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What is a Hazardous Waste?

A guide to the Hazardous Waste Regulations and the List of Waste Regulations in England and Wales

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Aims

You will need to read this document if you think you may be producing hazardous waste, or you either carry or collect waste. The guide shows a “desk-based” approach to find out if waste is hazardous. It uses a flowchart, with questions and answers, to help people work out the right classification to use.

It only applies to waste England and Wales, and is part of a series of documents that explain how the Hazardous Waste Regulations work.

The Environment Agency also have a detailed technical guidance document called [WM2](#), “Hazardous waste: Interpretation of the definition and classification of hazardous waste”, which you will need if you are dealing with more complex hazardous waste assessment issues. WM2 gives comprehensive information to decide if waste is hazardous or not. This Guide is not intended as a replacement for WM2 but aims to provide some of the principles behind hazardous waste assessment.

The information in this guide is based on what we know at the moment. It may change in the future if there is a change in Law, guidance from the Government changes or as a result of our experience in regulating hazardous waste.

What regulations make a waste hazardous?

If you are assessing a waste to determine if it is hazardous you should refer to:

- The Hazardous Waste Regulations 2005 (HWR);
- The List of Waste Regulations 2005 (LoWR)

These regulations came into force on 16 July 2005.

Different versions of each set of regulations apply in England and in Wales but their effect is the same in each country.

The HWR set out the rules for assessing if a waste is hazardous or not. As part of the assessment of waste, the HWR refer you to the “List of Wastes” given in the LoWR. This list is also known as the European Waste Catalogue (EWC).

Further details of how the HWR and LoWR allow you to assess if a waste is hazardous are given in Section 3 below.

Is my waste hazardous?

The flowchart in Figure 1 shows the steps involved in finding out if waste is hazardous or not. A simple description of each step is described below.

