organizational structure approved on March 14, 2007:



The Regulatory System

In its capacity as the national authority on all issues relating to radiation and nuclear safety, non-proliferation assurances, physical protection and transport of radioactive materials, the ARN grants licences, authorizations and permits, as appropriate, in connection with practices associated with radiation sources. In addition, the ARN performs control activities to ensure that persons responsible for each practice comply with the provisions set forth in the standards and other regulatory documents.

Radiation and Nuclear Safety

The organization (owner or operator) in charge of the design, construction, commissioning, operation and decommissioning stages of a nuclear facility shall take full responsibility for the radiation and nuclear safety of the facility in question. No event affecting radiation and nuclear safety shall relieve such organization from its responsibility in each stage of the project.

As far as the licensing process is concerned, facilities are divided, according to the associated radiological risk and the technological complexity involved, into Type I, II or III facilities (previously classified as major and minor facilities). For Type I and II facilities, the ARN grants operation licences, while for Type III facilities the ARN has a registration system.

According to current regulations, three types of licences are required for Type I or major facilities: Construction Licence, Operation Licence and Decommissioning Licence. For nuclear power plants, a Commissioning Licence is also mandatory.

Personnel of the major facilities occupying positions with significant influence on safety shall hold both Individual Licences and Specific Authorizations. Two types of regulatory documents are issued for the purpose of certifying the ability of a person to hold a position in the facility operation chart. To be accepted for performing a key safety-related responsibility in a given facility, the applicant needs in addition to the licence a Specific Authorization which must be requested to the ARN. For this purpose, the applicant shall prove a specific knowledge of the facility in question, be suitably trained for the particular job and have an adequate psychophysical fitness.

For the operation of Type II facilities, the organization responsible for the practice involving radioactive material or ionizing radiation shall apply to the ARN for an operation authorization. In addition, all responsible persons involved are required to hold a specific individual permit applicable to a given practice.

Safeguards

Safeguards and nuclear non-proliferation assurances are another aspect in the Argentine regulatory system. They constitute a set of requirements and procedures applicable to nuclear materials and other nuclear-related materials, equipment and information, aimed at ensuring, with a reasonable degree of certainty, that such elements are not diverted to an unauthorized use, and that the international commitments in this field are appropriately observed.

Safeguards may be national or international in nature; international safeguards can be regional or global in scope. National safeguards are defined by the provisions set forth in the regulatory framework adopted by each State. For Argentina, the ARN has established the guidelines of the Argentine Accounting and Control System for nuclear materials and other nuclear-related materials, equipment and facilities. As far as the international safeguards and non-proliferation assurances are concerned, their application proceeds in accordance with the commitments and agreements on non-proliferation of nuclear weapons adopted by Argentina. In this case, safeguards may be applied by regional or global international organizations and are aimed at detecting, at a timely manner and with a reasonable degree of certainty, that “significant quantities” of nuclear materials are not diverted to purposes banned by the agreements by virtue of which those safeguards are applied.

In this regard, it is worth mentioning the “Agreement between the Argentine Republic and the Federative Republic of Brazil for the Exclusively Peaceful Use of Nuclear Energy” signed in Guadalajara in 1991. By virtue of this agreement an Agency was created, designated as “Brazilian-Argentine Agency for Accounting and Control of Nuclear Materials” (ABACC) whose essential objective is the implementation of the “Common System of Accounting and Control of Nuclear Materials” aimed at ensuring that nuclear materials are not diverted for the manufacturing of nuclear weapons or other nuclear explosive devices.

Immediately after the entry into force of the bilateral agreement, the agreement between both countries, ABACC and the International Atomic Energy Agency (IAEA) for the application of safeguards (referred to as the Quadripartite Agreement) was concluded. This agreement commits the IAEA to applying safeguards in both countries for all nuclear materials in connection with all nuclear activities in Argentina and Brazil, based on the “Common System of Accounting and Control of Nuclear Materials”.

Physical Security

The Argentine regulatory system also envisages, with special attention focussed on the national regulatory function, the physical security against robbery, removal or unauthorized use of nuclear materials, and sabotage against nuclear faci-

lities. In this respect, the ARN takes full responsibility for requiring the Responsible Entity to implement a complete physical security system applicable to nuclear facilities and materials in accordance with the regulatory requirements set forth by the ARN. Physical security has become a matter of international interest and cooperation. In particular, the “Convention on Physical Protection of Nuclear Material”, regarding international transport of these materials, was opened to signature on March 3, 1980, in the IAEA’s headquarters in Vienna and the United Nations headquarters in New York; Argentina adopted this Convention under Act 23,620 and then ratified it.

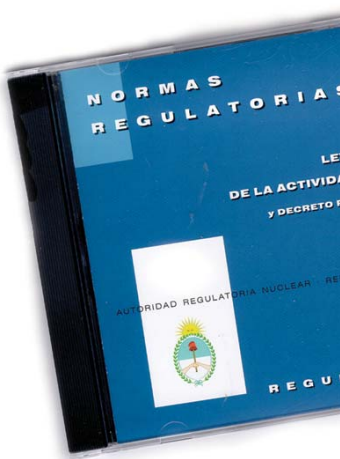
Transport of Radioactive Material



Container of radioactive material transport

All international, regional and national organizations responsible for regulation of land, air, river and sea transport of hazardous materials have endorsed the safety criteria contained in regulation AR 10.16.1. relating to “Transport of Radioactive Materials”, the text of which is identical to the aforesaid IAEA Regulations. Regulation AR 10.16.1. provides persons, goods and environment with an appropriate safety level during normal transport of radioactive material, as well as in the event of any accident. In order to protect workers and public under normal transport conditions, this regulation sets forth requirements which essentially limit the dose rate in the vicinity of the packages to be transported and the non-fixed contamination in their external surface.

