UNIVERSITY OF BIRMINGHAM

Health & Safety Guidance

Hazardous Waste: Guidance on Assessment

GUIDANCE/11/HWGA/17

Table of Contents

UNIVERSITY OF BIRMINGHAM

Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

Hazardous Waste: Guidance on Assessment

1 Introduction

Certain substances, waste materials, and articles or equipment that contain such substances are so damaging to people or the environment that they must be identified and disposed of separately from the normal refuse collection, in accordance with The Hazardous Waste Regulations. In defining 'Hazardous waste', the regulations and associated guidance[1] from the Environment Agency cross reference to The Classification, Labelling and Packaging Regulations (CLP).

It is the responsibility of the producer of the waste to determine whether it is hazardous. Hazardous waste is required to be assigned Hazard Properties, HP1-HP15 (*Section 2 Assessment of Hazards, and Appendix 2*) and an appropriate 6 digit code (*Appendix 1*). This Health and Safety Guidance document explains the statutory definition of hazardous waste, so far as it relates to substances that are not radioactive or infectious, and it contains decision trees to guide users through the process of assessing whether or not a waste is hazardous and its classification. The concentration thresholds/ranges referred to in these decision trees are for the definition of 'Hazardous waste' and may be different to those applied for labelling the original substances under the CLP Regulations.

University Health and Safety Policy and Procedures for disposal of hazardous waste, excluding infections and radioactive waste, are set out in Health and Safety Policy Hazardous Waste Disposal HSWD/HW/05.

Further advice may be obtained from Safety Services.

[1] Technical Guidance WM3: Waste Classification – Guidance on the classification and assessment of waste

2 Assessment of Hazards

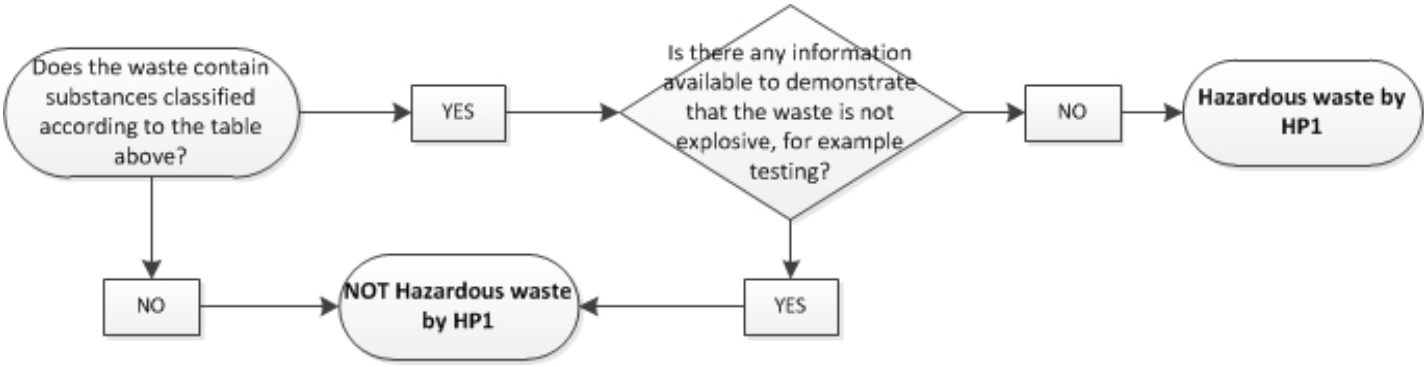
HP1: Explosive

A waste containing substances that are classified with the hazard class, category and hazard statements in the table below can be tested to show whether it displays that hazardous property or not. Alternatively a waste containing those substances can simply be assumed to be hazardous by HP1.

Additionally, where a waste mixture or article is known to be explosive it too shall be assigned HP1.

Some substances may be explosive under certain conditions. They are given Hazard statement codes such as 'H205 May mass explode in fire' or 'EUH001 Explosive when dry'. These substances do not make a waste hazardous by HP1: Explosive, but their presence in a waste could make that waste exhibit hazardous property HP15; see Section HP15 for more details.

Hazard class and category code(s)	Hazard statement code(s)	Description
Unst. Expl	H 200	Unstable explosive
Expl. 1.1	H 201	Explosive; mass explosion hazard
Expl. 1.2	H 202	Explosive; severe projection hazard
Expl. 1.3	H 203	Explosive; fire, blast or projection hazard
Expl. 1.4	H 204	Fire or projection hazard
Self-react. A	H 240	Heating may cause an explosion
Org. Perox. A		
Self-react B	H 241	Heating may cause a fire or explosion



A waste containing a substance classified as H240 or H241 should be considered for HP3:Flammable where the waste is not hazardous by HP1.

Cut off value for organic peroxides

A waste containing organic peroxides classified as H240 or H241 needs to be assessed for HP1 unless both:

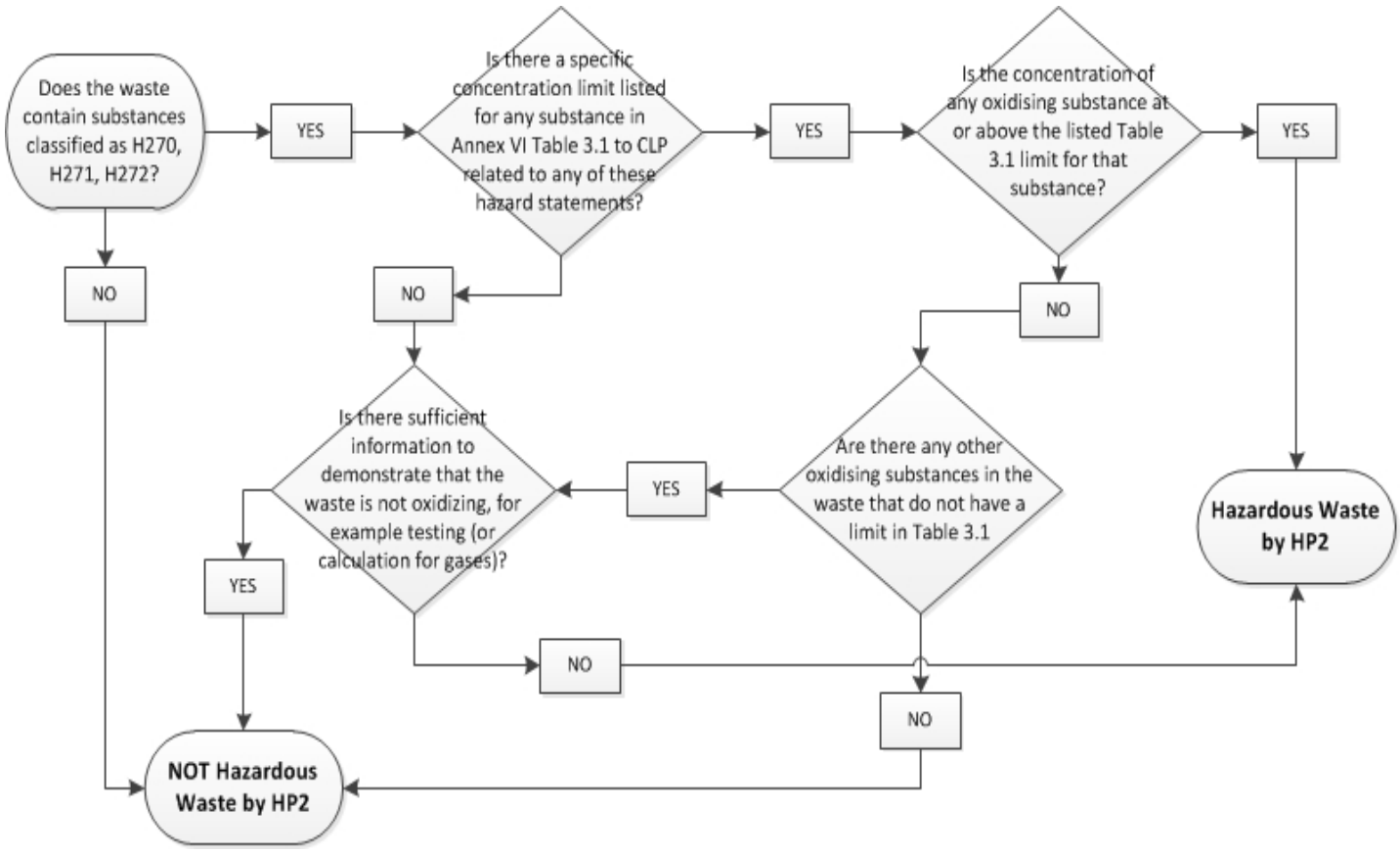
- no other hazardous substances assigned hazard statement codes listed in the above decision tree are present, and
- one of the following two criteria is met; the waste contains:
  - >1% but ≤ 7% hydrogen peroxide, and the available oxygen content of the organic peroxide(s) is ≤ 0.5%, or
  - ≤ 1% hydrogen peroxide, and the available oxygen content of the organic peroxide(s) is ≤ 1%.

HP2: Oxidising

A waste containing substances that are classified with the hazard class, category and hazard statements in the table below can be tested to show whether it displays that hazardous property or not. Alternatively a waste containing those substances can simply be assumed to be hazardous by HP2.

Where the waste contains only one such substance, and that substance is assigned a specific concentration limit given in Annex VI Table 3.1 to CLP, https://echa.europa.eu/information-on-chemicals/annex-vi-to-clp, the waste can be assumed not be hazardous by HP2 if the concentration of the oxidising substance is below that limit. For example nitric acid is listed in CLP as H272: Ox. Liq. 3, with a specific concentration limit of ≥ 65 %. Where nitric acid is present in a waste below 65% that waste will not be classified HP2. If another oxidising substance is also present then this cannot be assumed.

