

Hazardous Waste

Hazardous waste is a term used to describe material waste that poses a significant risk to human health and the environment. Hazardous waste types can be in a solid, liquid, or gas form. Wastes may be hazardous if they exhibit any of the four characteristics of a hazardous waste (ignitability, corrosivity, reactivity, and toxicity).

Hazardous waste management involves the proper handling, treatment, and disposal of waste materials that pose a risk to human health or the environment. Key steps include:

- **Identification:** Determining if the waste is hazardous based on its properties (toxic, flammable, reactive, corrosive).
- **Segregation:** Keeping hazardous waste separate from non-hazardous waste to prevent contamination.
- **Storage:** Using appropriate containers, bunds and labelling to safely store hazardous waste.
- **Transportation:** Ensuring safe transport to treatment or disposal facilities, following regulations.
- **Treatment:** Selecting disposal methods to neutralise or reduce the hazardous nature of the waste (e.g., incineration, chemical treatment).
- **Disposal:** Disposing of treated waste in designated licensed facilities, such as hazardous waste treatment facilities/ landfills.

Nuclear operations and the management of nuclear wastes and materials are highly regulated by a broad set of laws and regulations. Activities are governed through a range of licences, permits and authorisations granted by regulatory authorities in the UK, including the Office for Nuclear Regulation, the Defence Nuclear Safety Regulator and the Environment Agency and the Scottish Environmental Protection Agency, and Natural Resources Wales. In Canada, activities are regulated by Environment and Climate Change Canada and the Canadian Nuclear Safety Commission. In Australasia, activities are governed by Environment Protection Australia, the Australian Radiation Protection and Nuclear Safety Agency and the Environmental Protection Authority in New Zealand.

Safety and environmental protection remain the overriding priority, and Babcock must demonstrate to relevant regulatory authorities that suitable management arrangements are in place across our estates to undertake nuclear operations safely and ensure that any risks are minimised. In the UK, businesses must comply with the Waste Duty of Care Code of Practice, which is issued under the Environmental Protection Act 1990. This legislation makes provision for the safe management of waste to protect human health and the environment.

Certifications

- ISO 40001
- ISO 14001 (*Babcock hold 24 ISO 14001 accredited environmental management systems across the organization and a number of alternative EMS*)

Key Legislation and Regulations to consider:

- Waste (England and Wales) Regulations 2011
- Hazardous Waste (England and Wales) Regulations 2005
- Environmental Damage (Prevention and Remediation) (England) Regulations 2015
- Health and Safety and Nuclear (Fees) Regulation 2022
- The Ozone-Depleting Substances Regulations 2015
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011
- Environmental Protection Act 1990 (United Kingdom)
- National Environmental Protection Act 1994 (Australia)
- Canadian Environmental Protection Act 1999 (Canada)
- Hazardous Substances and New Organisms Act (New Zealand)
- EU Waste Framework Directive

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Training

Through the implementation of our site Environmental Management Systems and Waste Management Procedures, environmental SMEs provide training and awareness to personnel working on our sites to ensure that they understand how their activities can interact with hazardous materials. We ensure that employees are trained to a level appropriate to their role, from general environmental and climate change awareness, to spill management training, and specialist levels such as Radioactive Waste Advisors (RWA).

Babcock hold corporate memberships to IEMA and Barbour who provide specific training for Hazardous Waste Management. Training is deployed across our Sectors and site, tailored to the types of operations. Examples of training solutions include:

- All Health Physics Operation Group personnel are trained in Health Physics Standard HP014 Radioactive Waste Management
- Health Physics Monitors are trained (Training Module 014 NUC 0744)
- Competency Assessments (e.g., CA017 LLW sorting)
- Assessments comprise of Learner Statement and Supervisor sign off following workplace observation.
- Oral assessment by the Operational Health Physicist follows competency evaluations.
- Supervisors are expected to have completed the HPM level then have Competency Refreshers.
- Health Physicists complete the Graduate Trainee Health Physicist Programme (including Radioactive Waste Management Team placement) and must pass the Nuclear and Radiological Procedures Course (NRPC) or equivalent.

Radioactive Wastes

One major type of Hazardous waste is 'Radioactive', waste includes materials that emit radiation. These wastes are classified into low, intermediate, and high-level categories based on their radioactivity and toxicity.

Low Level Waste includes items such as contaminated clothing, cleaning materials, and medical swabs. These materials have low levels of radioactivity and are often generated from hospitals, research laboratories, and nuclear plant maintenance.

Intermediate Level Waste contains higher amounts of radioactivity and often requires shielding during handling and transportation. Examples include reactor components, resins, and chemical sludge from nuclear reactor operations.

High Level Waste is highly radioactive and generates significant heat. It primarily consists of spent nuclear fuel and waste materials from the reprocessing of spent fuel. This type of waste demands robust containment and long-term storage solutions.

Hazardous Wastes

Low Level wastes include materials such as used batteries, toner cartridges, paints, and solvents that contain low concentrations of hazardous substances. These are commonly produced by households, small businesses, and certain industrial processes.

Intermediate Level Waste comprises of materials such as industrial sludges, contaminated soils, and certain pesticides. These wastes have moderate toxicity and require specialised handling and disposal methods to mitigate environmental impact.

High Level Waste consist of highly toxic and dangerous materials, including industrial chemicals, certain pharmaceuticals, and byproducts from chemical manufacturing processes. These wastes pose significant health risks and require stringent containment and disposal protocols to prevent environmental contamination.

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Governance

Hazardous waste is managed across sectors and direct reporting countries (DRCs) differently, depending on the operation, waste types and legislation.

Adhering to local, national, and international regulations governing hazardous waste management is crucial to avoid legal penalties and ensure environmental protection.

The sectors and DRCs must ensure that the arrangements for environmental management comply with the requirements within the Babcock International Group Safety Standards Environmental Management Systems.

As well as ensuring compliance with current requirements, effort is made to minimise the use of hazardous materials in the design of future products, therefore reducing the future requirement for hazardous waste management.

As well as the requirements within the Environmental Management System, sectors and DRCs must ensure that waste management efforts also comply with requirements within the Duty of Care and relevant environmental permits.

Hazardous Waste Management Practices

Improving hazardous waste management practices is crucial to ensure safety, compliance, and environmental protection. Babcock do this through:

1. **Conducting Regular Audits:** Regularly auditing waste management processes helps identify areas for improvement and ensures compliance with regulations.
2. **Training:** Providing ongoing training for employees on proper hazardous waste handling, storage, and emergency procedures is essential.
3. **Proper Storage and Labelling:** Ensure hazardous waste is stored in appropriate containers, clearly labelled, and kept in designated areas to prevent leaks and contamination.
4. **Implement Recycling and Recovery Programs:** Where possible, recycle or recover hazardous materials to reduce the amount of waste needing disposal.
5. **Develop an Emergency Response Plan:** Have a clear plan in place for dealing with spills, leaks, or other emergencies involving hazardous waste.
6. **Sustainability Reporting:** Include hazardous waste management within our internal and external reporting to enhance transparency and encourage continuous improvement.
7. **Sustainable product design:** throughout the design of our products, we will consider avoiding or minimising the use and production of hazardous materials.

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