AR Regulatory Standards



In accordance with the provisions of article 16, section a) of Act 24,804, the ARN shall have power to “establish regulations relating to radiation and nuclear safety, physical protection and nuclear materials use control, the licensing and control of nuclear facilities, international safeguards and transport of nuclear materials with regard to its radiation and nuclear safety and physical protection aspects”.

Regulatory standards in Argentina have a performance basis: they are not prescriptive in nature, but they define the accomplishment of safety objectives. How such objectives are achieved depends on the adequate decisions taken by the organization in charge of the design, construction, commissioning, operation and decommissioning of the facility; such organization must demonstrate to the Regulatory Authority that the technical means it proposes actually accomplish the objectives set in the standards.

The Regulatory Standards in force on 2007 are listed below:

- AR 0.0.1. Licensing of Type I installations
- AR 0.11.1. Licensing of personnel of Type I installations
- AR 0.11.2. Psychophysical aptitude requirements for specific authorizations
- AR 0.11.3. Retraining of personnel of Type I installations
- AR 2.12.1. Management of radioactive waste generated at mining and milling facilities: Radiological Safety Criteria
- AR 3.1.1. Occupational exposure in nuclear power plants
- AR 3.1.2. Limitation of radioactive effluents in nuclear power plants
- AR 3.1.3. Radiological criteria relating to accidents in nuclear power plants
- AR 3.2.1. General safety criteria in the design of nuclear power plants
- AR 3.2.3. Nuclear power plant fire protection
- AR 3.3.1. Nuclear power plant reactor core design
- AR 3.3.2. Nuclear power plant heat removal systems
- AR 3.3.3. Nuclear power plant pressure primary circuit
- AR 3.3.4. Nuclear power plant fuel performance
- AR 3.4.1. Safety-related protection and instrumentation system in nuclear power plants
- AR 3.4.2. Nuclear power plant shutdown systems
- AR 3.4.3. Nuclear power plant confinement systems
- AR 3.5.1. Emergency electric power supply in nuclear power plants
- AR 3.6.1. Nuclear power plant quality system
- AR 3.7.1. Documentation to be submitted to the Regulatory Authority prior to the commissioning of a nuclear power plants
- AR 3.8.1. Pre-nuclear commissioning of nuclear power plants
- AR 3.9.1. General criteria for operational safety in nuclear power plants
- AR 3.9.2. Communication of significant events in nuclear power plants
- AR 3.10.1. Protection against earthquakes in nuclear power plants
- AR 3.17.1. Nuclear power plant decommissioning
- AR 4.1.1. Occupational exposure in nuclear research reactors
- AR 4.1.2. Limitation of radioactive effluents from nuclear research reactors
- AR 4.1.3. Accident related radiological criteria in nuclear research reactors
- AR 4.2.1. Design of critical assemblies
- AR 4.2.2. Design of research reactors
- AR 4.2.3. Fire protection in research reactors
- AR 4.5.1. Electric power supply system design for research reactors
- AR 4.7.1. Documentation to be submitted to the Regulatory Authority prior to the commissioning of a research reactor
- AR 4.7.2. Documentation to be submitted to the Regulatory Authority prior to the commissioning of a critical assemblie
- AR 4.8.1. Pre-nuclear commissioning of critical assemblies
- AR 4.8.2. Pre-nuclear commissioning of research reactors
- AR 4.9.1. Critical assembly operation
- AR 4.9.2. Research reactor operation
- AR 5.1.1. Occupational exposition in Type I accelerators

- AR 5.7.1. Documentation to be submitted to the Regulatory Authority prior to the commissioning of a particle accelerator
- AR 6.1.1. Occupational radiation safety in Type I radioactive installations
- AR 6.1.2. Limitation of radioactive effluents in Type I radioactive installations
- AR 6.2.1. Radiation safety for design of industrial irradiation plants with a mobile underwater radioisotopes source
- AR 6.7.1. Documentation to be submitted to the Regulatory Authority prior to the commissioning of an industrial irradiation plant
- AR 6.9.1. Industrial irradiation plant operation with a mobile underwater radioisotope source
- AR 7.9.1. Operation of industrial gammagraphy equipments
- AR 7.9.2. Operation of industrial radioactive sources
- AR 7.11.1. Individual licences for industrial gammagraphy equipment operators
- AR 7.11.2. Individual permits for operation of industrial radioactive sources
- AR 8.2.1. Use of sealed sources in brachytherapy
- AR 8.2.2. Operation of linear electron accelerators for medical use
- AR 8.2.3. Cobalt-therapy equipment operation
- AR 8.2.4. Use of unsealed radioactive sources in nuclear medicine
- AR 8.11.1. Individual licences for use of radioactive material or ionizing radiation in human beings
- AR 8.11.2. Minimal requirements to obtain medical individual permits
- AR 8.11.3. Individual permits in radiotherapy
- AR 10.1.1. Basic Radiation Safety Standard
- AR 10.12.1. Radioactive waste management
- AR 10.13.1. Basic standard on the physical protection of nuclear materials and installations
- AR 10.13.2. Physical safety of sealed sources
- AR 10.14.1. Assurances of non-diversion of nuclear materials and of material, installations and equipment of nuclear interest
- AR 10.16.1. Transport of radioactive materials