Hazard class and category code(s)	Hazard statement code(s)	Description
Ox. Gas 1	H 270	May cause or intensify fire; oxidiser
Ox. Liq. 1	H 271	May cause fire or explosion; strong oxidiser
Ox. Sol. 1	H 271	May cause fire or explosion; strong oxidiser
Ox. Liq. 2 Ox. Liq. 3	H 272	May intensify fire; oxidiser
Ox. Sol. 2 Ox. Sol. 3	H 272	May intensify fire; oxidiser



UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP3: Flammable

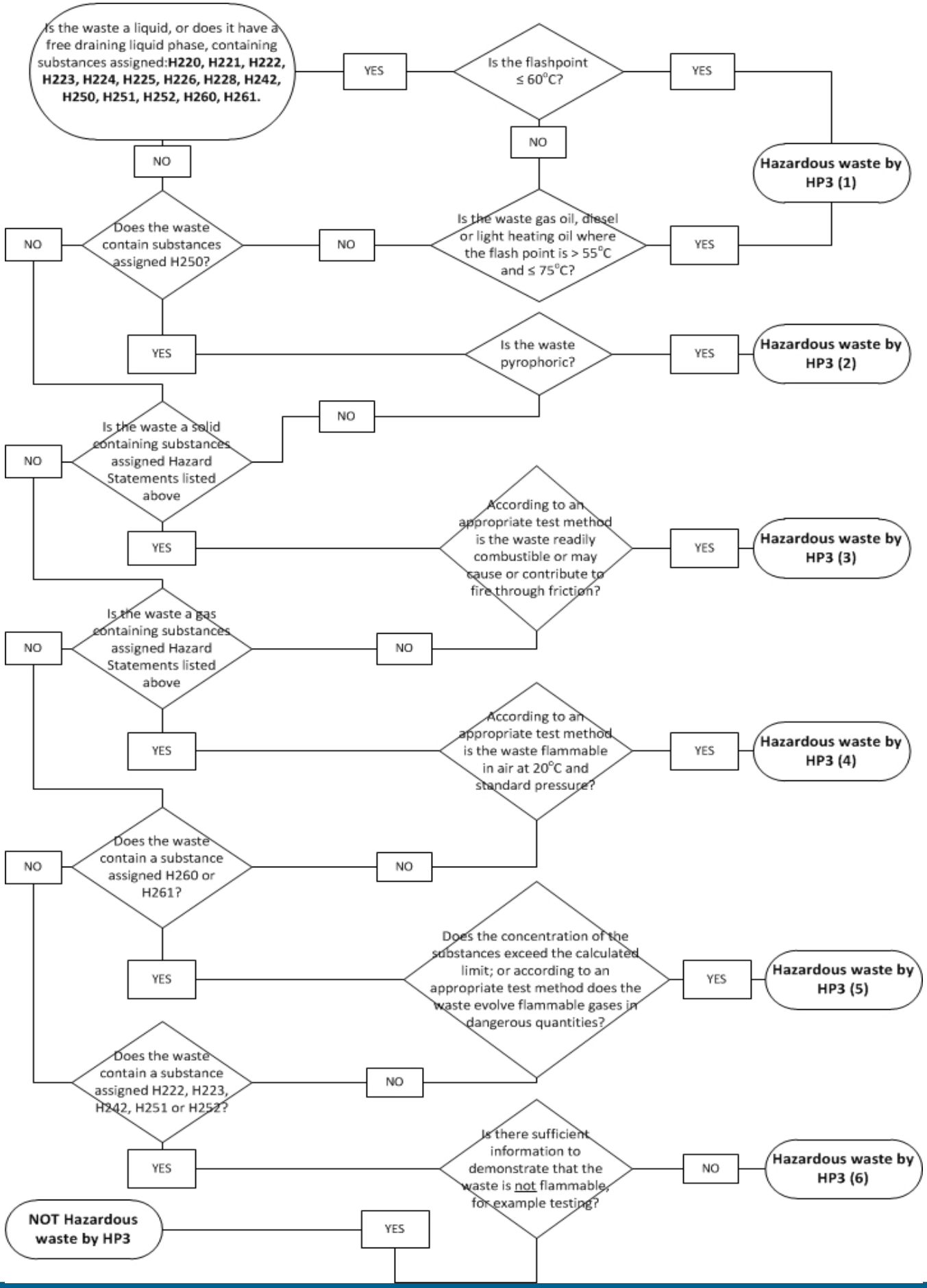
HP3 flammable waste is classified over 6 categories:

1. Flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and ≤ 75°C;
2. Flammable pyrophoric liquid and solid waste: solid or liquid waste which, even in small quantities, is liable to ignite within five minutes after coming into contact with air;
3. Flammable solid waste: solid waste which is readily combustible or may cause or contribute to fire through friction;
4. Flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kPa;
5. Water reactive waste: waste which, in contact with water, emits flammable gases in dangerous quantities;
6. Other flammable waste: flammable aerosols, flammable self-heating waste, flammable organic peroxides and flammable self-reactive waste.

A waste containing substances that are classified with the hazard class, category and hazard statements in the table below can be tested to show whether it displays that hazardous property or not. Alternatively a waste containing those substances can simply be assumed to be hazardous by HP3.

Where a waste contains substance assigned H260 or H261 it is possible to calculate the minimum amount of that substance that will give rise to HP3 (fifth category).

Hazard class and category code(s)	Hazard statement code(s)	Description
Flam. Gas 1	H220	Extremely flammable gas
Flam. Gas 2	H221	Flammable gas
Aerosol 1	H222	Extremely flammable aerosol
Aerosol 2	H223	Flammable aerosol
Flam. Liq. 1	H224	Extremely flammable liquid and vapour
Flam. Liq.2	H225	Highly flammable liquid and vapour
Flam. Liq. 3	H226	Flammable liquid and vapour
Flam. Sol. 1 Flam. Sol. 2	H228	Flammable solid
Self-react. CD Self-react. EF Org. Perox. CD Org. Perox. EF	H242	Heating may cause a fire
Pyr. Liq. 1 Pyr. Sol. 1	H250	Catches fire spontaneously if exposed to air
Self-heat.1	H251	Self-heating: may catch fire
Self-heat. 2	H252	Self-heating in large quantities; may catch fire
Water-react. 1	H260	In contact with water releases flammable gases which may ignite spontaneously
Water-react. 2 Water-react. 3	H261	In contact with water releases flammable gases



UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

If a waste contains a substance assigned H260 or H261, it is possible to calculate the limiting concentration of the substance in the waste that would make it hazardous by HP3(5). Examples of substances which may cause a waste to exhibit HP3 (5) and their threshold concentrations are given below:

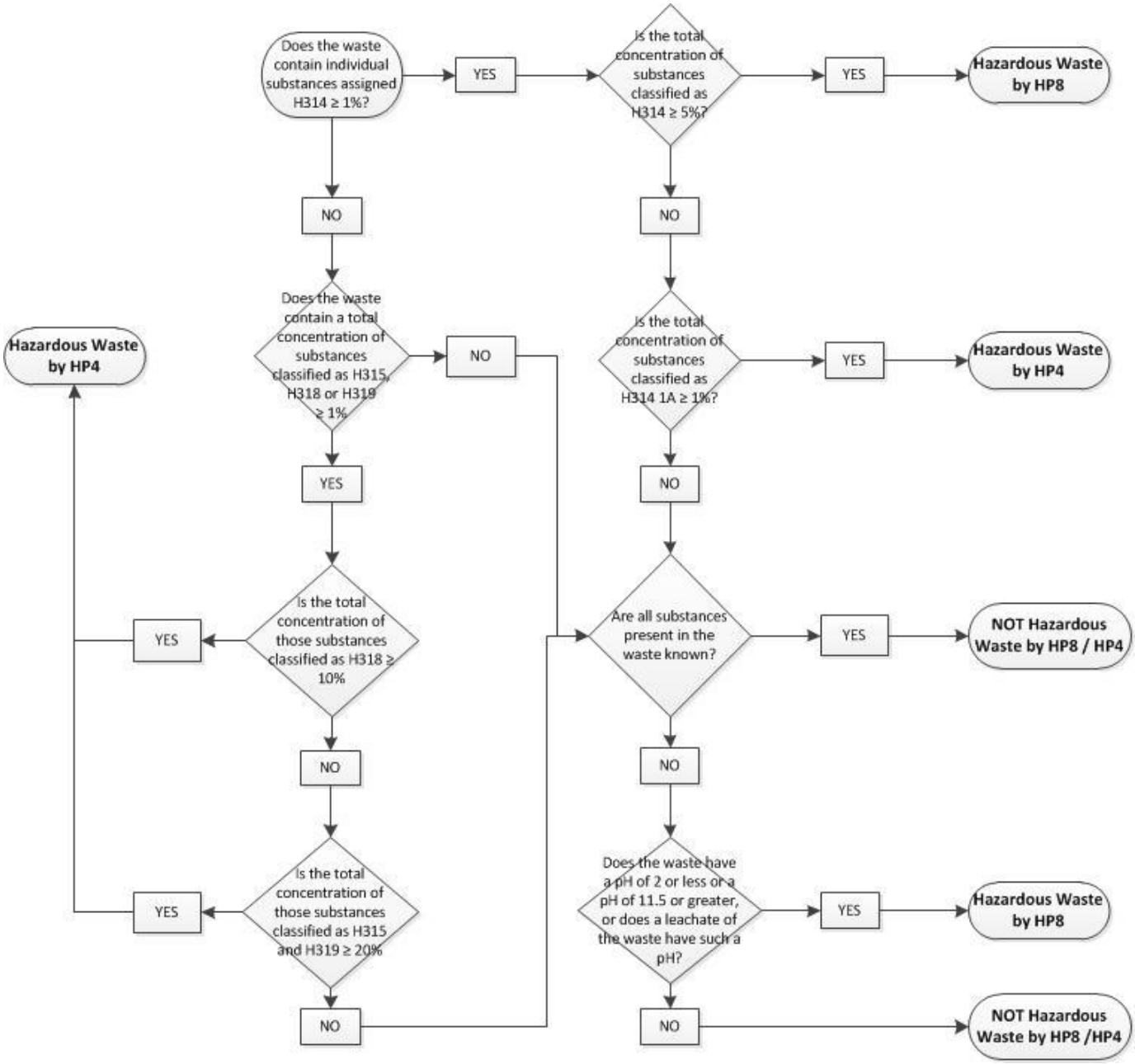
Substance	Risk Phrase	Liberated Gas	Threshold Concn %
Lithium	H260	Hydrogen	0.1
Sodium	H260	Hydrogen	0.2
Magnesium powder (pyrophoric)	H261	Hydrogen	0.1
Aluminium powder (pyrophoric)	H261	Hydrogen	0.1
Aluminium powder (stabilised)	H261	Hydrogen	0.1
Potassium	H260	Hydrogen	0.4
Calcium	H261	Hydrogen	0.2
Zinc powder/dust (pyrophoric)	H260	Hydrogen	0.3
Zirconium powder (pyrophoric)	H260	Hydrogen	0.2
Aluminium carbide	H260	Methane	0.2
Aluminium lithium hydride	H260	Hydrogen	0.1
Sodium hydride	H260	Hydrogen	0.1
Calcium hydride	H260	Hydrogen	0.1
Calcium carbide	H260	acetylene	0.3
Calcium phosphide	H260	phosphine	0.4
Aluminium phosphide	H260	phosphine	0.3
Magnesium phosphide	H260	phosphine	0.3
Trizinc diphosphide	H260	phosphine	0.6
Trichlorosilane	H260	Hydrogen	0.6
Diethyl (ethyldimethylsilanato) aluminium	H260	Ethane	0.4

