
CONTROL OF WASTE AND LAND USE

ELEMENT

6



LEARNING OUTCOMES

On completion of this element, you should be able to demonstrate understanding of the content by applying what you have learnt to familiar and unfamiliar situations. In particular, you should be able to:

- 1 Outline the significance of different waste categories and the relationship between category and route of disposal.
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- 2 Explain the importance of minimising waste.
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- 3 Outline how to manage waste.
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- 4 Describe outlets available for waste.
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- 5 Outline the risks associated with contaminated land.
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KEY INFORMATION

- Waste can be defined as “any substance or object which the holder discards or intends or is required to discard”.
- Waste can be categorised in a number of ways. Common categories are: inert, hazardous, non-hazardous, clinical and radioactive.
- **EU Directive 94/62/EC on Packaging and Packaging Waste** commits member states to take measures to stop the production of packaging waste including programmes to encourage the re-use of packaging.
- Construction sites produce significant quantities of waste.

THE WASTE FRAMEWORK DIRECTIVE

‘Waste’ is a term we all think we understand, but the legal issues surrounding the definition of waste are complex. There are many different types of waste that may be encountered in practice, and it is important to understand the various categories because of the differences in the way that they are regulated.

The **EU Waste Framework Directive**, first adopted in 1975, is the foundation of waste regulation and aims to ensure a uniform approach to waste management across the EU. Member states must:

- Adopt the waste hierarchy (i.e. give priority to waste prevention and encourage re-use and recycling).
- Ensure that waste is handled safely and without harming the environment.
- Ensure that waste management activities are authorised.
- Establish an adequate infrastructure of waste management installations.
- Prepare waste management plans.
- Ensure that waste producers bear the costs of disposal in line with the ‘polluter pays’ principle.

DEFINITION OF WASTE

Article 3(1) of the current version of the Directive (**2008/98/EC**), retains the original 1975 general definition of waste as:

“...any substance or object which the holder discards or intends or is required to discard”.

Anything discarded or dealt with as waste must be presumed to be waste unless proved otherwise. A ‘Yes’ answer to any of the following questions should clarify any doubts about the matter:

- Would it normally be described as waste?
- Is it a scrap material?
- Is it an effluent or other unwanted substance?
- Is it broken, worn out, contaminated or spoilt?
- Is it being discarded as if it were waste?

MORE...

Further information can be found in Defra’s: *Guidance on the legal definition of waste and its application (2012)*.

www.gov.uk/government/uploads/system/uploads/attachment_data/file/69590/pb13813-waste-legal-def-guide.pdf

Waste materials can be categorised in a number of ways. The categories that are most typically recognised in legislation around the world are described below.

INERT WASTE

Broadly speaking, this is waste which is stable, i.e. it does not degrade physically, chemically or biologically, nor does it dissolve, burn, chemically react or leach out to any degree that could be considered ecotoxic. Examples would include uncontaminated bricks, glass, concrete and tiles. If there is any suspicion of contamination, these items cannot be considered inert waste. The **Landfill Directive 99/31/EC** provides further criteria on what constitutes inert waste.

GLOSSARY

ECOTOXIC

Generally taken to mean 'damaging to the environment', although it is a general term and does not account for levels of toxicity, e.g. very toxic or toxic. Nor does it account for the sensitivity of specific species or ecosystems, e.g. an ecotoxic substance may be very toxic to one species but have little, if any, harmful effect on another.

HAZARDOUS WASTE

Certain wastes pose a particular danger to human health or to the environment. The **Waste Framework Directive** (Annex III) identifies the properties of a waste material that render it hazardous. In summary, this covers substances that are:

- Explosive.
- Oxidising (substances which are highly reactive in contact with other substances).
- Highly flammable.
- Irritant (substances that can cause inflammation of the skin or mucous membranes).
- Harmful (substances which may involve limited health risks).
- Toxic (substances that may involve serious health risks).
- Carcinogenic (substances that may induce cancer).
- Corrosive (substances that may destroy living tissue on contact).
- Infectious (substances that contain disease-causing micro-organisms).
- Mutagenic (substances that may damage or change hereditary genetic material).
- Release toxic gases in contact with water, air or an acid.
- Sensitising (substances that can elicit an allergic reaction).
- Ecotoxic (substances that present a risk to the environment).
- Waste that may yield another substance after disposal that exhibits any of the above properties (e.g. waste in a landfill that generates a toxic leachate).

Examples of some commonly encountered wastes that meet one or more of these hazardous waste criteria are:

- Liquid fuels, such as petrol and diesel; solvents such as white spirit (explosive; highly flammable).
- Strong acids or alkalis, e.g. battery acid or bleach (oxidising; irritant; corrosive).
- Insecticides, wood preservatives or old medicines (harmful; toxic; ecotoxic; sensitising).
- Waste oil, batteries containing lead, cadmium or mercury, fluorescent lighting tubes containing mercury (toxic; ecotoxic; mutagenic).
- Contaminated textiles, such as used bandages or dressings, asbestos (infectious; carcinogenic).

Disposal of hazardous wastes is managed by specialist companies who operate dedicated chemical plants. Recovery of waste oils, solvents, etc. is usually followed by incineration of the residues, which must be carefully controlled to minimise production of substances such as dioxins and furans. This involves careful control of incinerator temperatures and cleaning of effluent gases.