AR Regulatory Guides

The Regulatory Guides in force on 2007 are listed below:

- Guide GR 1 Dosimetric factors for external irradiation and internal contamination, and emergency levels in foods
- Guide GR 2 Schedules of requirements for the transport of specified types of radioactive material consignments
- Guide GR 3 Specific functional conditions to be verified by the specialized physician according to psychophysical performing score
- Guide GR 4 Design of nuclear research reactors
- Guide GR 5 Operation of industrial gammagraphy equipments: Recommendations to obtain individual permits
- Guide GR 7 Design of critical assemblies
- Guide GR 10 Training programme of personnel Type I installations

Facility Control

In Argentina there are two nuclear power plants in operation, one under construction, three critical assemblies, three research and isotope production reactors, 25 major radioactive facilities and more than 1,500 facilities for medical, industrial, research and training purposes which use radioactive materials or sources. Those facilities are intended for various purposes such as electric power generation, radioisotope production, basic and applied research, or the use of ionizing radiation in the field of medicine and industry. Such various facilities are located all around the country and their complexity and radioactive material inventories vary significantly.

The ARN's regulatory activities aimed at controlling those facilities include analyzing design and operation-related documents, permanently assessing safety during operation, and verifying by means of regulatory inspections and audits the compliance with the provisions of the licence concerned. The analysis and assessment tasks are performed by staff members skilled in the field of radiological and nuclear safety who use modern information technology for data management and are acquainted with the use of calculation codes, in order to validate, based on their own independent criteria, documentation supplied by the licensee.

The ARN's control action also includes a program of routine and non-scheduled inspections for monitoring all activities related to safety and verification of compliance with the provisions of the relevant licence.

Routine inspections are associated with the supervision of the facility's regular activities, process monitoring and verification of compliance with the provisions of binding documents. As far as nuclear power plants are concerned, inspections are basically conducted by ARN's resident inspectors relying on the technical support provided either by the ARN analysis and assessment teams or by teams working for the ARN under agreements or contracts.

Non-scheduled inspections are carried out both in the event of specific circumstances and when the need arises to increase the inspection effort. In such cases inspections are conducted by experts in a variety of disciplines, either from the ARN or other ARN-related institutions.

Facilities subject to regulatory control are listed in the following table:

Facilities under regulatory control	Number	Facilities under regulatory control	Number
Nuclear power plants in operation	2	Mining and milling plants	8
Nuclear power plant under construction	1	Gaseous diffusion enrichment plant	1
Research reactors	3	Teletherapy centres	61
Critical assemblies	3	Brachytherapy centres	68
Particle accelerators	5	Nuclear medicine centres	288
Radioisotope or radioactive source production plants	5	Gammagraphy facilities	59
High-dose irradiation plants	2	Industrial instalations	294
Facilities pertaining to nuclear fuel cycle	13	Linear accelerators in medical use	54
CNEA's waste management area	1	Radioimmunoassay laboratories	322
CNEA's laboratories	22	Research and education centres and other purposes	324
Storage facilities	3		

CNEA: National Atomic Energy Commission

Total Inspection Effort

Area under regulatory control	Person-days
Radiological protection and nuclear safety	2740
Safeguards	337
Physical protection	113

The ARN performed in 2007 its obligation to cooperate with ABACC for implementation of the "Common System of Accounting and Control of Nuclear Materials", by contributing 17 inspectors who carried out 229 person-days of inspection in Brazilian facilities.

Regulatory Permits, Licenses and other Documents

In 2007 the ARN granted Permits (new and renewals) and Licences (new and renewals) and other Documents as detailed in the following table:

Document	Number
Individual Licences	35
Specific Individual Authorizations	296
Operation Licences	364
Individual Permits	610
Radioactive Material Transport Certificates	17
Individual Records	98
Institutional Records	63
Import Radioactive Material Authorizations	550
Export Radioactive Material Authorizations	720

Emergency System

All ARN-regulated activities involving the use of ionizing radiation must have emergency procedures or plans. Such procedures or plans are a condition within the process of licensing and controlling those activities. The ARN establishes the emergency criteria and evaluates the radiological and nuclear emergency plans and procedures developed by the facilities under control.

In the event of radiological emergencies in facilities other than nuclear power plants, the ARN will take the necessary steps through its own Radiological Emergency Intervention System (SIER). The SIER is intended to:

- ▣ Advise personnel in charge of relevant installations in the event of an emergency.
- ▣ Advise public authorities involved in the control of radiological emergencies.
- ▣ Act in the event of emergencies which may arise in minor facilities and practices where accidents can not be adequately controlled or may affect the public, as well as in the event of radiological emergencies in public areas.

The SIER has a primary intervention group which is on duty in weekly shifts all year round. The SIER has the specific equipment and necessary logistic infrastructure to ensure a prompt and efficient intervention in the event of an accident with possible radiological consequences. During 2007 the Intervention System was required in 8 events: incidents with industrial gauges or with medical sources.

In addition, the ARN has signed cooperation agreements with other organizations such as the Federal Police, the Border Guard and the Coast Guard, so as to take common actions in the event of an emergency.