(See also Technical Guidance WM3 2015 Appendix C3.1 for method of calculation)

HP4: Irritant and HP8: Corrosive

When a waste contains one or more substances in concentrations above the cut-off value that are classified by one of the following hazard class and category codes and hazard statement codes, and one or more of the following concentration limits is exceeded or equalled, the waste shall be classified as hazardous by HP8 or HP4.

Hazard class and category code(s)	Hazard statement code(s)	Description	Concentration limit (total of substances)	HP Code
Skin Corr 1A,1B or 1C	H314	Causes severe skin burns and eye damage	≥5%	HP8
Skin Corr. 1A	H314	Causes severe skin burns and eye damage	≥1% and <5%	HP4
Eye Dam. 1	H318	Causes serious eye damage	≥ 10%	HP4
Skin irrit. 2 and Eye irrit. 2	H315 and H319	Causes skin irritation and Causes serious eye irritation	≥ 20%	HP4



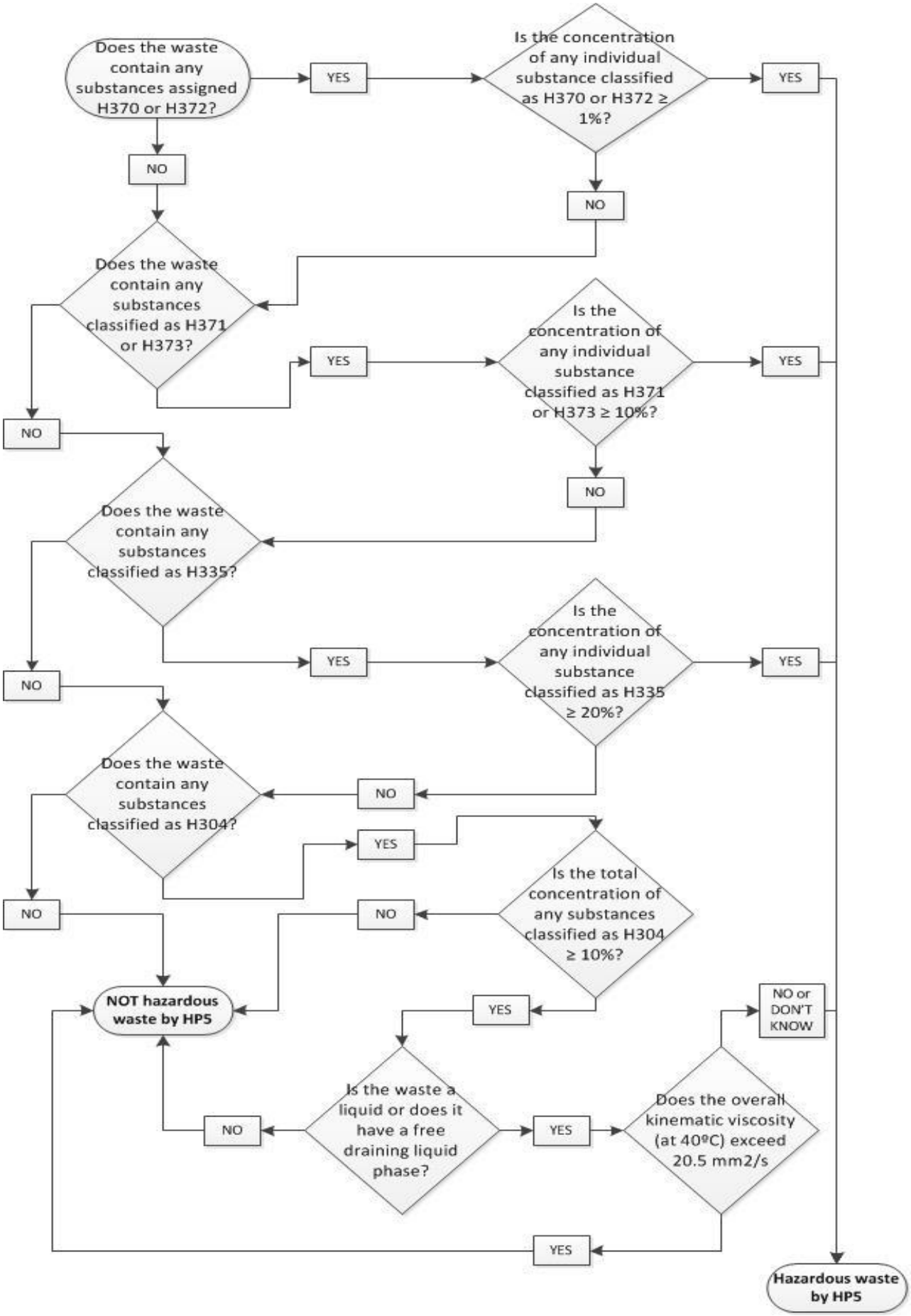
UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP5: Specific Target Organ Toxicity (STOT) / Aspiration Toxicity

When substances classified as STOT are present in a waste, an individual substance has to be present at or above the concentration limit for the waste to be classified as hazardous by HP5.

When a waste contains one or more substances classified as Asp. Tox. 1 and the sum of those substances exceeds or equals the concentration limit, the waste shall be classified as hazardous by HP5 only where the overall kinematic viscosity (at 40°C) does not exceed 20.5 mm²/s.

Hazard class and category code(s)	**Hazard statement code(s)**	**Description**	**Concentration limit**
STOT SE 1	H370	**C**auses damage to organs	≥ 1% (Indiv.)
STOT SE 2	H371	May cause damage to organs	≥ 10% (Indiv.)
STOT SE 3	H335	May cause respiratory irritation	≥ 20% (Indiv.)
STOT RE 1	H372	Causes damage to organs through prolonged or repeated exposure	≥ 1% (Indiv.)
STOT RE 2	H373	May cause damage to organs through prolonged or repeated exposure	≥ 10% (Indiv.)
Asp. Tox 1	H304	May be fatal if swallowed and enters airways	≥ 10%(total)



UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP6: Acute Toxicity

If the sum of the concentrations of all substances contained in a waste, classified with an acute toxic hazard class and category code and hazard statement code given in the below table, exceeds or equals the threshold given in that table, the waste shall be classified as hazardous by HP6. When more than one substance classified as acute toxic is present in a waste, the sum of the concentrations is required only for substances within the same hazard category.

