

Briefing note

Radioactive Substances Regulation

Assessing radiation doses our role

It's our job to set limits and regulate the discharges and emissions of radioactive waste from the nuclear industry and other organisations. Low levels of natural and artificial radioactivity from these discharges can sometimes be found in food, water and air. We are responsible for assessing radiation doses to the public from the sites we regulate.

Radioactivity in the environment

Radioactivity in the environment comes from a number of different sources. These include natural radiation, residues from the Chernobyl accident and atmospheric weapons testing, radioactive discharges and emissions from nuclear and non-nuclear sites.

Authorising radioactive waste discharges and disposals

Discharges of radioactive waste to the environment are controlled through strict authorisations granted to operators.

We will not grant an authorisation unless a number of important requirements are met. One requirement is that the public must not receive a radiation dose above the legal limit as a result of discharges of radioactive waste.

Radiological monitoring

Operators of nuclear sites are required to monitor their discharges and the effects on the environment. We carry out our own monitoring programme to provide an independent assessment.

We use the data to check whether radiation exposure conforms to legal limits.



Why do we monitor?

- Enables us to check that radioactivity in food and the environment from authorised releases and discharges does not affect people's health or the environment;
- Establishes long-term information on concentrations and trends so that we can identify any changes and take action if required;
- Allows us to assess the public's total exposure to radiation around nuclear sites.

Why do we assess radiation doses?

Radionuclides can enter the body by eating food, drinking water and breathing in air. We calculate doses, measured in fractions of sieverts (Sv), from the quantity of activity (Becquerels - Bq) taken into a person's body. Doses can also come from external radiation from activity in the environment. We have to take internal and external doses into account in our calculations.

The Health Protection Agency assesses the public's exposure to radiation from natural background radioactivity such as radon.



Radiation doses are calculated in the same way for natural radioactivity and from man made radiation sources.

How do we assess radiation doses?

The Environment Agency, the Scottish Protection Agency and the Department of Environment, Northern Ireland (the UK 'environment agencies'), together with the Food Standards Agency and the Health Protection Agency have produced guidance on how to assess the public's exposure to radiation from radiological monitoring of food and the environment.

We follow this guidance when we estimate doses. Our estimates of doses take into account radiation outside the body, distance from the body, extent of the distribution, shielding offered by buildings, the doses field and the amount of time people are exposed. We also take into account radioactivity taken into the body - its distribution within the organs and how long it spends in the body.

Each year we carry out an assessment of radiation to the public around the main nuclear sites and publish our findings in our annual Radioactivity in Food and the Environment (RIFE) report.

Radioactivity in the UK

The levels of naturally occurring radioactivity in the environment and the human body are usually considerably higher than levels of radioactivity from discharges of radioactive waste. Levels of natural radioactivity vary across the UK and public radiation does vary

accordingly, ranging from 1.5 millisievert (mSv) a year to 8 mSv a year.

National Dose Assessment Working Group

The National Dose Assessment Working Group (NDAWG) was set up to bring together people and organisations with responsibility for, and/or an interest in, assessing radiation doses to the public from the nuclear industry and other users of radioactivity. The main focus of the work of the NDAWG is the assessment of past, present and future authorised discharges and direct radiation.

The Environment Agency, Health Protection Agency, Food Standards Agency and the Nuclear Installations Inspectorate have jointly established the NDAWG with the following aims:

- Help share information and views on assessment methods;
- Develop clear and consistent methods of assessing radiation doses to the public;
- Meet regularly to discuss new developments, recent consultations or changes in government policy;
- Identify, discuss and evaluate research which will progress dose assessment methods;
- Keep up to date on international developments on dose assessment methods, and to provide feedback to the appropriate UK authorities for input into EU bodies.

Further information

For further information visit our website (<http://www.environment-agency.gov.uk/nuclear>).

You can use our interactive maps at <http://maps.environment-agency.gov.uk/wiyby> to find out more about the environment where you live.

About this briefing

This briefing is part of a series which highlight our work in the area of regulating radioactive substances. Our other briefings include: Radioactivity in food and the environment.

You can find these briefings by typing 'rsr' in the keyword search on our publications catalogue (<http://publications.environment-agency.gov.uk>).

For further information visit www.environment-agency.gov.uk/nuclear