(Note that in Scotland the term 'special waste' is equivalent to 'hazardous waste' in most other countries.)

MORE..

The Environment Agency has produced a useful guide on how any waste material should be assessed to determine if it should be treated as legally hazardous: *Hazardous waste: interpretation of the definition and classification of hazardous waste (WM2)*.

www.gov.uk/government/publications/hazardous-waste-technical-guidance-wm2

NON-HAZARDOUS WASTE

Wastes which are controlled under legislation, but are neither inert, nor exhibit any of the properties of hazardous wastes, are classified as non-hazardous. This category actually accounts for a high proportion of the wastes that are generated on a day-to-day basis by households and businesses, including paper, card, plastic packaging, cans and food waste.

Despite the name, non-hazardous wastes have the potential to cause significant environmental impacts. Many of these wastes are biodegradable, or may be corroded by the action of weather. If these wastes are landfilled they may generate methane gas which is a potent greenhouse gas, and generate toxic leachate with the potential to contaminate surface and groundwaters.

CLINICAL WASTE

Clinical waste is, effectively, a special category of hazardous waste, often treated separately in legislation because of the need for special methods of treatment and disposal. Clinical wastes are healthcare wastes which could harm people if they come into contact with them. The definition is wide-ranging, but includes:

- Soiled surgical swabs, dressings, etc.
- Excretions.
- Blood or body fluids.
- Human and animal tissues, carcasses, etc.
- Syringes, needles or other sharps.
- Drugs or other pharmaceuticals.



Clinical wastes and healthcare wastes

Clinical waste should be **segregated** from general waste; **separate bins, signage and training** should be provided to encourage this. There are various methods for achieving this, for example:

- Soiled surgical dressings should be put into heavy-duty yellow bags (2/3 full) and securely fastened.
- Sharps should go into properly designed sharps containers.
- Laboratory material, where risk of pathogens is high, should be autoclaved before being included with other clinical waste.

GLOSSARY

AUTOCLAVE

Equipment which uses high-pressure steam to sterilise material.

RADIOACTIVE WASTE

Radioactive waste is also a special category of hazardous waste that is governed by specific legislation. The International Atomic Energy Agency (IAEA) defines radioactive wastes as being:

“waste that contains, or is contaminated with, radionuclides at concentrations or activities greater than clearance levels as established by the regulatory body”.

In practice, this definition covers:

- High volumes of waste from the nuclear power industry where the level of radioactivity may vary from low to very high.
- Low volumes of waste produced by other businesses that use small quantities of radioactive materials in laboratories and in sensing and monitoring equipment.



Radioactive warning sign

CONTROLLED WASTE (UK)

In the UK, the term ‘controlled waste’ is often used. Controlled waste is any waste which is controlled by the relevant legislation (especially the **Environmental Protection Act 1990** and the **Control of Pollution Act 1974**).

Controlled waste effectively covers all of the waste that is likely to be encountered, including that from households, commerce (including construction and agriculture) and industry (including mining and quarrying).

RRC SAMPLE MATERIAL

REVISION QUESTIONS

1. Define 'waste'.
2. Identify the criteria used to classify waste as hazardous.

(Suggested Answers are at the end.)

KEY INFORMATION

- Minimising waste can help organisations make significant cost savings by following some practical steps, such as reviewing current practice, identifying opportunities for improvement, setting KPIs and targets, training and monitoring performance.
- The waste hierarchy defines the most desirable methods for waste management through to the least desirable.
- There are a number of benefits, limitations and barriers to waste minimisation, re-use and recycling.

The increasing volume of waste generated by the developed world is one of the biggest problems facing the planet today. In the developing world, it is also a major worry, with increased populations and higher standards of living, both contributing to significant increases in waste. Packaging is often highlighted as an area of significant waste and there are still major reductions that can be made in many areas of packaging. However, not all packaging is bad. Much of it protects goods from being damaged in transit and without some packing more damage, and therefore waste, would occur. As an example, a shrink-wrapped cucumber remains saleable for 14 days, whereas without wrapping it lasts just three days.

TOPIC FOCUS

Waste Minimisation in Practice

Waste minimisation has clear benefits for society but can also result in significant cost savings for organisations. Some practical steps for achieving waste minimisation are outlined below:

- **Current Practice**

The process should start by undertaking a review of current practice. Measurement is at the heart of this activity:

- How much of exactly what type of waste is currently being created in particular areas of the organisation?
- Waste arisings should be classified and quantified by type (e.g. paper, card, scrap metal, empty containers, chemicals, waste raw material, etc.) and by category (i.e. inert, hazardous, non-hazardous).
- What disposal routes are currently being used for each type of waste? Which disposal contractors are being used?
- How much did it cost in the last year to dispose of each waste stream?

Note that much of the information and data required can be obtained by reviewing statutory documentation, such as waste transfer notes and hazardous waste consignment notes.

- **Identify Opportunities**

Having established what is happening at the moment, identify potential improvements:

- Is the organisation ordering surplus goods that it does not need?
- Are manufacturing processes using raw materials efficiently?
- Are there opportunities for investing in more resource-efficient equipment or processes?
- Can any materials that are currently going to waste be re-used elsewhere in the organisation?
- Is it possible to switch to more efficient waste contractors?

(Continued)