

# STRATEGIC PLAN

# CEPN

A TEAM DEDICATED TO RADIOLOGICAL PROTECTION

2019-2021

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# PRESENTATION OF CEPN

CEPN, Nuclear Protection Evaluation Centre, is a non-profit organisation created in 1976 to establish a research and studies centre in the nuclear field on the evaluation of human protection against the dangers of ionising radiations, covering both technical, health-related, economic and social aspects.

A Board composed of 7 members manages the CEPN. A multi-disciplinary Research Group of about twelve people performs the research and studies under the responsibility of a Director.

A Scientific Council involving national and European radiological protection experts evaluates the working programme.

## CEPN MEMBERS

- ELECTRICITE DE FRANCE (FRENCH UTILITY COMPANY) (EDF)
- THE INSTITUTE OF RADIOLOGICAL PROTECTION AND NUCLEAR SAFETY (IRSN)
- THE FRENCH ALTERNATIVE ENERGIES AND ATOMIC ENERGY COMMISSION (CEA)

# CEPN VALUES

## SCIENTIFIC EXCELLENCE

Implementation of a scientific excellence regarding research and expertise notably through the publication of the results and the evaluation of the work programme by a Scientific Council.

## PRECAUTION

A precautionary approach for risks associated with low doses of ionizing radiation.

## TRANSPARENCY

Transparency on the work programme through the publication of the main achievements.

## AUTONOMY

Autonomy in the achievement of the missions.

## OPENNESS TO SOCIETY

Development of the work programme in interaction with stakeholders and dissemination of radiological protection culture.

# CEPN STRENGTHS

## MULTIDISCIPLINARY OF THE TEAM

CEPN's staff includes the necessary skills and competences related to the technical, health, environmental, social and economic dimensions for the implementation of radiological protection.

## A REACTIVE ORGANISATION

The flexibility in the management of CEPN, project-oriented, favours responsiveness of the team for achieving the work programme.

## A DIRECT INVOLVEMENT IN PRACTICAL RADIOLOGICAL PROTECTION

Involved in the implementation of radiological protection in the various exposure situations, the team has an in-depth knowledge of the issues at stake.

## RECOGNIZED EXPERTISE AT NATIONAL AND INTERNATIONAL LEVEL

The recognition of CEPN's contributions in the field of radiological protection results in the team's participation in the work of national and international radiological protection organisations.

## A PRIVILEGED ACCESS TO INTERNATIONAL FEEDBACK

As a result of its involvement in several international networks, the team has the ability to put into perspective the practical and regulatory issues associated with the implementation of radiological protection.

## IMPLEMENTATION OF THE STRATEGIC PLAN: 2016-2018 HIGHLIGHTS

### AXIS 1. CONTRIBUTE TO THE REFLECTIONS ON PRINCIPLES AND METHODS FOR RADIOLOGICAL RISK ASSESSMENT AND MANAGEMENT

CEPN has contributed to the work of the International Commission on Radiological Protection (ICRP) on the modalities of management of radon and natural source of exposure, as well as to the implementation of the system of radiological protection in the field of aviation. It also contributed to the developments on the ethical foundation of the system of radiological protection and on the radiological health detriment calculation. A reflection on the search for reasonableness in the implementation of optimization of radiological protection has been initiated with the French Society for Radiological Protection (SFRP) and the International Radiological Protection Association (IRPA). More recently, an analysis on the meaning and development of radiological protection culture was initiated in the framework of a European research project.

### AXIS 2. MANAGEMENT AND OPTIMIZATION OF RADIOLOGICAL PROTECTION IN NUCLEAR FACILITIES

During the last 3 years, CEPN developed a work programme with EDF in various fields: design, operation, maintenance, modifications, decommissioning, environment, ... This resulted in the elaboration of practical guidelines, feedback analysis and international exchanges on good practices. In the field of decommissioning, a particular attention was given to the management of alpha emitters contamination. Other activities were devoted to support advice for the implementation of remote monitoring systems for risk prevention in NPPs, or for the update of the monetary value of the person-Sievert to be used in decision-making processes related to radiological protection. Moreover, prospective reflection was started on the radiological protection issues associated with decommissioning activities, with a focus on the various schemes of waste management.

