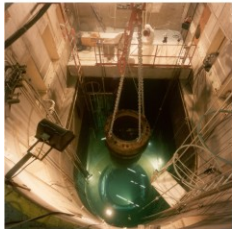


INSTITUTE FOR

ENVIRONMENT, HEALTH AND SAFETY



EHS evaluates radiological effects on our health and the environment and studies the behaviour and the impact of radioactive materials in the air, in water and in the ground by means of modelling and experiments. Radiation protection, decommissioning and waste and disposal are the main pillars. EHS also pays attention to services, safeguards and policy support, and examines the integration of social and ethical aspects in nuclear applications.

GENERAL OBJECTIVE

Through the performance of experiments, the development of models and the integration of human sciences in our R&D, propose new durable methods, computer codes and measuring instruments for radiation protection, management and disposal of radioactive waste and dismantling of nuclear installations. These developments belong to the disciplines environmental chemistry, radiobiology and radioecology and include the transfer of radio nuclides in the geosphere and biosphere, as also the behaviour of micro-organisms in space.

STRATEGIC PRIORITIES

Through its research and services the institute will:

- further develop its leading position in the field of assessing the behaviour of radionuclides in air, water, biosphere and geosphere both by experiments and model development;
- evaluate the radiological effects on population and environment;
- apply molecular biology in environments with ionising radiation;
- contribute to the development of safe and durable solutions for the disposal of radioactive waste and be excellent in providing such services to NIRAS/ONDRAF, the Belgian waste agency, and FANC/AFCN, the Belgian nuclear regulator;
- develop emergency plans and management methods for emergency situations and safeguarding nuclear materials;
- optimise decontamination methods.

EXPERT GROUPS

The institute for Environment, Health and Safety is composed of 9 expertise groups: 4 that have as main objective to perform the major part of the research programs and 5 that besides their research tasks within their domain, perform also services and maintain infrastructure for the other expertise groups, the other institutes or external clients.

Molecular and Cellular Biology (MCB)

- research on the biological causes of health consequences of low doses of ionising radiation is a priority for radiation protection and the epidemiological follow-up of nuclear workers and the surrounding population of nuclear installations remains a necessity;
- evaluates the radiological effects of ionising radiation on men and micro-organisms by using techniques of molecular biology;
- develops techniques together with the genomic platform;
- aims to support with its results the scientific underbuilding of legislation in the domain of radiation protection;
- valorises its expertise and infrastructure through contract and subsidised research.

Radiological Impact and Performance Assessments (IPA)

- assess the behaviour of radioactive pollutants in the air, water and soil by developing models and numerical codes, and by experiments on laboratory scale, in greenhouses and experimental fields;
- evaluates the radiological effects of radioactive substances and ionising radiation on the environment and biosphere;
- orients its research mainly on needs in relation to radioactive waste management e.g. NIRAS/ONDRAF.

Society and Policy Support (SPS)

- studies the societal aspects of nuclear technology with emphasis on involvement of the population in the decision making and acceptance of decisions;
- performs research in the framework of decision support with the aim to make the decision making more transparent by pointing out their basis;
- applies this knowledge in the framework of emergency planning and management of emergency situations;
- provides the government with the basic and measurement data required for the radiological survey of the Belgian territory;
- supports the government as centre of expertise for Safeguards;
- should be excellent in services to the Belgian nuclear regulator, the Federal Agency for Nuclear Control (FANC/AFNC), and the Federal Ministry of Internal Affairs.

Waste and Disposal (W&D)

- develops and evaluates solutions for a safe, acceptable and sustainable management of radioactive waste;
- contributes to the evaluation of radioactive waste streams that could be generated in new nuclear fuel cycles including new reactor systems before their deployment;
- should be excellent in services to the Belgian waste agency NIRAS/ONDRAF.

Radiation Protection Dosimetry and Calibration (RDC)

- in order to determine the real exposure of persons by measurements, research is performed in international context on gamma, X-ray and neutron personal (internal and external) dosimetry and on environmental dosimetry;
- performs optimisation studies for individual doses in the medical sector, especially diagnostic techniques and dose-image quality in medical imaging;
- performs this research in narrow collaboration with FANC/AFNC and the High Health Council;
- performs nuclear and classical calibrations for internal and external clients according to strict QA procedures.

Low Radioactivity Measurements (LRM)

- performs services for internal (nuclear reactors and laboratories) and external (nuclear industry and European institutes) clients for the follow-up of their personal that performs manipulations with radioactive substances of the environment of nuclear installations;
- collects and analyses biological samples (urine, faeces, ..) and environmental samples such as dust, rain water, surface water, sediments, soils, plants and nutrients;

- develops chemical techniques for achieving very low detection limits;
- applies accredited methods for a.o. the measurement of global alpha and beta activity, ^{90}Sr , ^{131}I in milk and for liquid scintillation counting.

EIG EURIDICE (EUR)

This is the economic interest grouping with NIRAS/ONDRAF with as main aims the exploitation and further development of the HADES underground research facility, and the performance of demonstration projects.

- performs the co-ordination and execution of the PRACLAY demonstration project for geological disposal of heat emitting vitrified waste including the construction of a gallery crossing and a 40 m long disposal gallery at 1 to 1 scale, a gallery heater test and a gallery seal test;
- aims to valorise its installations and know how by realising and exploiting of experimental set-ups;
- takes care of its own communication about its activities.

Decommissioning & Decontamination (D&D)

- decontaminates and decommissions the obsolete nuclear installations of SCK•CEN;
- develops further know how with the dismantling of the remaining parts of the BR3 reactor;
- optimises its tasks both in terms of economy and radiation protection by using planning, material management and ALARA tools;
- develops and enhances chemical processes for the decontamination of installations and materials;
- valorises its know how, in association with large industrial partners, by taking part in large commercial decommissioning projects.

Management of Waste and Technical Liabilities (MWL)

- manages the technical passif of SCK•CEN and its nuclear waste;
- takes care of the book keeping of fissionable material;
- develops chemical processes for the treatment of special nuclear wastes e.g. sodium;
- supports projects and installations in relation to their radioactive waste issues e.g. provisions, optimisation and minimisation of nuclear waste production.

Contact

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