In compliance with the provisions of Act 24,804 and its regulating decree, the ARN has created the Nuclear Emergency Intervention System (SIEN), which serves as a complement to the previously created SIER. The implementation of the SIEN coincides with the creation (by Decree 1,250/99) of the Federal Emergency System (SIFEM). The SIEN's structure allows for the ARN to join the SIFEM as a participant organization.

The main features of ARN's SIEN and SIER emergency intervention systems are summarized in the following chart:



Measurements during an emergency exercise in Embalse nuclear power plant

System	Objetives
SIEN Nuclear Emergency Intervention System	<p>To act in the event of emergencies resulting from accidents in nuclear power plants, the consequences of which extend to the outside of the facility.</p> <p>To participate in planning and training stages aimed at intervention in emergencies.</p> <p>To take actions within the Federal Emergency System (SIFEM).</p>
SIER Radiological Emergency Intervention System	<p>To act in the event of radiological emergencies arising in minor facilities and practices or involving the public.</p> <p>To act in the event of radiological emergencies in public areas.</p> <p>To advise public authorities and users.</p>

Occupational Surveillance

Basic criteria supporting radiological safety establish that: all practices involving the use of ionizing radiation shall be adequately justified, radiological protection shall be optimized, dose limits and constraints shall be complied with, the likelihood of accidents (potential exposures) shall be kept at a minimum level.

The ARN assesses information related to occupational exposure in all the relevant and the most important of the minor facilities. This work allows the ARN to define behavioural indicators for radiological protection systems, to identify trends, to verify compliance with dose limits, and to make comparisons among different practices.

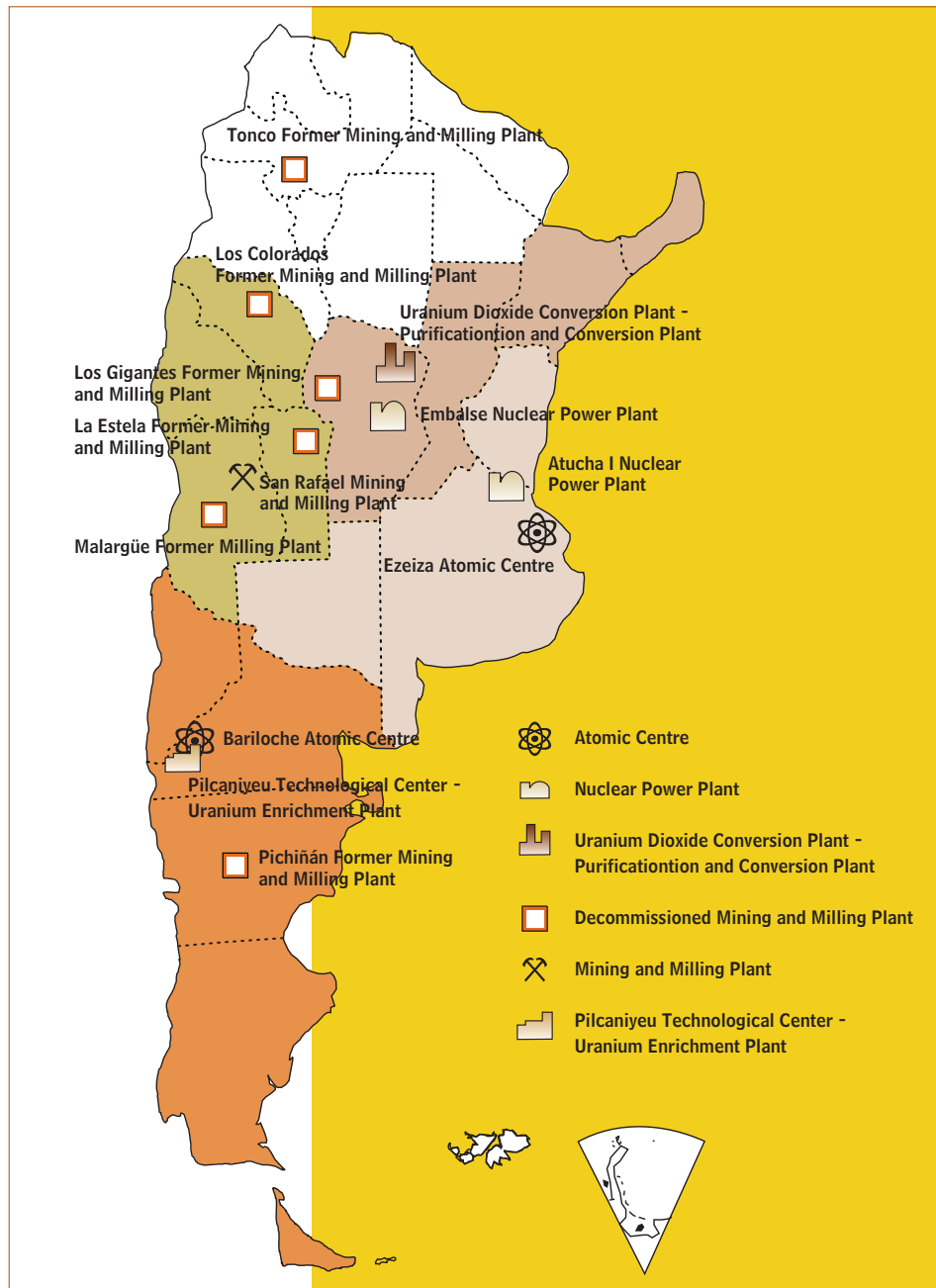
In 2007, the total number of workers subject to control in the different facilities reached 2170, with 79% of them pertaining to the nuclear power plants.