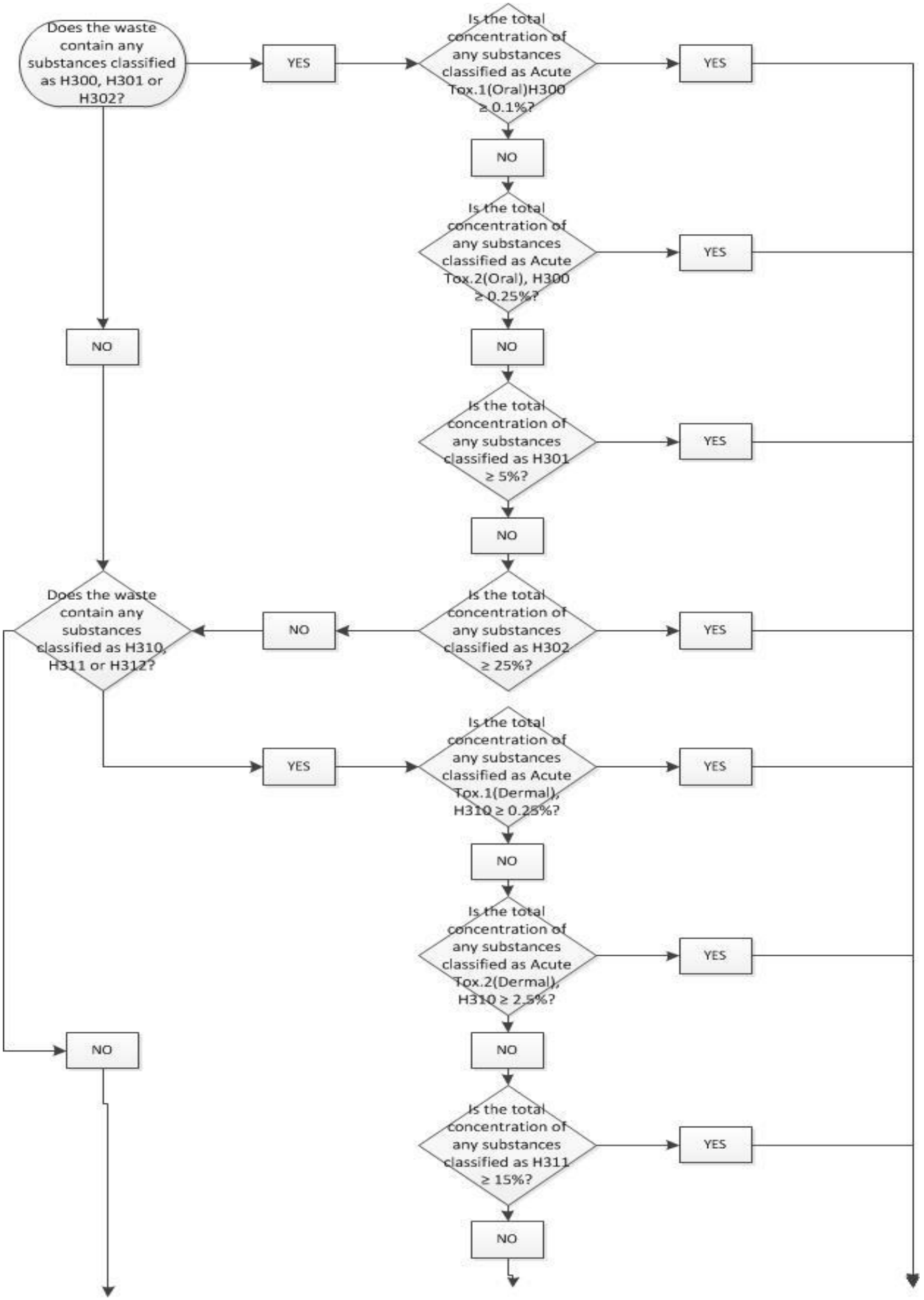
The following cut-off values apply to the assessment:

- For H300, H310, H330, H301, H311, and H331: 0.1%
- For H302, H312, and H332: 1%.

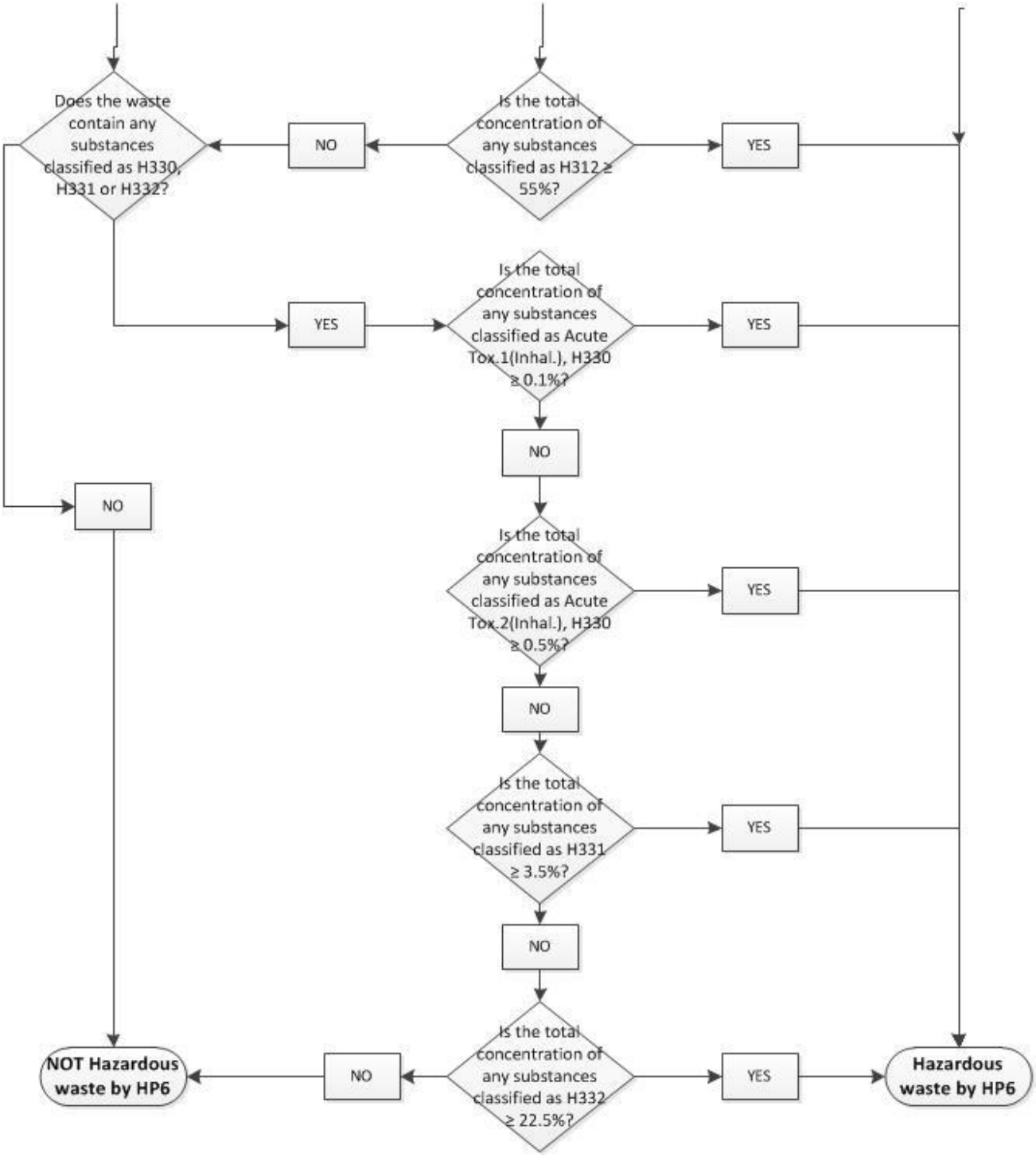
An individual substances present at a concentration below the cut off, for a hazard statement code assigned to it, is not included in the sum of the concentrations for that hazard class and category code.

Hazard class and category code(s)	**Hazard statement code(s)**	**Description**	**Concentration limit (sum of substances)**
Acute Tox.1 (Oral)	**H300**	Fatal if swallowed	≥ 0.1%
Acute Tox.2 (Oral)	**H300**	Fatal if swallowed	≥ 0.25%
Acute Tox.3 (Oral)	**H301**	Toxic if swallowed	≥ 5%
Acute Tox.4 (Oral)	**H302**	Harmful if swallowed	≥ 25%
Acute Tox.1 (Dermal)	**H310**	Fatal in contact with skin	≥ 0.25%
Acute Tox.2 (Dermal)	**H310**	Fatal in contact with skin	≥ 0.25%
Acute Tox.3 (Dermal)	**H311**	Toxic in contact with skin	≥ 15%
Acute Tox.4 (Dermal)	**H312**	Harmful in contact with skin	≥ 55%
Acute Tox.1 (Inhal)	**H330**	Fatal if inhaled	≥ 0.1%
Acute Tox.2 (Inhal)	**H330**	Fatal if inhaled	≥ 0.5%
Acute Tox.3 (Inhal)	**H331**	Toxic if inhaled	≥ 3.5%
Acute Tox.4 (Inhal)	**H332**	Harmful if inhaled	≥ 22.5%

UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk



UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

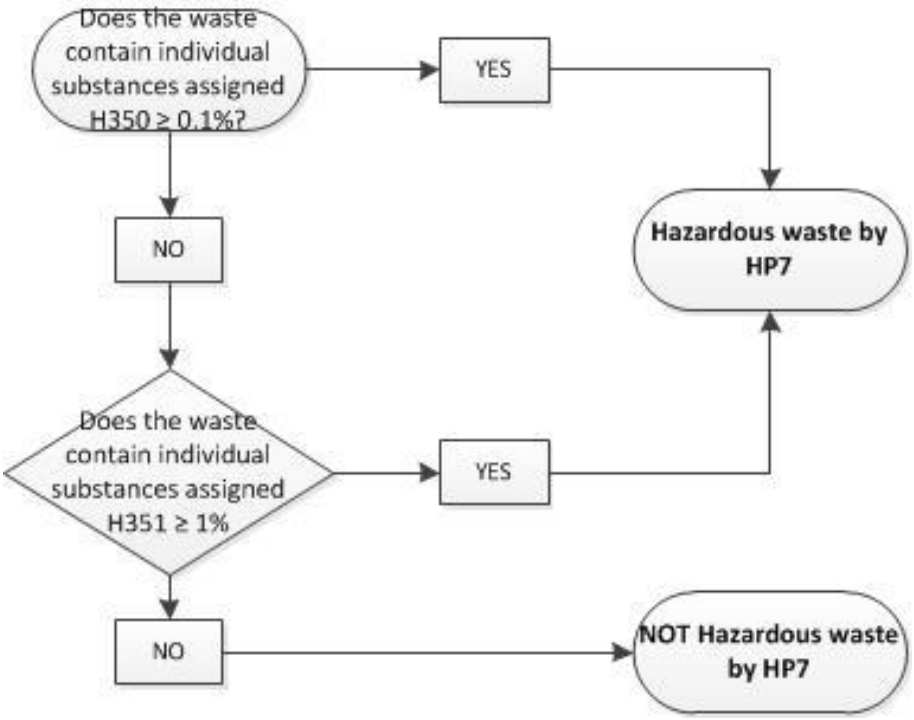


UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP7: Carcinogenic

When a waste contains a substance classified by one of the following hazard class and category codes and hazard statements, and exceeds or equals one of the following concentration limits, the waste shall be classified as hazardous by HP7.