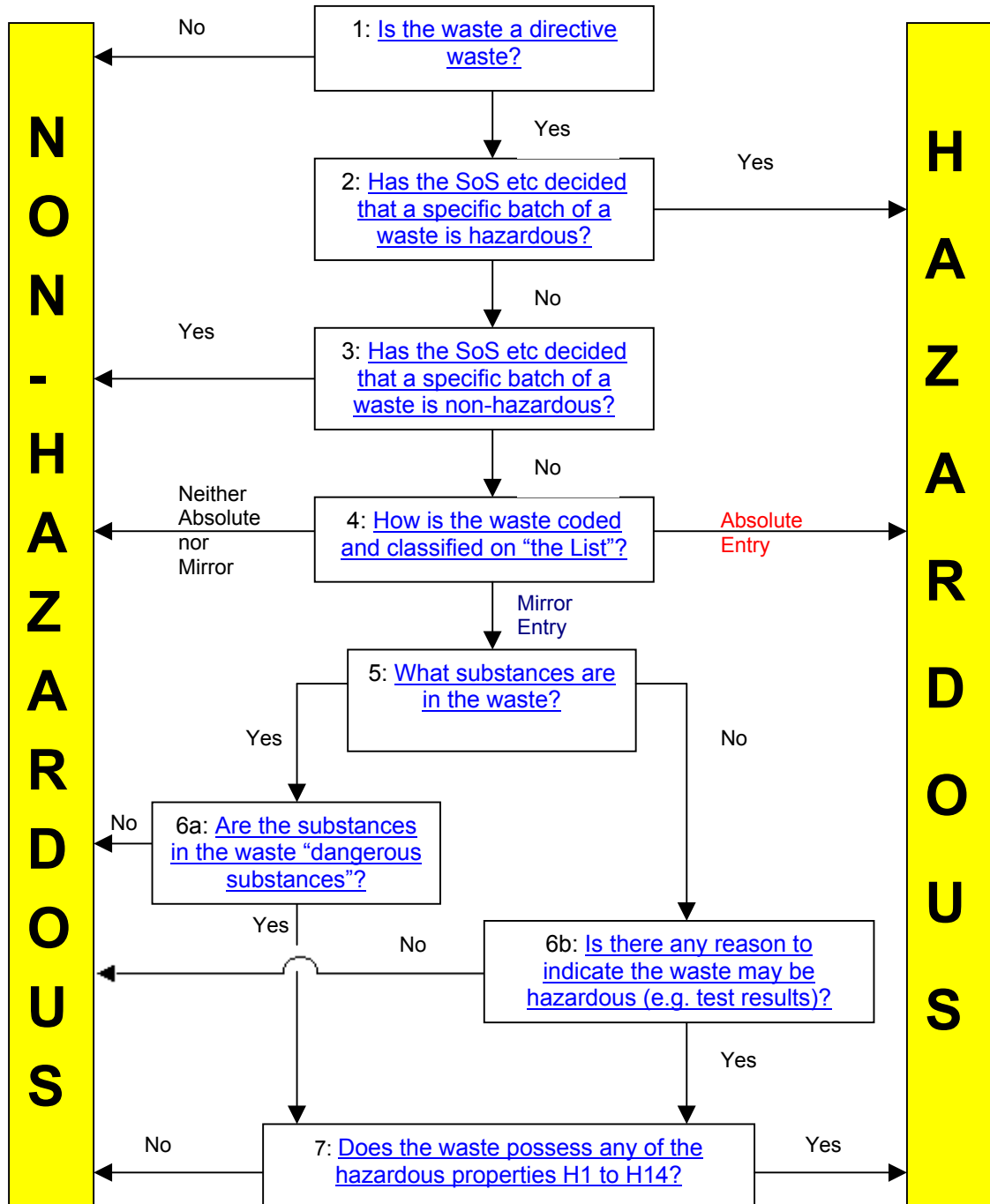


Figure 1: Hazardous Waste Assessment Methodology

Step 1: Is the waste Directive waste?

Nearly all household, commercial and industrial waste is Directive Waste and should be assessed to determine if they are hazardous waste.

The phrase “Directive Waste” refers to European legislation called the Waste Framework Directive. This identifies the environmental protection principles behind waste regulation. It also identifies which wastes are covered by these principles and those which are not.

The following wastes are not Directive wastes:

- radioactive waste¹;
- waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries;
- animal carcasses and the following agricultural waste: faecal matter and other natural, non-dangerous substances used in farming;
- waste waters, with the exception of waste in liquid form;
- decommissioned explosives e.g. ammunition, fireworks, flares.

If a waste is not a Directive waste, the HWR do not apply to it, so such wastes cannot be hazardous waste.

Step 2: Has the SoS etc decided that a specific batch of a waste is hazardous?

The HWR allows the Secretary of State (SoS), the Welsh Assembly, Scottish Executive or Northern Ireland Department of the Environment to determine that a waste identified as non-hazardous on the List of Wastes should be a hazardous waste, because it possesses hazardous properties.

If you feel that you can identify a waste that is non-hazardous but should be hazardous, then you should contact the Hazardous Waste team in Defra and provide detailed evidence to support this. Defra can be contacted via the Defra Helpline by telephone on 08459 33 55 77 or by email at helpline@defra.gsi.gov.uk

Step 3: Has the SoS etc decided that a specific batch of a waste is non-hazardous?

If you feel that you can identify a waste that is hazardous but should be non-hazardous, then you should contact the Hazardous Waste team in Defra and provide detailed evidence to support this. Defra can be contacted as described above.

Further details on Steps 2 and 3 can found in [Appendix C](#)

¹ Most radioactive waste is not Directive Waste, but comes under the Radioactive Substances Act 1993 (RSA). However, if radioactive waste is exempt from the requirements of sections 13 or 14 of the RSA, and has one or more of the hazardous properties listed in [Appendix A](#), this waste will be **classified as hazardous waste** according to Regulation 15.

Step 4: How is the waste coded and classified on “the List”?

Coding

The HWR define hazardous waste by referring to the LoWR. Waste is listed in the LoWR using a six-digit code together with a waste description.

The LoWR contain 20 chapters that refer either to a process that produced the waste or specific waste types. The chapters are given a two-digit number as follows:

- “01 Wastes resulting from exploration, mining, quarrying, physical and chemical treatment of minerals*
- 02 Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing*
- 03 Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard*
- 04 Wastes from the leather, fur and textile industries*
- 05 Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal*
- 06 Wastes from inorganic chemical processes*
- 07 Wastes from organic chemical processes*
- 08 Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks*
- 09 Wastes from the photographic industry*
- 10 Wastes from thermal processes*
- 11 Wastes from chemical surface treatment and coating of metals and other materials; non-ferrous hydro-metallurgy*
- 12 Wastes from shaping and physical and mechanical surface treatment of metals and plastics*
- 13 Oil wastes and wastes of liquid fuels (except edible oils, 05 and 12)*
- 14 Waste organic solvents, refrigerants and propellants (except 07 and 08)*
- 15 Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified*
- 16 Wastes not otherwise specified in the list*
- 17 Construction and demolition wastes (including excavated soil from contaminated sites)*
- 18 Wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)*
- 19 Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use*
- 20 Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions”*

Each of these chapters has sub-chapters shown by four digits. The sub-chapters contain the unique six-digit code for each waste.