The resulting collective dose to major facility workers was 5,8 man Sv (January-December). In the Embalse nuclear power plant (CNE) and Atucha I nuclear power plant (CNA I) no workers exceeded 20 mSv (mean value between 2003 and 2007).

Environmental Surveillance

The ARN performs environmental monitoring of areas around the different nuclear facilities, fully independently from monitoring carried out by the facilities themselves. In 2007, such a monitoring was carried out in the surroundings of Atucha I and Embalse nuclear power plants, Ezeiza and Bariloche atomic centres, San Rafael uranium ore mining plant, Cordoba uranium ore milling plant and the following decommissioned plants for mining and milling of uranium ores: Malargüe, Los Gigantes, La Estela, Pichiñán and Tonco. The facilities under environmental control are shown in the map of the following page.

Facilities under Environmental Control



In the surroundings of Atucha I and Embalse nuclear power plants, representative samples were taken of the different compartments within the radionuclide transfer environmental matrix. In order to evaluate the environmental impact of the liquid discharges, samples of river and lake water, sediments and fish were collected and analyzed. To assess the environmental impact of gaseous emissions, samples of locally produced food, such as milk and vegetables, were taken and analyzed. Grass was analyzed as an indicator of radioactive material deposition. On account of their importance from the radiological point of view, radionuclides analyzed were mainly the radioactive fission products (cesium 137, strontium 90, iodine 131) and neutron activation products (tritium and cobalt 60).

Environmental monitoring was also carried out for CNEA's Ezeiza Atomic Centre. As done for the nuclear power plants, representative samples of the different compartments of the environmental matrix were collected in the surroundings of the Atomic Centre and then analyzed.

The ARN has continued to periodically perform environmental monitoring in the areas surrounding the operating and decommissioned facilities for the mining and milling of uranium ores. Monitoring was conducted at currently operating Cordoba plant, San Rafael uranium ore mining plant, as well as the following decommissioned plants: Malargüe, Los Gigantes, La Estela, Pichiñán and Tonco. To assess the radiological environmental impact of the operation of the various facilities, surface water, sediment and ground water were sampled. Natural uranium concentration and radium 226 activity were determined, as was radon gas emission rate for uranium mill tailings, on account that uranium, radium 226 and radon maintain the highest potential to produce radiological exposure. The results obtained show that no environmental pollution exists attributable to the monitored facilities.

In the course of year 2007, the ARN continued to carry out the radon concentration measurement program directed to monitor houses in different cities of Argentina, so that exposure incurred by members of the public could be estimated. For houses monitored from 1983 to 2007 all around the country, the radon concentration mean value resulted in 44.3 Bq/m³. Studies performed show that radon levels in Argentine houses are well within the permissible values.

In 2007 the radioactive effluent release during operation of CNA I and CNE nuclear power plants represented 24% and 7% of the respective annual dose constraints.

The resulting doses to individuals of the critical group for Atucha I and Embalse nuclear power plants reached 0.004 mSv (both plants). These doses represent less than 2% of the annual dose constraints for a particular facility.

The resulting doses to individuals of the critical group in the remaining major facilities were less than a tenth of the annual dose constraints for each particular facility.

ARN Laboratories

The ARN performs various scientific and technological tasks to support its regulatory activity. For this purpose, the ARN relies on appropriate laboratories, equipment and skilled personnel whose work consists in implementing and validating the corresponding methodologies within different working sectors.

The ARN has various laboratories at the Ezeiza Atomic Centre, located in Ezeiza, province of Buenos Aires. Those laboratories cover an area of 2,000 m² and work on physical dosimetry, radiopathology and biological dosimetry, radioche-



ARN Laboratories

mical analyses, uranium particle detection, iodine 129 detection, radon measurement, environmental samples processing, and internal contamination assessment. Those facilities also include measurement laboratories (whole body counter, gamma and alpha spectrometry laboratory, gross alpha and beta activity measurement laboratory, and low background activity counter), electronic support laboratories and filter efficiency determining laboratories.

Various activities supporting the regulatory and development control functions are performed within the following specific areas:

- ❑ Physical dosimetry.
- ❑ Internal contamination.
- ❑ Biological dosimetry.
- ❑ Radon measurement techniques.
- ❑ Program of medical assistance on radiation protection.
- ❑ Diagnostic and prognostic indicators applicable to accidental overexposure.
- ❑ Prenatal irradiation effects on developing central nervous system.
- ❑ Remote surveillance and monitoring system.
- ❑ Filter tests.
- ❑ Development of techniques aimed at detecting undeclared nuclear activities.
- ❑ Nuclear tests detection techniques.

In the framework of the Comprehensive Nuclear Test Ban Treaty, a gamma spectrometry laboratory is in operation which serves as a primary laboratory within the international network set forth in that Treaty.

The radiochemical laboratories process samples obtained from environmental monitoring and inspections. The different types of samples, including waters, soils, sediments, vegetables, filters and biological samples such as urine, feces and nasal wipes, are analyzed in order to determine different alpha and beta emitter radionuclides.

In the radiation measuring laboratories, routine and special measurements in thyroid, lungs and the whole body are performed. Measurements associated with environmental studies, inspections and audits are also conducted.