Hazard class and category code(s)	Hazard statement code(s)	Description	Concentration limit (Individual substance)
Carc. 1A	**H350**	May cause cancer	≥ 0.1%
Carc. 1B	**H350**	May cause cancer	≥ 0.1%
Carc. 2	**H351**	Suspected of causing cancer	≥ 1.0%



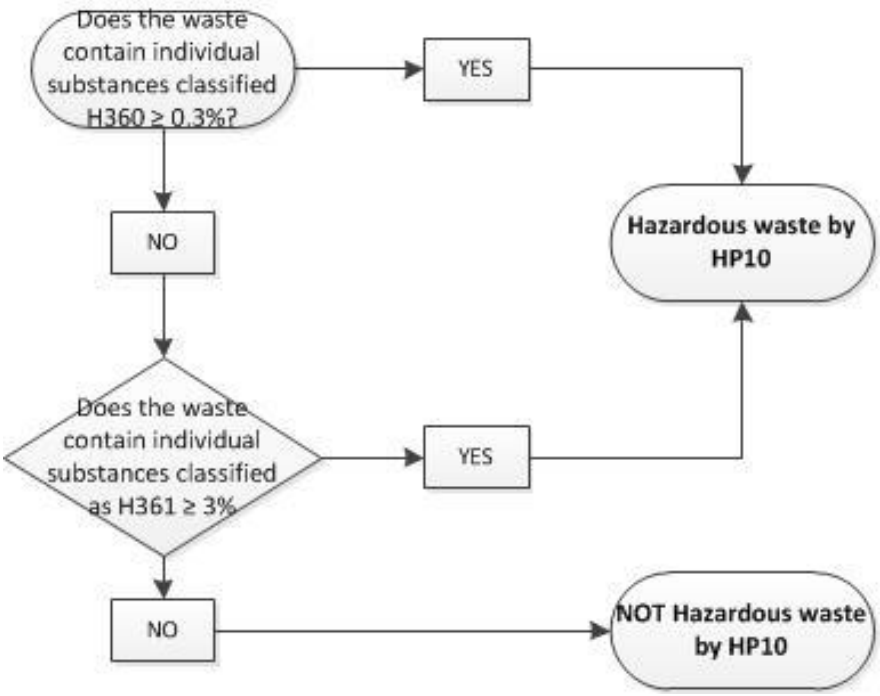
UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP10: Toxic for Reproduction

When a waste contains a substance classified by one of the following hazard class and category codes and hazard statement codes, and exceeds or equals one of the following concentration limits, the waste shall be classified hazardous according to HP10.

When more than one substance classified as toxic for reproduction is present in a waste, an individual substance has to be present at or above the concentration limit for the waste to be classified as hazardous by HP10.'

Hazard class and category code(s)	Hazard statement code(s)	Description	Concentration limit (Individual substance)
Repr. 1A	**H360**	May damage fertility or the unborn child	≥ 0.3%
Repr. 1B	**H360**	May damage fertility or the unborn child	≥ 0.3%
Repr. 2	**H361**	Suspected of damaging fertility or the unborn child	≥ 3.0%



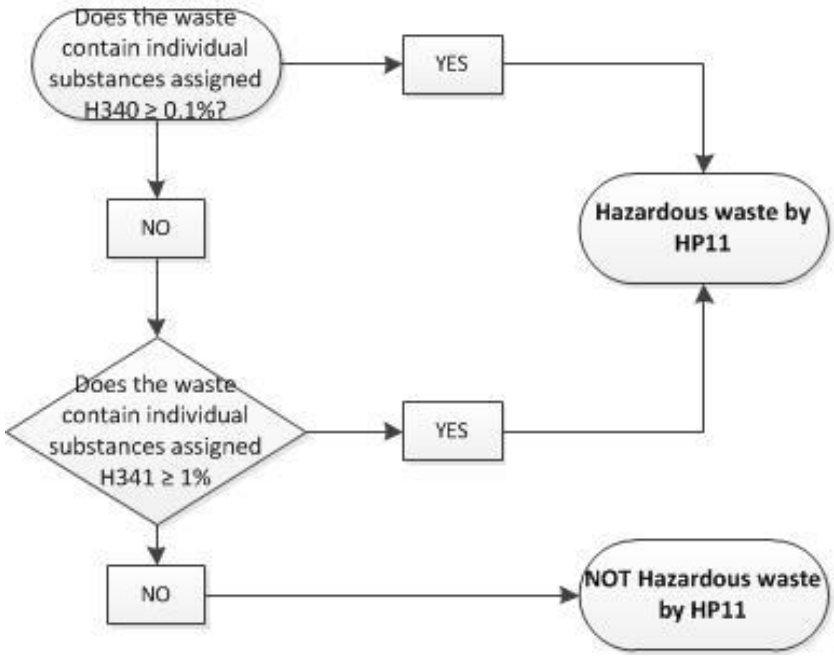
UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP11: Mutagenic

When a waste contains a substance classified by one of the following hazard class and category codes and hazard statement codes, and exceeds or equals one of the following concentration limits, the waste shall be classified hazardous according to HP11.

When more than one substance classified as toxic for reproduction is present in a waste, an individual substance has to be present at or above the concentration limit for the waste to be classified as hazardous by HP11.

Hazard class and category code(s)	Hazard statement code(s)	Description	Concentration limit (Individual substance)
Muta. 1A	**H340**	May cause genetic defects	≥ 0.1%
Muta. 1B	**H340**	May cause genetic defects	≥ 0.1%
Muta. 2	**H341**	Suspected of causing genetic defects	≥ 1.0%



UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP12: Release of an Acute Toxic Gas

A waste containing substances that are assigned EUH029, EUH031 and EUH032 can be tested to show whether it displays that hazardous property or not.

Alternatively, where a waste contains substances assigned H260 or H261 it is possible to calculate the minimum amount of that substance that will give rise to HP12. Contact Safety Services for further information.

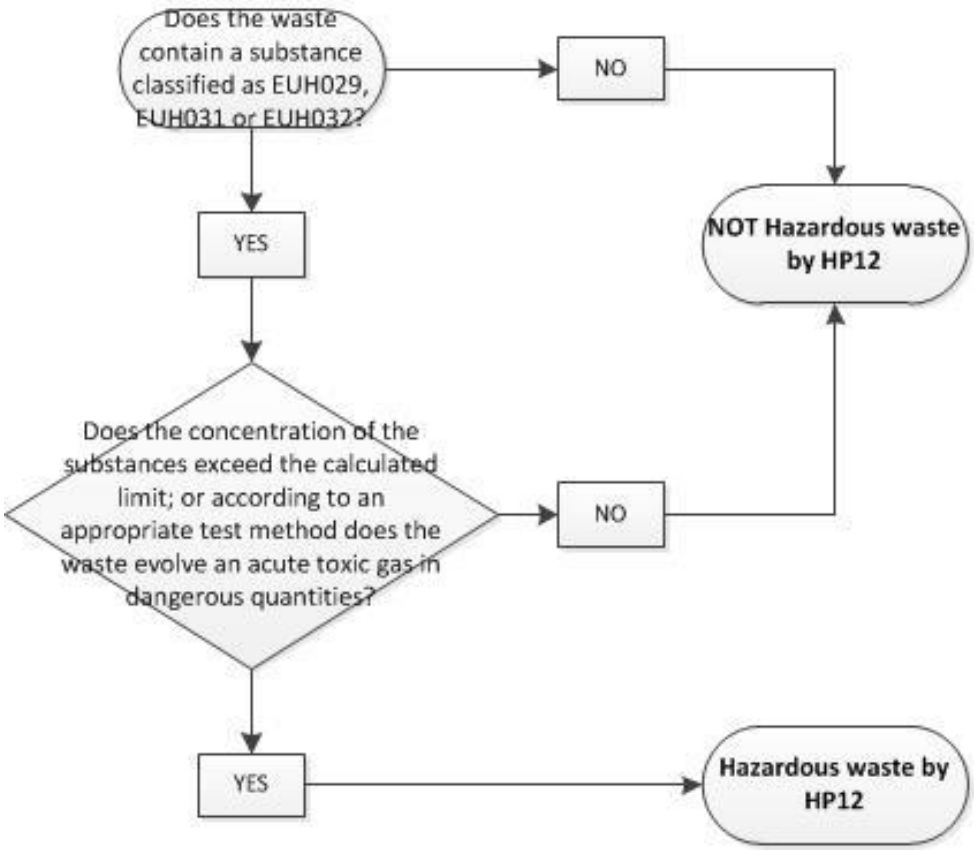
Otherwise a waste containing those substances can simply be assumed to be hazardous by HP12.