### AXIS 3. DEVELOP INNOVATIVE APPROACHES FOR MANAGING EXISTING EXPOSURE SITUATIONS

The work programme on radon risk management was devoted to the development of a territorial approach to support local stakeholders with a progressive extension to the Bourgogne - Franche-Comté Region. Moreover, a research project on the Jurasian Arc in partnership with Switzerland colleagues has been set up to develop shared tools for the stakeholders in charge of radon risk management. An extension of this approach taking into account indoor air quality management has also to be emphasized. In addition, the reflection on the management of contaminated sites has been developed in connection with international organizations in view of the application of the radiological protection system for the existing exposure situations, as well as with the Swiss Federal Office of Public Health for the implementation of their radium action plan.

### AXIS 4. CONTRIBUTE TO IMPROVE THE MANAGEMENT OF POST-ACCIDENT SITUATIONS

During this period, the CEPN continued the analysis to draw the lessons from the Fukushima accident management in connection with ICRP and several Japanese partners. Particular attention was paid to the modalities of return of the evacuated populations and to the management of food products. The team has been involved in several European research projects on post-accident health and medical surveillance and management of uncertainty in decision-making processes to improve post-accident management preparedness. By relying on the network established with Japanese partners involved in the management of the damaged Fukushima NPP, a watch on the radiation protection issues associated with the dismantling of the site has been set up in order to draw lessons learned.

## FEATURES OF THE CURRENT CONTEXT OF RADIOLOGICAL PROTECTION

The current period is marked by the implementation of new European and International Basic Safety Standards for the radiological protection of people and the environment in national regulations. Among the new provisions is a strengthening of the management of exposure to radon for both the public and the workers as well as the consideration of exposure to ionising radiation in an integrated approach of all occupational risks.

For several years now, European research platforms on radiological protection have begun a common reflection on medium and long-term research objectives. In this context, multidisciplinary research projects have been initiated to better understand the radiological protection issues at stake. These research projects contribute to the evolution of knowledge concerning both the biological and health effects of ionising radiation and the challenges associated with participatory approaches in response to the growing involvement of civil society in decision-making processes.

Major maintenance works are underway in the French fleet of nuclear power plants and will continue in the coming years. In terms of radiological protection, these works require a follow-up of radiological protection issues for the workers involved and may in some cases call for an adaptation of the organization of radiological protection set up for managing occupational exposures in nuclear installations.

Decommissioning of nuclear installations is progressing in many countries, providing useful feedback to better address the associated radiological protection issues. The management of radioactive materials and waste linked to these activities is evolving, subject to the implementation of national frameworks widely discussed with various stakeholders.

Technological developments and their dissemination lead to an increasing use of ionising radiation in the medical field. In this context, new challenges are emerging for the application of the radiological protection system regarding optimization approach and the awareness of health professionals and patients on radiological protection issues in this field.

Seven years after the accident at the Fukushima-Daïchi nuclear power plant, the consequences for the people and the environment remain an important issue in the daily life of the inhabitants of the Prefecture of Fukushima and continue to mobilize the public authorities. In addition, the management of the damaged installations brings to light new issues associated with the treatment of liquid and solid waste as well as to the dismantling operations of the reactors themselves. This feedback has led international and national organizations to set up working groups to reflect on the evolution of accident and post-accident management plans.

## AXIS 1: CONTRIBUTE TO THE REFLECTIONS ON PRINCIPLES AND METHODS FOR RADIOLOGICAL RISK ASSESSMENT AND MANAGEMENT

The CEPN will continue its contribution to national and international reflections carried out with a view to facilitating the understanding of the foundations of the radiological protection system, in a context characterised both by the evolution of scientific knowledge, the transposition of new Basic Safety Standards into national regulations and the growing involvement of civil society in decision-making processes. In the framework of the current discussions on the implementation of the optimization principle, the CEPN will contribute to methodological developments carried out in particular within the International Radiation Protection Association and the International Commission on Radiological Protection on the concepts of reasonableness and tolerability.

It should also be emphasized that the protection of the environment is now an integral part of the radiological protection system. In this context, the CEPN will undertake a watch on the implementation of the protection of the environment against the deleterious effects of ionizing radiation, addressing both the impact of radiation on the non-human biota and the environment in a perspective of a heritage approach.