In the field of physical dosimetry, routine measurements of personnel dosimetry and special measurements in reactors, critical assemblies and accelerators for medical use and for research are carried out.

These laboratories are regularly involved in international intercomparison programs aimed at keeping up the required operating standards.

Institutional Relations

In compliance with its regulatory function, the ARN maintains a close and varied interaction with domestic and foreign, governmental and non-governmental organizations, as well as with international agencies. Such an interaction has the following objectives:

- ❑ To facilitate the exchange of experiences and information as well as the participation in developing international recommendations to address issues related to radiological and nuclear safety, nuclear non-proliferation assurances and physical protection.
- ❑ To establish and develop technical cooperation agreements.
- ❑ To promote cooperation in order to improve effectiveness and efficiency of the international safeguards system through the participation of experts and the development of specific techniques in the country.

Furthermore, the ARN is actively involved in negotiating international instruments in connection with nuclear regulatory activities as well as in their subsequent implementation. In addition, the ARN contributes to the articulation of Argentine regulatory policies upheld in different international forums.

The negotiation of local and international agreements has always been one of the most important tasks within the context of the ARN's institutional relations. The ARN is currently involved in the execution of numerous agreements signed with local and foreign Universities, Hospitals, Security Forces and other Institutions:

Universities	Security Forces
University of Buenos Aires, Faculty of Exact Sciences University of Cuyo University of San Juan University of Buenos Aires, Faculty of Engineering Higher School Institut of the Army National Technological University University of Tucuman University of Entre Ríos	Argentine Army Federal Police - Firemen Department Borderguard Coastguard
Hospitals	Others
San Martín Hospital Burnt Person Hospital Navy Hospital	Province of Mendoza's Ministry of the Environment National Atomic Energy Commission National Institut for Seismic Studies Municipality of Neuquén Province Argentine Society of Radiation Protection Governement Office of Public Health Custom General Direction National Board of Cientific and Technical Investigations Nuclear Medicine School National Meteorogical Organization National Institute of Water

International Agreements

Countries and Institutions		
Switzerland	Hauptabteilung für die Sicherheit der Kernanlage (HSK)	Brazilian-Argentine Agency for Nuclear Material Accountancy and Control (ABACC)
United Kingdom	National Radiological Protection Board (NRPB)	U.S. Department of Energy (DOE)
South Africa	Council for Nuclear Safety (CNS)	U.S. Nuclear Regulatory Commission (NRC)
Canada	Atomic Energy Control Board (AECB)	U.S. Electric Power Research Institute (EPRI)
U.S.A.	Nuclear Regulatory Commission (NRC)	France's Institut de Protection et de Sûreté Nucléaire (IPSN)
France	Commissariat à l'Energie Atomique (CEA)	Canada's McMaster University
Spain	Consejo de Seguridad Nuclear (CSN)	University of Pisa - Italy
Armenia	Armenia's Nuclear Regulatory Authority (ARNA)	Direction Général de la Sûreté Nucléaire et de la Radioprotection (DGSNR - France)
Egypt	National Centre for Nuclear Safety and Radiation Control (NCNSRC)	Battelle Institute (Pacific Northwest Division USA)
Germany	Gesellschaft für Anlagen und Reaktorsicherheit (GRS)	Purdue University (USA)
Italy	Agenzia Nazionale per la Protezione dell' Ambiente (ANPA)	
Australia	Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)	

The ARN attaches great importance to its link with the International Atomic Energy Agency (IAEA). This link can be defined by three essential aspects:

- ▣ Attendance to regular meetings of the IAEA's "policy-making" organs;
- ▣ Participation in meetings of high-level expert committees advising the IAEA Director-General on issues in connection with nuclear safety and safeguards, as well as in activities related to negotiation or implementation of international agreements significant for nuclear safety; and
- ▣ Contributing experts for technical assistance missions in various countries, preparing safety-related publications and providing training for foreign trainees.

It is worthy of note that Argentina is one of the few member countries of the four technical committees working within IAEA's Secretariat-established process for the preparation and review of safety standards. Those committees are as follows:

- ▣ Radiation Safety Standards Committee (RASSC)
- ▣ Nuclear Safety Standards Committee (NUSSC)
- ▣ Waste Management Safety Standards Committee (WASSC)
- ▣ Transport Safety Standards Committee (TRANSSC)

Officers of the ARN are also members of other important committees, in particular the Standing Advisory Group on Safeguards Implementation (SAGSI) and the Commission on Safety Standards (CSS).

The ARN is a member of the Latin American Forum of Nuclear Regulatory Organizations and the Network of Regulators of Countries with Small Nuclear Programmes (NERS).

Adherence to the Comprehensive Nuclear Test Ban Treaty (CTBT) adopted by the United Nations General Assembly in September, 1996, requires continuous work to be performed by different sectors in the ARN. For the purpose of verifying compliance with the essential obligations set forth in the Treaty, an International Monitoring System envisaging the use of various detection techniques is established. For radionuclide and infrasound techniques, the ARN is the Argentine responsible organization.

Training

The ARN undertakes as a permanent activity the training of specialists in radiation and nuclear safety, safeguards and physical protection, by means of training courses and the participation in local and international congresses and expert meetings. The training activity is carried out through the Training Department in charge of defining, organizing and coordinating courses, workshops and follow-up seminars.