Examples of substances which may cause a waste to exhibit HP12 and their threshold concentrations is given in the table below (*N.B.*, this is not a complete list of substances with these properties):

Substance name	Hazard statement codes	Equation	Concentration limits for waste to be HP12 (%)1
Phosphorous pentasulphide	EUH029	P2S5 + 8H2O → 5H2S + 2H3PO4	0.1
3,5-dichloro-2,4- difluoro-benzoyl fluoride (DCDFBF)	EUH029	DCDFBF + H2O → HF + Prod.	1.0
Metam-sodium	EUH031	CH3NHCS2Na + H+ → CH3NH2 + CS2 + Na+	0.5
Barium sulphide	EUH031	BaS + 2H+ → H2S + Ba2+	0.8
Barium polysulphides	EUH031	BaSn + 2H+ → H2S + Ba2+ + Sn-1	0.8
Calcium sulphide	EUH031	CaS + 2H+ → H2S + Ca2+	0.3
Calcium polysulphides	EUH031	CaSn + 2H+ → H2S + Ca2+ + Sn-1	0.3
Potassium sulphide	EUH031	K2S + 2H+ → H2S + 2K+	0.5
Ammonium polysulphides	EUH031	(NH4)2Sn + 2H+ → H2S + 2NH4+ + Sn-1	0.3
Sodium sulphide	EUH031	Na2S + 2H+ → H2S + 2Na+	0.4
Sodium polysulphides	EUH031	Na2Sn + 2H+ → H2S + 2Na+ + Sn-1	0.4
Sodium dithionite	EUH031	Na2O6S2 + 2H+ → 2Na+ + SO2 + H2SO4	0.9
Sodium hypochlorite, solution Cl active2	EUH031	2NaOCl + 2H+ → Cl2 + 2Na+ + H2O	2.9
Calcium hypochlorite, solution Cl active2	EUH031	Ca(OCl)2 + 2H+ → Cl2 + Ca2+ + H2O	0.6
Dichloroisocyanuric acid	EUH031	C3HCl2N3O3 + 2H+ → C3H3N3O3 + Cl2	0.9
Dichloroisocyanuric acid, sodium salt of	EUH031	C3Cl2N3O3Na + 3H+ → C3H3N3O3 + Cl2 + Na+	1.0
Sodium dichloroisocyanruate, dihydrate	EUH031	C3Cl2N3O3Na.2H2O + 3H+ → C3H3N3O3 + Cl2 + Na+ + 2H2O	1.1
Trichloroisocyanuric acid	EUH031	2C3Cl3N3O3 + 6H+ → 2C3H3N3O3 + 3Cl2	0.7
Hydrogen cyanide, salts of (with the exception of complex cyanides such as ferrocyanides,	EUH032	NaCN + H+ → HCN + Na+	0.2

ferricyanides and mercuric oxycyanide)			
Sodium fluoride	EUH032	NaF + H+ → HF + Na+ 0.2	0.2
Sodium azide	EUH032	NaN3 + H+ + H2O → NO2 + NH3 + Na+	0.3
Trizinc disphosphide	EUH032	Zn3P2 + 6H+ → 2PH3 + 3Zn2+	0.6
Calcium cyanide	EUH032	Ca(CN)2 + 2H+ → 2HCN + Ca2+	0.2
Cadmium cyanide	EUH032	Cd(CN)2 + 2H+ → 2HCN + Cd2+	0.4
Aluminium phosphide	EUH029 EUH032	AlP + 3H+ → PH3 + Al3+ AlP + 3H2O → PH3 + Al(OH)3	0.3 0.3
Calcium phosphide	EUH029 EUH032	Ca3P2 + 6H2O → 2PH3 + 3Ca(OH)2	0.4
Magnesium phosphide	EUH029 EUH032	Mg3P2 + 6H2O → 2PH3 + 3Mg(OH)2	0.3
Trizinc diphosphide	EUH029 EUH032	Zn3P2 + 6H2O → 2PH3 + 3Zn(OH)2	0.6

(See also Technical Guidance WM3 2015 Appendix C12.1 for method of calculation)

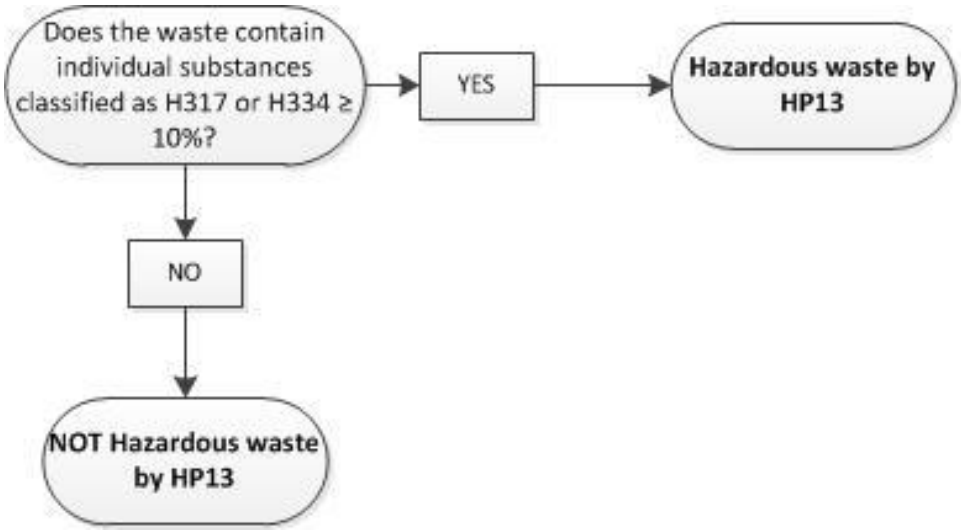


UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP13: Sensitising

When a waste contains a substance classified as sensitising, is assigned to one of the hazard statement codes H317 or H334 and one individual substance equals or exceeds the concentration limit of 10%, the waste shall be classified as hazardous by HP13.

Hazard class and category code(s)	Hazard statement code(s)	Description	Concentration limit (Individual substance)
Skin Sens. 1, 1A,and 1B	**H317**	May cause an allergic skin reaction	≥ 10%
Resp Sens. 1, 1A,and 1B	**H334**	May cause allergy or asthma symptoms or breathing difficulties if inhaled	≥ 10%

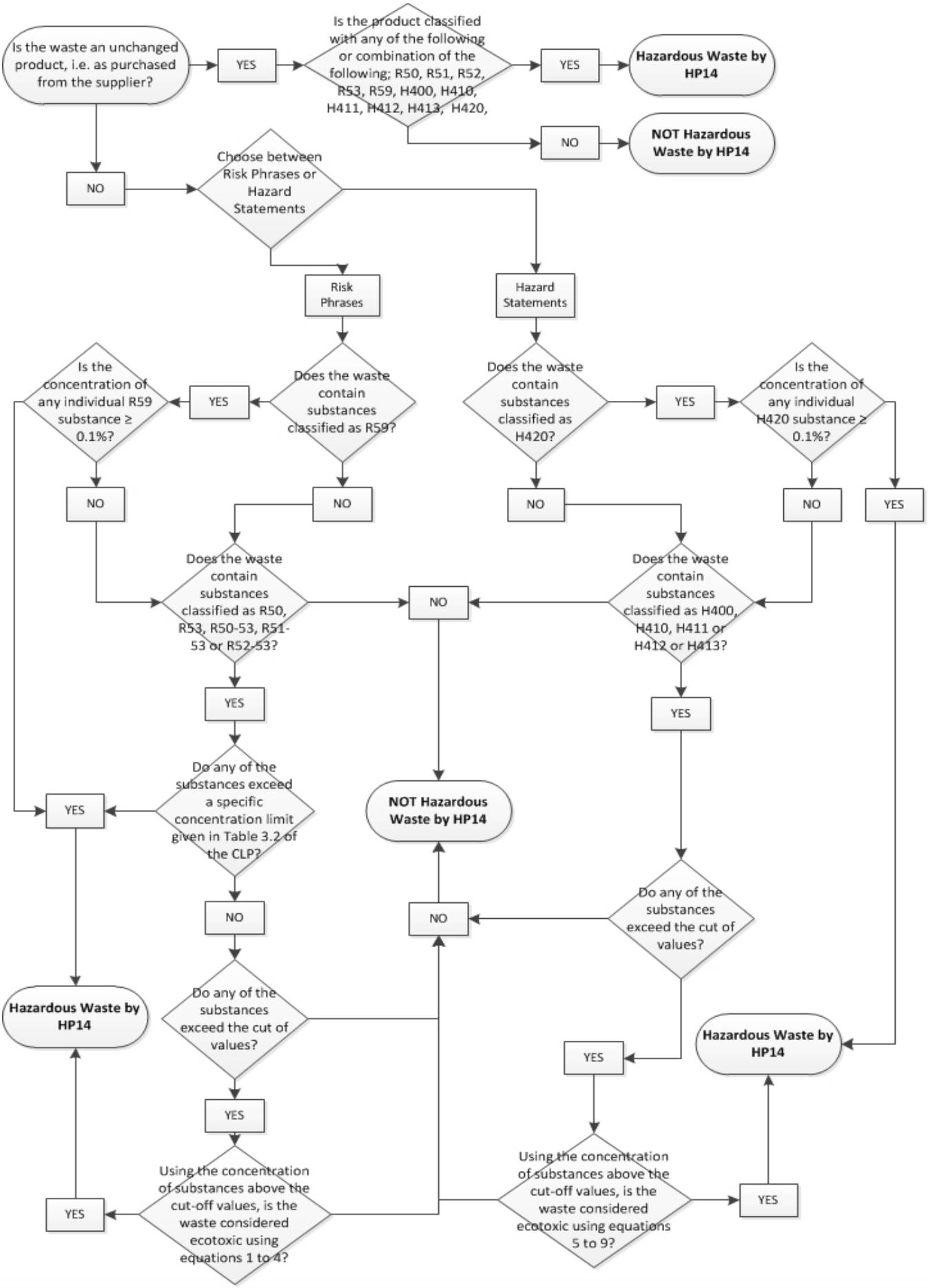


UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP14: Ecotoxic

The assessment of waste for ecotoxicity can use either hazard statements or risk phrases and can be complicated for mixed waste. The table below contains generic cut off values for ecotoxic hazard statements and risk phrases. Some substances also have individual cut of values in Annex VI, Table 3.2 to the Classification, Labelling and Packing Regulations.