The following steps must be used to identify the correct 6-digit code for a waste:

1. Find out whether the waste was produced from the source described in chapters 01 to 12 or 17 to 20. If so, work out the appropriate six-digit code of the waste. At this point, codes ending with '99' cannot be chosen.
2. If there is no appropriate waste code in chapters 01 to 12 or 17 to 20, you must look at chapters 13, 14 and 15 to identify the waste.
3. If none of these waste codes apply, use chapter 16 to identify the waste.
4. If the waste is not in chapter 16 either, the 99 code (wastes not otherwise specified) must be used in the section of the list that matches the activity identified above in 1.

The different wastes produced by one organisation may be described in several of the chapters.

Classification

Some of the 6-digit codes in the List of Wastes have an asterisk next to them. These are the hazardous wastes. Wastes without an asterisk are not hazardous waste. We have reproduced the List of Wastes in Appendix A of our technical guide WM2: *Interpretation of the definition and classification of hazardous waste*.

In WM2 some entries are coloured red and some blue:

- the entries in red are known as “**Absolute**” hazardous wastes;
- the entries in blue are known as “**Mirror**” hazardous wastes;

“Absolute” hazardous

These wastes are marked in the List with an asterisk (*), but the waste description next to the 6-digit code does not have a specific or general reference to “*dangerous substances*” in the waste description. They are automatically considered hazardous. You do not need to work out what chemicals are in the waste to find out if it is hazardous or not. We call these entries, that are colour-coded **red** in WM2 Appendix A, “*absolute entries*”, e.g.,

13 07 01* fuel oil and diesel

“Mirror” hazardous

Some waste can be either hazardous or not, depending on whether it contains “*dangerous substances*” at or above certain levels. This waste is covered by linked (usually two paired) 6-digit entries in the List of Wastes, called “*mirror*” entries.

These wastes have:

- a hazardous waste entry marked with an asterisk (*), and
- an alternative linked non-hazardous waste entry (or entries) not marked with an asterisk.

“Mirror” entry hazardous wastes, colour-coded blue in WM2 Appendix A, are identified because they refer to dangerous substances. They can do this in one of two ways:

A General Reference: e.g.,

07 01 11* sludges from on-site effluent treatment containing **dangerous substances**.

These wastes are classified as hazardous by looking for any dangerous substances in the waste. This entry is chosen if this waste contains any dangerous substance at the required levels.

A Specific Reference: e.g.

17 03 11* bituminous mixtures containing **coal tar**.

These wastes are classified as hazardous by looking for a specific dangerous substance in the waste; in the example above that substance is coal tar. This entry is chosen if this waste contains coal tar at the required levels.

In the two examples above, if the waste doesn't contain the dangerous substance(s) at the required levels, it is not hazardous and the non-hazardous 6-digit of the pair should be chosen, e.g.

07 01 12 sludges from on-site effluent treatment other than those mentioned in 07 01 11; and

17 03 02 bituminous mixtures other than those mentioned in 17 03 01

Non-hazardous (neither *Absolute Hazardous* nor *Mirror Hazardous*)

This is an entry in the List of Wastes without an asterisk so it is not hazardous, e.g.,

03 01 01 waste bark and cork

Steps 5 to 7 below **only** apply to finding out if waste, listed as linked “mirror” entries, is hazardous or not.

Step 5: What substances are in the waste?

In the majority of cases the business producing or storing a “mirror” entry waste should have enough information about the chemical substances in their waste to know if it is hazardous or not (e.g. from safety data sheets, or knowing how the waste was produced).

If they do not know what substances are in their waste and they cannot find this out, they will need to test the waste for hazardous properties (see Step 6b).

Step 6a: Are the substances in the waste “dangerous substances”?

There are three ways to find out if the substances in a “*mirror*” entry waste are dangerous:

1. use the Approved Supply List (ASL)². This shows hazard information and classification for many common chemicals³. If the waste contains substances listed in the ASL, this classification **must** be used;
2. Obtain data from reliable data sources such as reference books or the internet. These sources must be ‘peer reviewed’. That means that other professionals have looked at and approved the data. With this data, use the methodology given in the Approved Guide to the Classification and Labelling of Substances and Preparations for Supply⁴ to determine the appropriate classification. This is a technically complex process that is described in more detail in WM2 Appendix D.
3. use information from the Safety Data Sheets or other data sources to find out whether the waste contains dangerous substances.