Postgraduate Courses

The Postgraduate Course in Radiation Protection and Nuclear Safety organized in accordance with the provisions of an agreement with the University of Buenos Aires (UBA) and the Ministry of Health under the auspices of the IAEA, has uninterruptedly taken place on a yearly basis between 1980 and 2004. Since 2005, the ARN and the University of Buenos Aires, under IAEA auspices provide the following postgraduate courses: "Radiation Protection and Safety of Radiation Sources" and "Nuclear Safety". The 2007 Course had 22 participants and took place between April, 2 and September, 21 and the second one with 15 participants took place between September, 24 and December, 14. Since 1980, a total number of 770 professionals have been granted a degree, half of them foreigners.

Training Course for Technicians

A course in radiation protection is provided to train technicians from public and private institutions. This course runs for eight weeks on a daily seven-hour basis. In the 2007 edition, 31 participants belonged to Venezuela, Guatemala, Chile, Ecuador and the National Atomic Energy Commission, the Dixitek Plant, the Nuclear Regulatory Authority, IONICS (Irradiation Plant) and CONUAR (Fuel elements Plant). This course took place between October 1st and November 30.

Specialized Courses

In addition to general courses in Radiation Protection and Nuclear Safety mentioned above, different ARN groups provide specific courses, for example the following:

- ▣ Transport of radioactive material.
- ▣ Safeguards, for IAEA and ABACC inspectors.
- ▣ Aerosol monitoring, for CTBT International Surveillance System operators.
- ▣ Medical response in radiation accidents.

These courses run for a period of 1 to 4 weeks on a daily full-time basis. They take place every 2 years, on average.

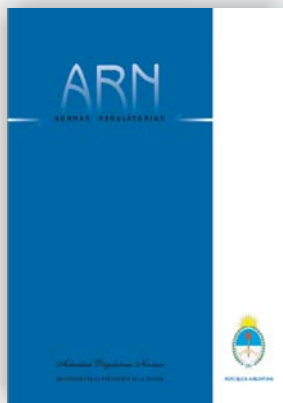
Training courses provided by the ARN during 2007 are shown in the following table:

Name of the Course	Duration/Date
Postgraduate Course in Radiation Protection and Safety of Radiation Sources	April, 2 to September, 21
Posgraduate Course in Nuclear Safety	September, 24 to December, 14
Radiation Protection (Technician Level)	October, 1 st to November, 30
Radiation Protection Module – Course in Radioisotope Methodology and Applications (CNEA)	May / September
Radiation Safety Module - Master's Degree in Nuclear Reactors (CNEA/UTN)	May/June
Regional Course: Response to Illicit Traffic of Nuclear Materials and other Radioactive Sources	August, 27-30
Radiation Protection Module - Physicist in Radiotherapy Course	August - September
Nuclear Energy Use: ARN Role	October
Training on Enrichment Plants Safeguards (First Level)	November, 5-9
Radiation Protection (First Level)	December

The ARN has an Information Centre comprising two functional units allowing the public to access specialized literature on radiation and nuclear safety, safeguards and physical protection through both ARN's own databases and remote data banks, or by means of periodicals and specific textbooks.

ARN Publications

The following institutional publications are regularly edited by the ARN in printed and compact disk form:



AR Standards

This publication contains the text of the regulations currently in force relating to radiological and nuclear safety, safeguards, physical protection and transport of radioactive material.

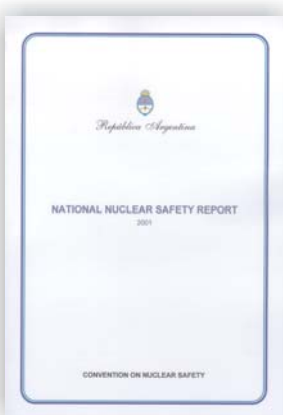
Separate printouts of each standards and the complete set in CD-version are also provided.



Annual Technical Reports

The ARN Technical Reports contain all papers published and/or submitted to congresses by the ARN's different working groups in the field of radiological and nuclear safety, safeguards and physical protection. They also include works performed under agreements between the ARN and universities or other local and foreign organizations.

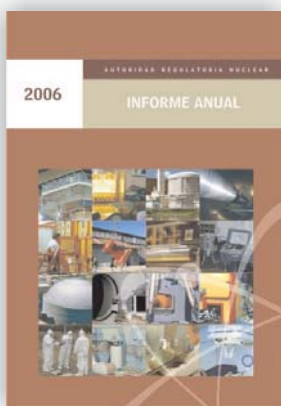
The Technical Reports are edited on a yearly basis since the creation of the Regulatory Authority.



National Nuclear Safety Report

This report has been written according to the guidelines established in the frame of the Convention on Nuclear Safety, the objective of which is to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international co-operation. Argentina signed the Convention on Nuclear Safety, adopted by a Diplomatic Conference held in Vienna, on June 17, 1994, and adopted the Convention through Act 24,776 passed by Parliament on February 4, 1997.

This report describes the actions performed by Argentina since the start of its nuclear activities, such that compliance with provisions of the Convention above can be verified.



Annual Reports

Annual reports summarize the main regulation and control activities regarding radiological and nuclear safety, safeguards and physical protection which are carried out each year at all facilities and for all practices involving ionizing radiation throughout the country.