Classification of the substance	**Generic cut-off value**
R50, R50-53, R51-53	0.1%
R52, R52-53, R53	1%
H400, H410	0.1%M
H411, H412, H413	1%



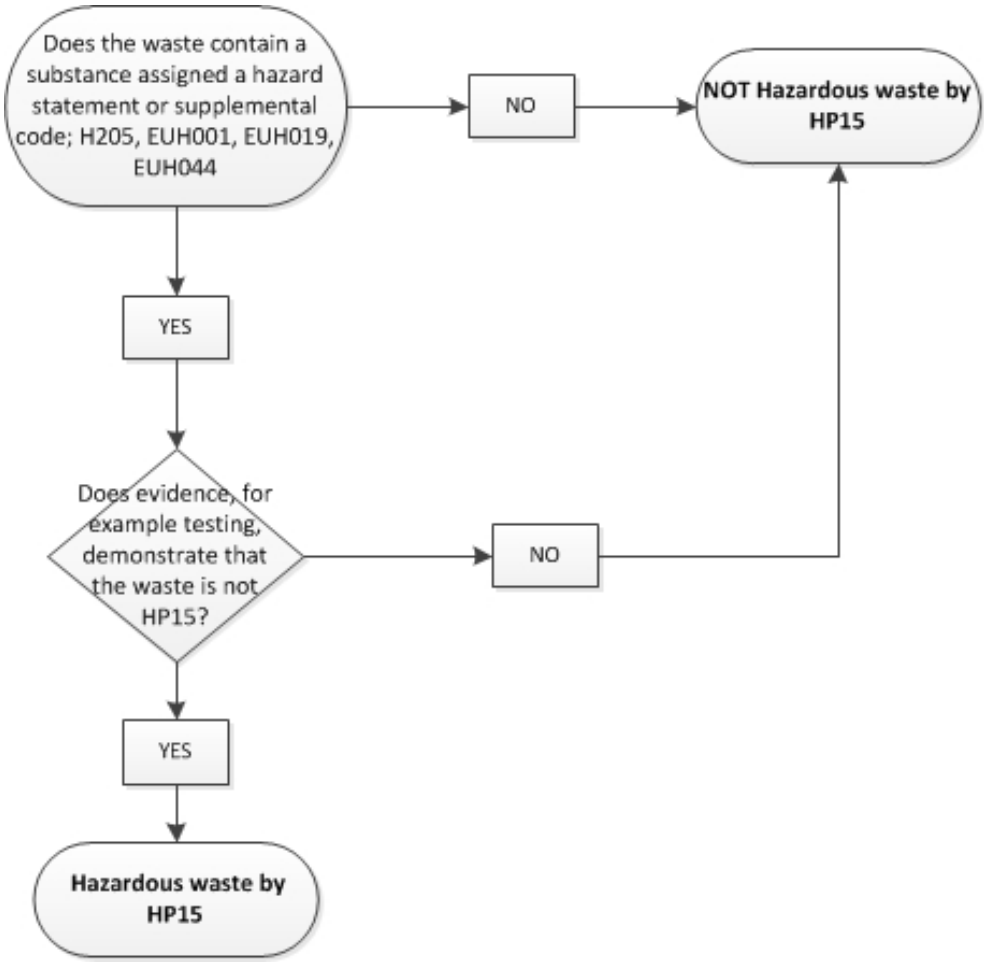
UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

HP15: Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste

To be considered in addition to but after HP1-HP14.

When a waste contains one or more substances assigned to one of the hazard statements or supplemental hazards the waste shall be classified as hazardous by HP15, unless the waste is in such a form that it will not under any circumstance exhibit explosive or potentially explosive properties, or it has been tested to show whether it exhibits that hazardous property or not.

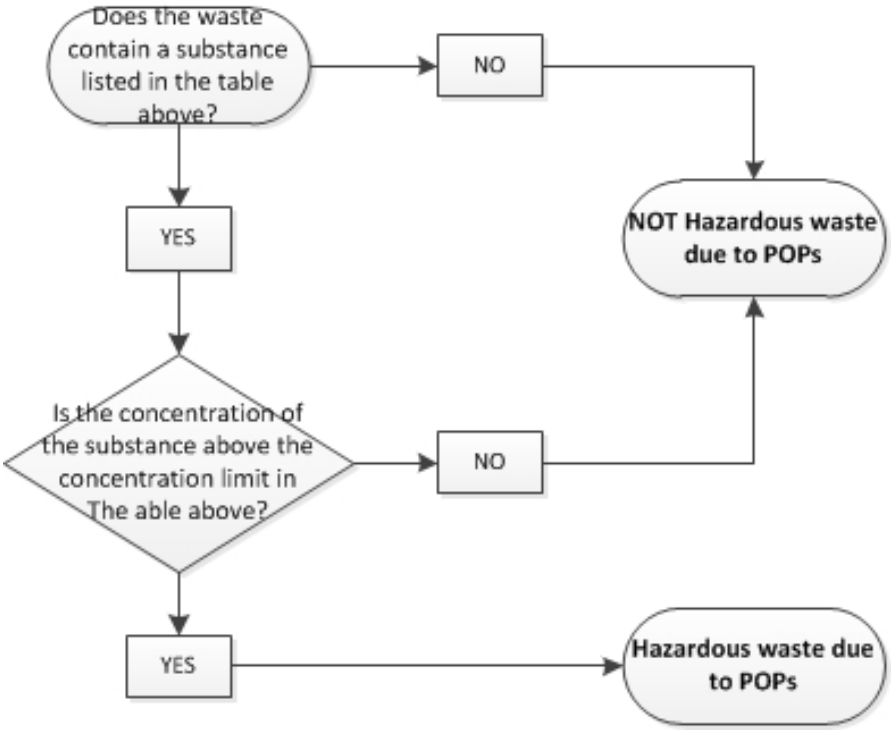
Hazard statement(s) / supplemental hazard(s)	
May mass explode in fire	H205
Explosive when dry	EUH001
May form explosive peroxides	EUH019
Risk of explosion if heated under confinement	EUH044



Persistent Organic Pollutants (POPS)

A waste containing persistent organic pollutants listed below is hazardous if the concentration of the POP is above the concentration limit assigned to it.

Substance	CAS No.	EU No.	Concentration limit
Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)		15 µg/kg(1)	
DDT (1,1,1-trichloro- 2,2-bis (4-chlorophenyl)ethane)	50-29-3	200-024-3	50 mg/kg
Chlordane	57-74-9	200-349-0	50 mg/kg
Hexachlorocyclohexanes, including lindane	58-89-9 319-84-6 319-85-7 608-73-1	210-168-9 200-401-2 206-270-8 206-271-3	50 mg/kg
Dieldrin	60-57-1	200-484-5 50	50 mg/kg
Endrin	72-20-8	200-775-7 50	50 mg/kg
Heptachlor	76-44-8	200-962-3 50	50 mg/kg
Hexachlorobenzene	118-74-1	200-273-9 50	50 mg/kg
Chlordecone	143-50-0	205-601-3	50 mg/kg
Aldrin	309-00-2	206-215-8	50 mg/kg
Pentachlorobenzene	608-93-5	210-172-5	50 mg/kg
Polychlorinated Biphenyls (PCB)	1336-36-3 and others	215-648-1	50 mg/kg(2)
Mirex	2385-85-5	219-196-6	50 mg/kg
Toxaphene	8001-35-2	232-283-3	50 mg/kg
Hexabromobiphenyl	36355-01-8	252-994-2	50 mg/kg



Appendix 1 List of Wastes

Index

Chapter / Section	
0804	Adhesives
20 01 33	Batteries
18 01 & 18 02	Chemicals from medical research
16 05	Chemicals other than those from chapter 18
20 01 29	Detergents
16 02	Electrical equipment
20 01 21	Fluorescent tubes and other lamps
18 01 06	Formalin
10 09 & 10 10	Foundry waste
20 01 23	Fridges/freezers
12 01	Machining oils
11	Metal surface treatment including degreasing waste
13	Oil
08 01	Paints
20 01 19	Pesticides
09 01	Photographic and printing chemicals
08 03	Printing inks
14 06	Solvents and degreasing solvents except those covered by chapter 11

Chapters of the list of wastes

From *The list of wastes Regulations 2005*

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; nonferrous 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

In order to select an appropriate 6-digit code, the regulations require you to first consider the entries in chapters 01 to 12 and 17 to 20. If a suitable code cannot be found in chapters 01 to 12 and 17 to 20 an appropriate 6-digit code from chapters 13 to 15 should be used.

