

# Waste Management



The main objective associated with waste management concerns the need to minimise the detrimental effects of the waste to protect people and the environment and thus ensure that the materials are handled in a safe and environmentally responsible manner for current and future generations.

In order to evaluate the way in which these wastes are managed, a full understanding of the chemical, physiological and radiological characteristics of the waste must be assessed, alongside any potential processing and disposal treatments.

The assessment of the way in which these wastes are managed encompasses a thorough Best Available Technique (BAT) process developed by the Environment Agency and forms part of the Integrated Waste Strategy (IWS) associated with all waste producing facilities.

Assessment of the waste management philosophy is a skilled discipline, requiring in-depth technical knowledge encompassing;

- the chemistry and physical attributes of the waste;
- process engineering to understand the behaviour of the components such that a mass and activity balance for the process can be developed;
- site specific constraints to ensure that the wastes produced adhere to discharge authorisations and permitted disposal routes.

Waste Management services Atkins can offer are:

- **BAT Support**

Atkins has the ability to deliver safety cases and wide ranging experience in an integrated manner as part of multi-disciplinary projects, to deliver cost-effective yet safe solutions.

Atkins has undertaken safety cases covering all stages of a project from concept design through to decommissioning. This has included:

- Full safety cases for operational facilities;
- Staged safety case submissions for new build (including PSR, PCSR, PCmSR, and POSR)
- Support to Periodic Reviews of Safety (LC15);
- Modification safety cases; and
- Decommissioning safety cases.



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In support of the above Atkins have a number of experienced HAZOP chairpersons and secretaries, as well as technical staff who are fully conversant with the requirements of the HAZOP process.

- **Waste Disposability Assessments**

With the production of modern standards safety cases Atkins is able to provide expert support in all areas of hazard analysis including:

- Frequency and consequence assessment;
- Design Basis Analysis;
- Probabilistic Risk Assessment and demonstration of ALARP; and
- Reconciliation of HAZAN's/Engineering Schedule via ALARP reviews.

- **Radiation Shielding Design and Dose Assessment**

- Derive radiation source terms based upon the interpretation of facility measurements or from isotopic process flow sheet data (Shielding Design Basis);
- Production of Radiological Classification of Areas schemes;
- Determine the bulk shielding requirements, e.g. the thickness of cell walls, shield doors, flasks, etc. by employing industry standard shielding codes RANKERN, MCNP or MICROSHIELD; and
- Comprehensive Shielding Design Assessment documentation in support of the facility safety case.

- **Integrated Waste Strategy**

Atkins has developed a variety of emergency plans for site operators and was recently involved in the review of off-site emergency plans for a number of sites (including both civil and naval) on behalf of the NII.

- **Probabilistic Safety Assessment**

- Fault/Event tree analysis;
- Failure modes and effects analysis;
- Cause-consequence analysis; and
- Human reliability assessments.

- **Other Services**

- Safety Management Systems (including License Compliance support);
- Fire Safety;
- Human Factors Engineering; and
- Environmental and Waste Management Support.



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