### WORK PROGRAMME:

- Radiological health risk assessment
- Methodological developments on concept of reasonableness in the implementation of the principle of optimization of radiological protection
- Reflection on the concept of tolerability of risk
- Analysis of existing exposure situations management
- Watch on the integration of environmental protection approach and consideration of the concept of quality of the environment in risk assessment and risk management

## AXIS 2: MANAGEMENT AND OPTIMIZATION OF RADIOLOGICAL PROTECTION IN NUCLEAR FACILITIES

In the context of the new radiological protection regulations, the CEPN will initiate methodological development for the practical implementation of an integrated approach of occupational risk management. It will continue supporting the implementation of optimization of radiological protection during the design and operation / maintenance stages of nuclear facilities and radioactive waste storage facilities.

In particular, it will support the implementation and follow-up of actions undertaken to strengthen the operational management of projects with high radiological challenges and will contribute to the development of actions to strengthen the operational control of radiological cleanliness.

The CEPN will contribute to analysing and sharing of experience in the field of decommissioning of nuclear installations, at national and international level, and will participate in the discussions initiated within the framework of European research projects. It will also reflect on the issues of radiological protection and the societal aspects associated with the management of radioactive materials and waste. For these reflections, the CEPN will notably rely on the ISOE and EAN networks to draw lessons from international feedback experiences.

### WORK PROGRAMME:

- Methodological developments for the implementation of an integrated approach for the evaluation and management of occupational risks
- Supporting approaches for the management and optimization of radiological protection during the design and operation of nuclear facilities
- Methodological development for the management and optimization of radiological protection adapted to the specificities of facilities under decommissioning
- Sharing of experience on the management of releases from nuclear installations and on the methods of monitoring the environment
- Assessment of management options for radioactive materials and waste

### AXIS 3: DEVELOP INNOVATIVE APPROACHES FOR MANAGING EXISTING EXPOSURE SITUATIONS

The new regulatory provisions for the management of existing exposure situations call for further developing reflections related to the management of exposure to radon and naturally occurring radioactive materials (NORM). Thus, in addition to supporting territorial actions to favour the integration of radon risk management in the framework of indoor air quality improvement in dwelling, CEPN will get involved in the development of innovative approaches to radon risk management in the workplace.

Given the recent work of the International Commission on Radiological Protection and new obligations for industries using NORMs, a methodological reflection will be undertaken to support the implementation of a graded approach, in connection with the work of the European ALARA network.

Special attention will also be given to the reflections on the role, the development and the dissemination of the radiological protection culture for the public and workers. In addition, the CEPN will continue its reflections on the management of contaminated sites based on feedback experience and will contribute to the work in this field of the International Commission on Radiological Protection and the Nuclear Energy Agency.

#### WORK PROGRAMME:

- Supporting the implementation of optimization of radiological protection for the management of radon exposures through the dissemination of territorial approaches and the development of the radiological protection culture
- Facilitating the implementation of actions for developing awareness and skills for the management of radon exposures of the public and workers
- Analysis of radiological protection management framework in industries using NORMs
- Feedback analysis from the management of contaminated sites

### AXIS 4: CONTRIBUTE TO IMPROVE THE MANAGEMENT OF POST-ACCIDENT SITUATIONS

The CEPN will continue the analysis of the feedback experience from the management of the consequences of the accident at the Fukushima-Daiichi nuclear power plant. The analysis will focus on the support of the populations by radiation protection experts, on the stakes associated with the agricultural and economic activities in the affected zones as well as on the organization of the health and radiological surveillance. This reflection will be based on the involvement of the CEPN in the Dialogue Initiative of the International Commission on Radiological Protection and on the cooperation established with Japanese universities and organizations. It will contribute to the development of recommendations and strategies for post-accident preparedness and management at the national, European and international levels.

The CEPN will continue the analysis of the radiological protection issues related to the decommissioning of the damaged Fukushima-Daiichi power plant in order to draw lessons on the management of occupational exposures as well as on the approaches adopted to deal with the materials, waste and discharges resulting from these activities.