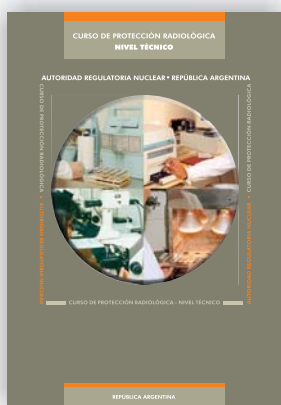
This report, regularly sent to Parliament since 1997, describes the Argentine regulatory system, the facilities under control and the main regulatory activities performed by the ARN during the period from January 1st to December 31 each year. Annexes containing all licences, operating authorizations and transport certificates issued and inspections performed during the year at medical, industrial and research and teaching facilities are included.



Radiation Protection in Medicine Practices

This book is intended to provide professionals and technicians working on medical purposes of ionizing radiation with the main elements of radiation protection.

The first chapters relate to dosimetric magnitudes and techniques and describe the biological effects of radiation and the fundamentals of radiation protection. The rest of the book relates to the main radioprotection aspects in radiodiagnosis, nuclear medicine and radiotherapy.



Course in Radiation Protection for Technicians

The handbook of the radiation protection course for technicians, given by the ARN, contains in 22 chapters and 5 annexes basic and specific topics of the protection against harmful effects of ionizing radiation.

This publication, which develops the syllabus of the course, is also of interest to persons wishing an introduction to the subject.



Regulatory Activities

This text describes the regulatory system developed by ARN to fulfil the objectives set forth in Act 24,804. Through 8 chapters, details are given on the organization of the institution, the regulatory framework, the methods used for the control of installations, the system to face radiological and nuclear emergencies, the environmental surveillance effected by ARN and the laboratories.



The final sections are devoted to the relations that it maintains with other national and foreign institutions, and its activities in the areas of education, training and technical information.

Internal Publications

These publications contain preliminary information on different technical issues regarding radiation protection, safeguards and physical protection.

Papers concerned are eventually submitted to congresses or published in international journals.

At the end of the year they are included in the Annual Technical Report.



Brochures of Nuclear Accident Exercises

These brochures contain information on the preparation of nuclear accident exercises and the expected behaviour of the population. The brochures are used for information diffusion between the population near the Nuclear Power Plants.

Information Systems

Since 1995 the Nuclear Regulatory Authority counts with an information network allowing both internal and external communication.

This network supports more than 300 work stations and is divided in two local area networks, one located in the ARN Headquarters and the other one in Ezeiza Atomic Centre.

The main objectives of the information network are as follows:

- ❑ To allow users at any ARN department to work on group projects, share documents, access databases or any other type of available information within the network.
- ❑ To automate the workflow contemplated in the ARN administrative processes.
- ❑ Maintain a common system for network management.

Operating Systems used are: Netware 4.1, Windows NT 4 and SCO Unix 5.04, which are supported by Servers with Multiprocessor, redundant disk and source array. For connection to the Internet a 64 kbps and a 128 kbps radio links are used which connect the ARN Headquarters and the Ezeiza Atomic Centre to the Internet service provider.

Intranet

The ARN has developed and maintains in operation an Intranet intended to function as the central file for all technical information necessary to accomplish the objectives set forth by the law. The Intranet is accessed through the internal information network. Thus, technical information on radiation and nuclear safety, safeguards and physical protection as well as general administrative information may be accessed from ARN's 300 work stations on a permanent basis. The use of the Intranet in ARN's daily work has allowed information to be quickly and permanently accessed by the different working groups, thus resulting in a more efficient execution of the ARN's annual work programme.

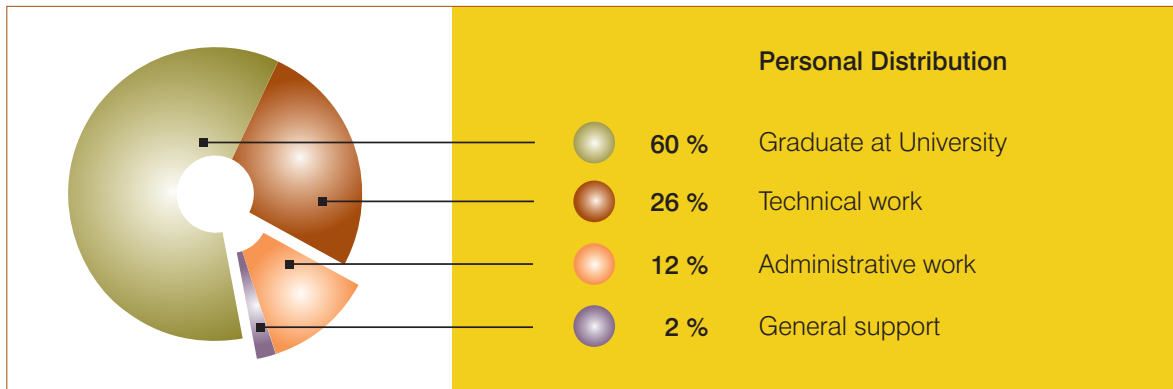
ARN Web Site

ARN Web page address is:

<http://www.arn.gov.ar>

Human and Economic Resources

The organizational structure of the ARN is made up of 180 established posts and 3 posts pertaining to the Board of Directors. In the course of the year 2007 116 qualified contract workers were engaged. By the end of the year the number of trainees at the ARN was 17.



Out of the total staff, 69% are university-degree holders. Approximately 90% of the total staff is devoted to specialized scientific and technical tasks within the ARN's sphere of activities, while 10% performs support and administrative work.