The classification of the substance(s) shows:

- the *categories of danger* exhibited by the substance; and
- the *risk phrase(s)*, which describe the hazards the substance possesses.

The risk phrases are used to set the levels that the dangerous substance must be present at in the waste for it to be classified as hazardous or not. The hazards described in Appendix A all have risk phrases associated with them. WM2 identifies all of the risk phrases that are relevant to hazardous waste and provides the thresholds (levels that they must be at in the waste for it to be hazardous) or criteria that relate them to their hazard.

If none of the substances in the waste are classified as “*dangerous substances*”, the waste will not be hazardous and the non-hazardous EWC code can be used.

Step 6b: Is there any reason to indicate the waste may be hazardous (e.g. test results)?

If you do not know what is in the waste, you must still find out if the waste is hazardous or not. You may have to use consultants or your waste contractor to help you make this determination.

If you do not have this information, you may have to arrange for the waste to be tested (see WM2 Appendix C for test methods).

Step 7: Does the waste possess any of the **Hazardous Properties** H1 to H14?

There are two ways to find out if “*mirror*” entry waste has a hazardous property:

² Approved Supply List (Eighth edition) – Information approved for the classification and labelling of substances and preparations dangerous for supply. HSE Books, ISBN 0717661385

³ Chemical is the common term for substances (a chemical element or one of its compounds, including any impurities) and preparations (a mixture of substances).

⁴ Approved Guide to the Classification and Labelling of Dangerous Substances and Dangerous Preparations (the Approved Classification and Labelling Guide) Fifth edition, HSE Books, ISBN 0 7176 2369 6

1. where the waste contains “*dangerous substances*”, their concentrations (that is the levels they are present at in the waste) are compared against the appropriate thresholds; or
2. a test is carried out to find out if the waste has a hazardous property. This mainly applies to physical properties e.g. flashpoint for hazard H3 - Flammable.

The waste will be hazardous if:

- it contains a dangerous substance(s) with a concentration at or above the appropriate threshold; and/or
- a test shows a hazardous property.

If it is hazardous, then the hazardous part of the “mirror” entry pair must be used.

Waste will not be hazardous if it contains a dangerous substance(s) but these are present in the waste at levels that are below the threshold; or tests do not show a hazardous property. Then the non-hazardous part of the “*mirror*” entry should be used.

The LoWR gives the thresholds for only some of the hazards that are listed in Appendix A. We have included these in [Appendix B](#). Full details of each hazard and the thresholds or criteria that are relevant to it, including those **not** referenced in Appendix B, are given in WM2.

Appendix A Hazardous Properties

Wastes on the List of Wastes are hazardous if they have one or more of the following hazardous properties:

- | | |
|-----|---|
| H1 | “Explosive”: substances and preparations which may explode under the effect of flame or that are more sensitive to shocks or friction than dinitrobenzene. |
| H2 | “Oxidising”: substances and preparations which exhibit highly exothermic reactions when in contact with other substances, particularly flammable substances. |
| H3A | Highly flammable (first indent): liquid substances and preparations having a flash point below 21°C (including extremely flammable liquids), or |
| H3A | Highly flammable (second indent): Substances and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any application of energy, or |
| H3A | Highly flammable (third indent): solid substances and preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or to be consumed after removal of the ignition source, or |
| H3A | Highly flammable (fourth indent): gaseous substances and preparations which are flammable in air at normal temperature and pressure, or |
| H3A | Highly flammable (fifth indent): substances and preparations which, in contact with water or damp air, evolve highly flammable gases in dangerous quantities. |
| H3B | “Flammable”: liquid substances and preparations having a flash point equal to or greater than 21 °C and less than or equal to 55°C. |
| H4 | “Irritant”: non-corrosive substances and preparations which, through immediate, prolonged or repeated contact with the skin or mucous membrane, can cause inflammation. |
| H5 | “Harmful”: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may involve limited health risks. |
| H6 | “Toxic”: substances and preparations (including very toxic substances and preparations) which, if they are inhaled or ingested or if they penetrate the skin, may involve serious, acute or chronic health risks and even death. |
| H7 | “Carcinogenic”: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce cancer or increase its incidence. |
| H8 | “Corrosive”: substances and preparations which may destroy living tissue on contact. |
| H9 | “Infectious”: substances containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms. |
| H10 | “Teratogenic ⁵ ”: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce non-hereditary congenital malformations or increase their incidence. |
| H11 | “Mutagenic”: substances and preparations which, if they are inhaled or ingested or if they penetrate the skin, may induce hereditary genetic defects or increase their incidence. |
| H12 | Substances and preparations which release toxic or very toxic gases in contact with water, air or an acid. |
| H13 | Substances and preparations capable by any means, after disposal, of yielding another substance, e.g. a leachate, which possesses any characteristics listed above. |
| H14 | “Ecotoxic”: substances and preparations which present or may present immediate or delayed risks for one or more sectors of the environment. |

