

ISEMIR

An IAEA Tool for Radiation Protection Optimization in Interventional Cardiology, Industrial Radiography and Naturally Occuring Radioactive Material (NORM)

Information System on Occupational Exposure in Medicine, Industry and Research

What is ISEMIR?

ISEMIR is a free IAEA online web-based information system that aims to optimize occupational radiation protection. It is divided into three topical areas where radiation protection of workers can be a challenge:

- interventional cardiology (IC)
- industrial radiography (IR)
- naturally occurring radioactive material — NORM (N)



How to access ISEMIR

1. Go to <https://nucleus.iaea.org/isemir>.
2. Select industrial radiography (ISEMIR-IR), interventional cardiology (ISEMIR-IC) or NORM (ISEMIR-N).
3. Register in order to gain access to ISEMIR.

Who can participate?

Occupationally exposed workers, operators, employers and radiation protection officers from:

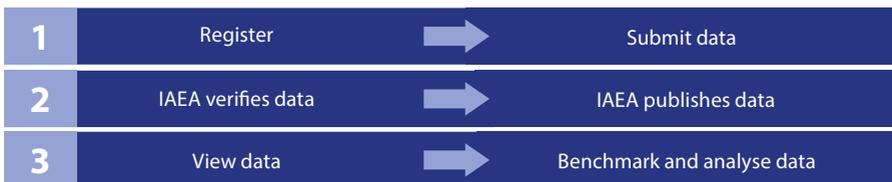
1. Non-destructive testing (NDT) companies carrying out industrial radiography.
2. Medical facilities carrying out interventional procedures.
3. Industrial processes involving NORM.

What are the key objectives of ISEMIR?

- To improve radiation protection of workers.
- To provide efficient collection and maintenance of data on occupational exposure and radiation practices.
- To use the collected data for analysis of occupational doses of individuals.
- To allow NDT companies and IC facilities to benchmark their own facility or company and individual radiographers' performances against global or regional data.
- To allow industry operators to conduct and compare dose assessment methodology.
- To define follow-up actions to address identified gaps and disseminate lessons learnt.

How does it work?

A selected coordinator from the facility or company submits information about the annual collective dose as well as individual effective doses. After verification, the data will be available for benchmarking. The coordinator can also provide access to ISEMIR to the employees for comparing their own exposure information to that of others.



Why focus on industrial radiography?

Industrial radiography work is often carried out under difficult working conditions. Working in such adverse environments might result in operational situations in which IR personnel are exposed to radiation.

What data does the NDT company provide?

Each participating NDT company should provide annual information such as company procedures, training related to radiation protection and annual doses. NDT companies could also submit anonymous information about the dose received by individual industrial radiographers in the company.

Why participate in ISEMIR-IR?

ISEMIR-IR assists NDT companies in benchmarking their arrangements in radiation protection and safety, and in reviewing their trends with time. NDT companies are able to compare their collective as well effective doses against global and regional data. This way, they can better optimize occupational radiation protection.

The statistical analysis is based on the occupational dose per radiographic exposure for a given industrial radiographer.



Why focus on interventional cardiology?

In the last three decades, the use of image guided interventional procedures in cardiology has increased, bringing great benefit to millions of patients around the world. These procedures require health professionals to be present in the room alongside the patient when radiation is being used. This may result in occupational exposure.

What data does the IC facility provide?

Each participating IC facility should provide annual information about the facility, including the number of procedures performed, number of catheterization laboratories, X ray equipment used, X ray equipment performance data and anonymous dosimetry data for individual personnel working in the facility.

Why participate in ISEMIR-IC?

As an outcome of the data entry, IC facilities are able to benchmark their own facility and individual personnel performances against global or regional data and review their trends with time. Based on this information, IC facilities can identify areas for improvement and corrective actions.

The statistical analysis is based on the occupational dose per procedure for individual staff members or groups of staff members.



Why focus on NORM?

Globally, of the 24 million workers monitored for occupational exposure, more than 50% are exposed to naturally occurring radioactive material (NORM) in various industries such as mining, oil and gas production, mineral sands, water treatment, and metal refining and recycling.

What data do industry operators provide?

