

Nuclear and Radioactive Substances Regulation In Wales **NRW B B 55.15**

Annex 1 Radioactive Substance Explanation and Terminology

There are a range of terms that are used throughout the radioactive substances industry. Radionuclide refers to an unstable element that can emit radiation in one or more forms. The most common types are:

- Alpha (α) – short range but high mass can make these very damaging, mainly when eaten, inhaled or getting into the body through cuts and lesions. These particles are typically blocked by a sheet of tissue.
- Beta (β) – moderate range, low mass and higher energy. Very damaging if ingested and are typically blocked by a thin sheet of aluminium.
- Gamma (γ) – Long range and high energy, this type is extremely penetrating and only blocked by significant thicknesses of concrete or dense metals such as lead.

When this radiation interacts with matter it will pass its energy onto the substance via ionisation. This is what causes the damage to the incident material. Although the above forms are officially known as ionising radiation it is commonly referred to as just radiation.

Where an atom can exist in more than one form it is called an isotope; for example, there are 15 known isotopes of Carbon from C^8 to C^{22} but the most common are Carbon-12, Carbon-13 (not radioactive) and Carbon-14 (Radioactive).

In radioactivity, activity relates to the rate at which an unstable nuclei decay, producing radioactive emissions over time. When a quantity of radioactive material has one unstable nucleus decaying each second it is said to have an activity of 1 Becquerel (Bq), the scientific unit of activity.

Over time the activity of a radioactive substance declines at a constant rate, usually recorded as a half-life ($T^{1/2}$). This is the length of time for the activity to halve and ranges from a fraction of a second (hydrogen-7) to over a septillion years (Tellurium-128). For C^{14} , which is used for radiocarbon dating, the half-life is 5,700 years.

Annex 2 **Working with our Stakeholders**

The following explains the responsibilities of our main stakeholders and how we undertake our liaison with them:

Welsh Government (WG)

Radioactive waste issues are a devolved matter. WG set policies and scrutinise the work of the regulators within Wales. WG have a specific Radioactivity and Pollution Prevention branch based at Cathays Park and maintain regular engagement with our specialists in the RAIR Group and Area Teams. They also have an energy policy team who also interact regularly with NRW staff covering the breadth of energy policy in Wales. Representatives from the Energy and Planning team and Wylfa Newydd team hold regular discussions with this policy unit.

Department of Energy and Climate Change (DECC)

DECC's responsibilities relating to the nuclear industry cover a range of interests from the electricity and gas markets and new energy infrastructure to energy security, nuclear safety and regulation. The majority of DECC's spending is on managing the UK's historic nuclear sites. They are the sponsoring body for the Nuclear Decommissioning Authority and lead on the provision of a Geological Disposal Facility.

DECC's role in this sector means our engagement with them is as the nuclear regulator for Wales. The Radioactivity and Industry Regulation Group (RAIR) in KSP lead this engagement on behalf of NRW.

Committee on Radioactive Waste Management

The Committee on Radioactive Waste Management (CoRWM) provides independent scrutiny and advice to the UK governments on the long-term management of higher activity radioactive wastes. CoRWM is an advisory non-departmental public body, sponsored by DECC.

Natural Resources Wales attend CoRWM each year to give evidence on our work in relation to HAW. This explores our resourcing and regulatory arrangements to ensure the committee have confidence in our ability to be a competent regulator.

Scottish Environmental Protection Agency (SEPA)

SEPA is the regulator for both nuclear and non-nuclear permits. Whilst they regulate these premises under Scottish legislation they are proposing to consolidate the various approaches into a single framework, bearing some similarities to the existing environmental permitting regime in England and Wales. SEPA have dedicated radioactive substance specialists in their policy and operational divisions, totalling approximately 20 staff. We regularly engage with colleagues in SEPA's on radioactive substances policy and strategy, however, SEPA does not provide a service to NRW for radioactive substances regulation.

Scottish Government policy diverges from that of Wales and England in that it does not support new nuclear power stations. Furthermore they also do not support using a Geological Disposal Facility, favouring near surface storage instead.

Nuclear Decommissioning Authority (NDA)

The NDA is a non-departmental public body responsible for decommissioning and clean-up of the UK's civil nuclear legacy in a safe and cost-effective manner. Where possible they seek to accelerate work programmes that reduce hazard. They oversee this work through contracts with operating companies and determine the overall strategy and priorities for managing decommissioning and clean-up. Its annual budget is over £3billion.

Radioactive Waste Management

Radioactive Waste Management (RWM) is charged by DECC to develop and lead the GDF programme. They are responsible for delivering a geological disposal facility and provision of radioactive waste management solutions. Their role is to carry out the preparatory work to plan and design a geological disposal solution. This work is described as "generic" because no sites have been identified yet.

RWM is a wholly owned subsidiary of the Nuclear Decommissioning Authority, which is an Executive Non-Departmental Public Body of the Department of the Energy and Climate Change.

Office for Nuclear Regulation

The Office for Nuclear Regulation (ONR) is the safety regulator for the civil nuclear industry in the UK. It is an independent statutory body whose costs are met by charging fees to the nuclear industry. The ONR reports to the Department for Work and Pensions and works closely with DECC. They were set up in 2011 following a Government review recommending creating a single industry specific safety regulator. The main headquarters for the ONR are in Bootle and Cheltenham. We have a Memorandum of Understanding in place.

Health and Safety Executive

The HSE is a non-governmental public body responsible for the regulation of workplace health, safety and welfare in Great Britain, sponsored by the Department for Work and Pensions. They have responsibility for regulating the non-nuclear industry whereas the ONR is the safety regulator for the nuclear industry.

We work closely with the HSE in regulating industrial sites in Wales, including non-nuclear permitted premises and those sites with the potential to cause a major accident known as COMAH sites (Control of Major Accident Hazards). NRW staff including Industry Regulation (IR) and RAIR staff engage regularly with HSE on matters regarding policy, strategy and regulation of industrial sites including the non-nuclear permitted sites in Wales.

National Counter Terrorism Security Office (NaCTSO)

NaCTSO is a police unit advising UK government on counter terrorism strategy and supporting the protection of hazardous and potentially vulnerable sites, as well as offering advice on a range of threats and dangerous substances. Our IR teams liaise with colleagues in the NaCTSO specifically regarding security of radioactive substances held at sites we permit. Counter Terrorism Security Advisors (CTSAs)

and IR officers jointly inspect security at these locations in Wales, which total approximately 100.

Wylfa and Trawsfynydd Stakeholder Groups

Both Trawsfynydd and Wylfa sites hold regular Site Stakeholder Group meetings. Membership of these groups consists of local MPs, local AMs, local Councillors, National Park Authorities, Emergency Services, other Regulators, members of the public and other interested parties. We attend each meeting to ensure we have a presence and are available to answer any questions that fall within our remit.