⁵ In Directive 92/32/EEC amending for the seventh time Directive 67/548/EEC the term ‘toxic for reproduction’ was introduced. The term ‘teratogenic’ was replaced by a corresponding term ‘toxic for reproduction’. This term is considered to be in line with property H10 in Annex III to Directive 91/689/EEC.

Appendix B Relevant Thresholds

Properties and characteristics of dangerous substances classified as hazardous waste

The following are the thresholds or criteria that are set in the HWR. Where the text refers to “R35” or “R41”, that is a reference to a risk phrase for a particular dangerous substance.

- (a) flash point ≤ 55 °C,
- (b) one or more substances classified as very toxic at a total concentration ≥ 0.1 %,
- (c) one or more substances classified as toxic at a total concentration ≥ 3 %,
- (d) one or more substances classified as harmful at a total concentration ≥ 25 %,
- (e) one or more corrosive substances classified as R35 at a total concentration ≥ 1 %,
- (f) one or more corrosive substances classified as R34 at a total concentration ≥ 5 %,
- (g) one or more irritant substances classified as R41 at a total concentration ≥ 10 %,
- (h) one or more irritant substances classified as R36, R37, R38 at a total concentration ≥ 20 %,
- (i) one substance known to be carcinogenic of category 1 or 2 at a concentration ≥ 0.1 %,
- (j) one substance known to be carcinogenic of category 3 at a concentration ≥ 1 %,
- (k) one substance toxic for reproduction of category 1 or 2 classified as R60, R61 at a concentration $\geq 0,5$ %,
- (l) one substance toxic for reproduction of category 3 classified as R62, R63 at a concentration ≥ 5 %,
- (m) one mutagenic substance of category 1 or 2 classified as R46 at a concentration ≥ 0.1 %,
- (n) one mutagenic substance of category 3 classified as R68 at a concentration ≥ 1 %.

Appendix C Steps 2 and 3

Step 2: Has the SoS etc decided that a specific batch of a waste is hazardous?

Regulation 8 of the HWR allows the Secretary of State (SoS), the Welsh Assembly, Scottish Executive or Northern Ireland Department of the Environment to determine, *“in exceptional cases, that a specific batch of waste which:*

- (a) is not listed as a hazardous waste in the List of Wastes;*
- (b) is not listed in regulations made under section 62A(1) of the 1990 Act; or*
- (c) though of a type listed as a hazardous waste in the List of Wastes, is treated as non-hazardous pursuant to regulation 9(2),*

displays one or more of the hazardous properties”, and is therefore hazardous waste.

Waste will only be classified after the appropriate organisations have been consulted. We will publish any decisions made by the Secretary of State.

Using section 62A(1) of the Environmental Protection Act 1990, the Secretary of State may also classify other waste as hazardous.

Step 3: Has the SoS etc decided that a specific batch of a waste is non-hazardous?

Regulation 9 of the HWR allows the Secretary of State, the Welsh Assembly, Scottish Executive and Northern Ireland Department of the Environment to decide, *in exceptional cases*, that a specific batch of a waste that a specific batch of waste which:

- “(a) is listed as hazardous waste in the List of Wastes;*
- (b) is listed in regulations made under section 62A(1) of the 1990 Act; or*
- (c) though of a type not listed as a hazardous waste in the List of Wastes, is treated as hazardous pursuant to regulation 8(2),*

does not display any of the properties listed in Annex III to the Hazardous Waste Directive”, and is therefore non-hazardous waste.

Waste will only be classified after the appropriate organisations have been consulted. We will publish any decisions made by the Secretary of State.

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