

**60 Years**  
Atoms for Peace and Development

# Factsheet for Decision Makers

## Radiation Protection of Workers

### INDUSTRIAL RADIOGRAPHY

#### Why is it important?

As a main element of non-destructive testing, industrial radiography uses high activity radiation sources to inspect materials for hidden flaws by using the ability of X rays and gamma rays to penetrate materials. For example, this allows us to identify cracks in pipes or flaws in welds that may not be otherwise visible. Industrial radiography is used throughout the world in many different industries and for many different applications.

The safe use and control of the radiation sources in industrial radiography is particularly important to ensure the safety of the operators, other workers and the public.

#### What do I need to know?

Industrial radiography can be undertaken in specially designed fixed facilities or in any outside area using mobile industrial radiography equipment (this is referred to as “site radiography”). The highest individual doses of all workers using radiation tend to be received by those undertaking site radiography (radiographers).

Both the provider of the radiographer service and the owner of the facility where the radiography takes place (the client), have responsibility for radiation safety. They need to cooperate in establishing and implementing the technical and organizational measures necessary for safety and for compliance with the relevant legal and regulatory requirements.

The risk of accidents is increased by the use of high activity radiation sources and the difficult working environment. In the past, high radiation doses in excess of the dose limits have resulted from, for example, inadequate training of the operators, not following operating procedures, and improper radiation monitoring of the radiography equipment.



#### IAEA Safety Standards

for protecting people and the environment

#### Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards

Jointly sponsored by EC, FAO, IAEA, ILO, OECD/NEA, PAHO, UNEP, WHO



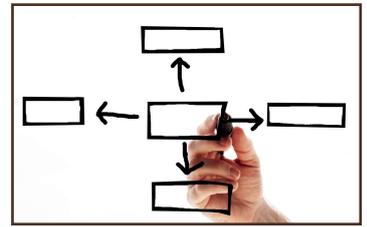
General Safety Requirements Part 3  
No. GSR Part 3



The International Basic Safety Standards (BSS) are the international benchmark for radiation safety. The BSS are used in many countries as the basis for national legislation to protect workers, patients, the public and the environment from the risks of ionizing radiation.

The BSS are based on the most recent scientific evidence on the effects of ionizing radiation and take into account practices and experiences from around the world in the use of ionizing radiation and nuclear techniques. Eight international organizations sponsor the BSS.

### What actions are required?



1. The provider of the radiography service should have in place a radiation protection program.
2. A radiation protection program is required in order to control radiation hazards, optimize radiation protection and mitigate the consequences of accidents arising from radiography operations.
3. The radiation protection program should include:
  - Clear allocation of responsibilities for radiation safety
  - Proper training of the operators and other workers
  - Clear operating procedures
  - Emergency procedures to deal with accidents
  - Appropriate means for measuring, assessing and recording the doses to the operators and other workers
  - Appropriate controls and management of the radiation sources.
4. The provider of the radiographer services and the client should cooperate on the preparation and planning of the radiography, including:
  - Selection of a suitable location and time for the radiography work to be carried out
  - Notices, warning signals and alarms to be used to avoid possible confusion on the site
  - Consideration of all aspects of workplace safety
  - Exchange of any information relevant to safety
  - The guidance and information to be provided to the client's workers and other workers on the client's site.



### Resources

Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, No. GSR Part 3  
[http://www-pub.iaea.org/MTCD/publications/PDF/Pub1578\\_web-57265295.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1578_web-57265295.pdf)

Occupational Radiation Protection Networks  
<http://www-ns.iaea.org/tech-areas/communication-networks/orpnet/>

Radiation Safety in Industrial Radiography  
[http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1466\\_web.pdf](http://www-pub.iaea.org/MTCD/Publications/PDF/Pub1466_web.pdf)