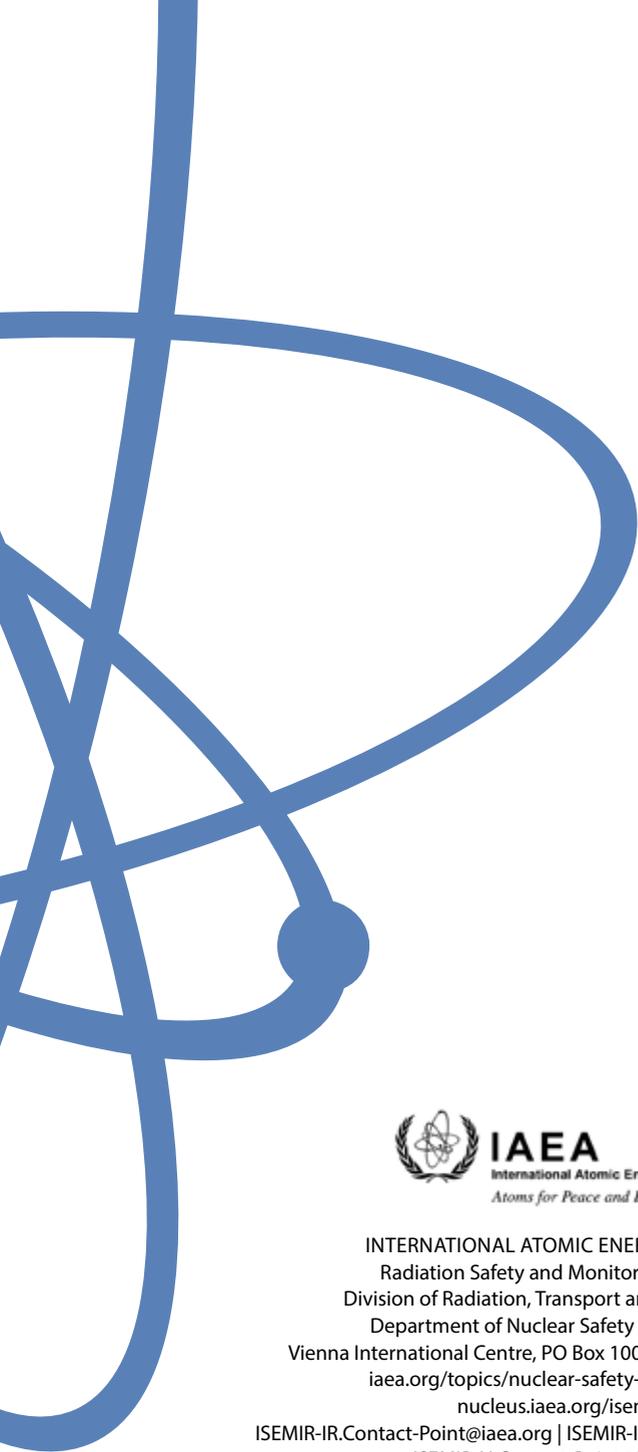
Each participating industry operator should provide annual information about industrial operation and processes, monitoring arrangements, assumptions to calculate exposure and dose based on exposure pathways and arrangements for designation of areas, control mechanisms, induction, training, staffing, record keeping and quality control, which forms the radiation protection programmes.

Why participate in ISEMIR-N?

ISEMIR-N assists industry operators in benchmarking their own radiation protection programmes and maintaining their records in national dose registries. They can also assess, develop and further enhance overarching industry trends by improving data sharing between stakeholders.

The statistical analysis is based on the occupational dose from the industrial operation type or processing methodology for groups of workers.





INTERNATIONAL ATOMIC ENERGY AGENCY
Radiation Safety and Monitoring Section
Division of Radiation, Transport and Waste Safety
Department of Nuclear Safety and Security
Vienna International Centre, PO Box 100, 1400 Vienna, Austria
iaea.org/topics/nuclear-safety-and-security
nucleus.iaea.org/isemir
ISEMIR-IR.Contact-Point@iaea.org | ISEMIR-IC.Contact-Point@iaea.org
ISEMIR-N.Contact-Point@iaea.org

Photos provided by IAEA staff and counterparts for use.