#### WORK PROGRAMME:

- Feedback analysis from the management of post-accident situations
- Further work on the preparedness programme for institutional and local actors for the management of post-accident situations
- Deepening of the reflection on health and environmental surveillance frameworks
- Continuation of work on food and non-food products management in post-accident situations
- Feedback analysis on the radiological protection issues associated with the management of the damaged site of Fukushima-Daiichi nuclear power plant

# NETWORKING ACTIVITIES

## INFORMATION SYSTEM ON OCCUPATIONAL EXPOSURES – ISOE

Founded in 1992 by the Nuclear Energy Agency (NEA) of the OECD and co-sponsored by the International Atomic Energy Agency (IAEA) since 1993, ISOE is a network of nuclear power plants operators and national radiation protection authorities. Its objective is the improvement of occupational radiation protection optimization. The CEPN is the European Technical Centre of the system.

[isoe-network.net](http://isoe-network.net)

## EUROPEAN ALARA NETWORK – EAN

The EAN network was founded in 1996. It is conducted by a group of twenty experts who represent the European radiation protection authorities, research organizations and nuclear industrial operators. The objective of this network is to share experience and produce recommendations regarding the practical application of radiological protection optimization in all the exposure situations of both the workers and the public. The CEPN coordinates the network.

[eu-alara.net](http://eu-alara.net)

## FEEDBACK EXPERIENCE ON RADIOLOGICAL INCIDENTS

The CEPN and the French Society for Radiological Protection (SFRP) initiated the RELIR system in 2001. Its objective is to gather and make available events analysis relevant to the training of workers and to foster prevention. The CEPN coordinates the network.

[relir.cepn.asso.fr](http://relir.cepn.asso.fr)

## EUROPEAN PLATFORM ON PREPAREDNESS FOR NUCLEAR AND RADIOLOGICAL EMERGENCY RESPONSE AND RECOVERY – NERIS

The NERIS Platform was created in 2010. It gathers about sixty organizations, all involved in the preparation and management of nuclear and radiological accidental situations. Its mission is to conduct a dialogue forum and to favour research and methodological developments in this field. The CEPN is in charge of the platform's technical and scientific secretariat.

[eu-neris.net](http://eu-neris.net)

## THE HIGH SCHOOL “RADIATION PROTECTION WORKSHOPS”

Since September 2007, CEPN organizes jointly with the Institute for Radiological Protection and Nuclear Safety (IRSN) and the Sciences Pavilion of Franche-Comté, the French Nuclear Safety Authority (ASN), the National Institute of Nuclear Sciences and Techniques (INSTN) of the CEA and the French Society for Radiological Protection (SFRP), the ‘Radiological Protection Workshops’ with students of French and European high schools. These workshops aim to develop a practical culture of radiological protection at school by involving the students into practical and multidisciplinary activities. The CEPN coordinates the steering committee of the workshops.

[lesateliersdelaradioprotection.com](http://lesateliersdelaradioprotection.com)

## INVOLVEMENT IN NATIONAL AND INTERNATIONAL ORGANISATIONS

Currently, the CEPN is actively involved in activities and work of the following organizations:

### FRENCH SOCIETY FOR RADIOLOGICAL PROTECTION - SFRP

- Administrative Board
- Environment and Technical Protection Sections
- Youth Club
- International Relations Commission
- Editorial Board of 'Radioprotection' Journal

### COMMITTEE ON RADIOLOGICAL PROTECTION AND PUBLIC HEALTH OF OECD - OECD/NEA/CRPPH

- CRPPH Bureau
- Expert Group on Legacy Management
- Expert Group on Post-Accident Management

### INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION - ICRP

- Committee 4 on application of the Commission's recommendations for the protection of people and the environment
- Task Group on the update of Commission's recommendations on the management of emergency and post-accident situations
- Task Group on detriment calculation methodology
- Task Group on the management of exposures associated with contaminated sites

### INTERNATIONAL RADIATION PROTECTION ASSOCIATION

- Chairmanship of the Young Generation Network
- Member of the Programme Committee of IRPA 2020 International Congress



# CEPN

CENTRE D'ÉTUDE SUR L'ÉVALUATION  
DE LA PROTECTION DANS LE DOMAINE NUCLÉAIRE

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