02 wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	
02 01 08 agrochemical waste containing hazardous substances	M
03 wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	
03 01 wastes from wood processing and the production of panels and furniture	
03 01 04 sawdust, shavings, cuttings, wood, particle board and veneer containing hazardous substances	M
03 02 wastes from wood preservation	
03 02 01 non-halogenated organic wood preservatives	A
03 02 02 organochlorinated wood preservatives	A
03 02 03 organometallic wood preservatives	A
03 02 04 inorganic wood preservatives	A
03 02 05 other wood preservatives containing hazardous substances	M
08 wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesives, sealants and printing inks	
08 01 wastes from MFSU and removal of paint and varnish	
08 01 11 waste paint and varnish containing organic solvents or other hazardous substances	M
08 01 13 sludges from paint or varnish containing organic solvents or other hazardous substances	M
08 01 15 aqueous sludges containing paint or varnish containing organic solvents or other hazardous substances	M
08 03 wastes from MFSU of printing inks	
08 03 12 waste ink containing hazardous substances	M
08 03 14 ink sludges containing hazardous substances	M
08 03 16 waste etching solutions	A
08 03 17 waste printing toner containing hazardous substances	M
08 03 19 disperse oil	A
08 04 wastes from MFSU of adhesives and sealants (including waterproofing products)	
08 04 09 waste adhesives and sealants containing organic solvents or other hazardous substances	M
08 04 11 adhesive and sealant sludges containing organic solvents or other hazardous substances	M

UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

08 04 13 aqueous sludges containing adhesives or sealants containing organic solvents or other hazardous substances	M
08 04 15 aqueous liquid waste containing adhesives or sealants containing organic solvents or other hazardous substances	M
08 04 16 aqueous liquid waste containing adhesives or sealants other than those mentioned in 08 04 15	M
08 04 17 rosin oil	A
08 05 wastes not otherwise specified in 08	
08 05 01 waste isocyanates	A
09 wastes from the photographic industry	
09 01 wastes from the photographic industry	
09 01 01 water-based developer and activator solutions	A
09 01 02 water-based offset plate developer solutions	A
09 01 03 solvent-based developer solutions	A
09 01 04 fixer solutions	A
09 01 05 bleach solutions and bleach fixer solutions	A
09 01 06 wastes containing silver from on-site treatment of photographic wastes	M
09 01 11 single-use cameras containing batteries included in 16 06 01, 16 06 02 or 16 06 03	A
09 01 13 aqueous liquid waste from on-site reclamation of silver other than those mentioned in 09 01 06	A
10 wastes from thermal processes	
10 08 wastes from other non-ferrous thermal metallurgy	
10 08 08 salt slag from primary and secondary production	
10 08 10 dross and skimmings that are flammable or emit, upon contact with water, flammable gases in hazardous quantities	A
10 08 12 tar-containing wastes from anode manufacture	M
10 08 15 flue-gas dust containing hazardous substances	M
10 08 17 sludges and filter cakes from flue-gas treatment containing hazardous substances	M
10 08 19 wastes from cooling-water treatment containing oil	M
10 09 wastes from casting of ferrous pieces	
10 09 05 casting cores and moulds which have not undergone pouring containing hazardous substances	M
10 09 07 casting cores and moulds which have undergone pouring containing hazardous substances	M
10 09 09 flue-gas dust containing hazardous substances	M
10 09 11 other particulates containing hazardous substances	M
10 09 13 waste binders containing hazardous substances	M
10 09 15 waste crack-indicating agent containing hazardous substances	M
10 10 wastes from casting of non-ferrous pieces	
10 10 05 casting cores and moulds which have not undergone pouring, containing hazardous substances	M
10 10 07 casting cores and moulds which have undergone pouring, containing hazardous substances	M
10 10 09 flue-gas dust containing hazardous substances	M
10 10 11 other particulates containing hazardous substances	M
10 10 13 waste binders containing hazardous substances	M
10 10 15 waste crack-indicating agent containing hazardous substances	M
10 11 wastes from manufacture of glass and glass products	
10 11 09 waste preparation mixture before thermal processing, containing hazardous substances	M

10 11 11 waste glass in small particles and glass powder containing heavy metals (for example from cathode ray tubes)	M
10 11 13 glass-polishing and -grinding sludge containing hazardous substances	M
10 11 15 solid wastes from flue-gas treatment containing hazardous substances	M
10 11 17 sludges and filter cakes from flue-gas treatment containing hazardous substances	M
10 11 19 solid wastes from on-site effluent treatment containing hazardous substances	M
11 wastes from chemical surface treatment and coating of metals and other materials; non-ferrous hydrometallurgy	
11 01 wastes from chemical surface treatment and coating of metals and other materials (for example galvanic processes, zinc coating processes, pickling processes, etching, phosphating, alkaline degreasing, anodising)	
11 01 05 pickling acids	A
11 01 06 acids not otherwise specified	A
11 01 07 pickling bases	A
11 01 08 phosphatising sludges	A
11 01 09 sludges and filter cakes containing hazardous substances	M
11 01 11 aqueous rinsing liquids containing hazardous substances	M
11 01 13 degreasing wastes containing hazardous substances	M
11 01 15 eluate and sludges from membrane systems or ion exchange systems containing hazardous substances	M
11 01 16 saturated or spent ion exchange resins	A
11 01 98 other wastes containing hazardous substances	M
11 02 wastes from non-ferrous hydrometallurgical processes	
11 02 02 sludges from zinc hydrometallurgy (including jarosite, goethite)	A
11 02 05 wastes from copper hydrometallurgical processes containing hazardous substances	M
11 02 07 other wastes containing hazardous substances	M
11 03 sludges and solids from tempering processes	
11 03 01 wastes containing cyanide	A
11 03 02 other waste	A
11 05 wastes from hot galvanising processes	
11 05 03 solid wastes from gas treatment	A
11 05 04 spent flux	A
12 wastes from shaping and physical and mechanical surface treatment of metals and plastics	
12 01 wastes from shaping and physical and mechanical surface treatment of metals and plastics	
12 01 06 mineral-based machining oils containing halogens (except emulsions and solutions)	A
12 01 07 mineral-based machining oils free of halogens (except emulsions and solutions)	A
12 01 08 machining emulsions and solutions containing halogens	A
12 01 09 machining emulsions and solutions free of halogens	A
12 01 10 synthetic machining oils	A
12 01 12 spent waxes and fats	A
12 01 14 machining sludges containing hazardous substances	M
12 01 16 waste blasting material containing hazardous substances	M
12 01 18 metal sludge (grinding, honing and lapping sludge) containing oil	M
12 01 19 readily biodegradable machining oil	A
12 01 20 spent grinding bodies and grinding materials containing hazardous substances	M
12 03 wastes from water and steam degreasing processes (except 11)	
12 03 01 aqueous washing liquids	A
12 03 02 steam degreasing wastes	A

13 oil wastes and wastes of liquid fuels (except edible oils, and those in chapters 05, 12 and 19)	
13 01 waste hydraulic oils	
13 01 01 hydraulic oils, containing PCBs	A
13 01 04 chlorinated emulsions	A
13 01 05 non-chlorinated emulsions	A
13 01 09 mineral-based chlorinated hydraulic oils	A
13 01 10 mineral based non-chlorinated hydraulic oils	A
13 01 11 synthetic hydraulic oils	A
13 01 12 readily biodegradable hydraulic oils	A
13 01 13 other hydraulic oils	A
13 02 waste engine, gear and lubricating oils	
13 02 04 mineral-based chlorinated engine, gear and lubricating oils	A
13 02 05 mineral-based non-chlorinated engine, gear and lubricating oils	A
13 02 06 synthetic engine, gear and lubricating oils	A
13 02 07 readily biodegradable engine, gear and lubricating oils	A
13 02 08 other engine, gear and lubricating oils	A
13 03 waste insulating and heat transmission oils	
13 03 01 insulating or heat transmission oils containing PCBs	A
13 03 06 mineral-based chlorinated insulating and heat transmission oils other than those mentioned in 13 03 01	A
13 03 07 mineral-based non-chlorinated insulating and heat transmission oils	A
13 03 08 synthetic insulating and heat transmission oils	A
13 03 09 readily biodegradable insulating and heat transmission oils	A
13 03 10 other insulating and heat transmission oils	A
13 04 bilge oils	
13 04 01 bilge oils from inland navigation	A
13 04 02 bilge oils from jetty sewers	A
13 04 03 bilge oils from other navigation	A
13 05 oil/water separator contents	
13 05 01 solids from grit chambers and oil/water separators	A
13 05 02 sludges from oil/water separators	A
13 05 03 interceptor sludges	A
13 05 06 oil from oil/water separators	A
13 05 07 oily water from oil/water separators	A
13 05 08 mixtures of wastes from grit chambers and oil/water separators	A
13 07 wastes of liquid fuels	
13 07 01 fuel oil and diesel	A
13 07 02 petrol	A
13 07 03 other fuels (including mixtures)	A
13 08 oil wastes not otherwise specified	
13 08 01 desalter sludges or emulsions	A
13 08 02 other emulsions	A
13 08 99 wastes not otherwise specified	A
14 waste organic solvents, refrigerants and propellants (except 07 and 08)	
14 06 waste organic solvents, refrigerants and foam/aerosol propellants	
14 06 01 chlorofluorocarbons, HCFC, HFC	A
14 06 02 other halogenated solvents and solvent mixtures	A
14 06 03 other solvents and solvent mixtures	A
14 06 04 sludges or solid wastes containing halogenated solvents	A

14 06 05 sludges or solid wastes containing other solvents	A
15 waste packaging, absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	
15 01 packaging (including separately collected municipal packaging waste)	
15 01 10 packaging containing residues of or contaminated by hazardous substances	M
15 01 11 metallic packaging containing a hazardous solid porous matrix (for example asbestos), including empty pressure containers	M
15 02 absorbents, filter materials, wiping cloths and protective clothing	
15 02 02 absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by hazardous substances	M
16 wastes not otherwise specified in the list	
16 02 wastes from electrical and electronic equipment	
16 02 09 transformers and capacitors containing PCBs	M
16 02 10 discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09	M
16 02 11 discarded equipment containing chlorofluorocarbons, HCFC, HFC	M
16 02 12 discarded equipment containing free asbestos	M
16 02 13 discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12	M
16 02 15 hazardous components removed from discarded equipment	A
16 04 waste explosives	
16 04 01 waste ammunition	A
16 04 02 fireworks wastes	A
16 04 03 other waste explosives	A
16 05 gases in pressure containers and discarded chemicals	
16 05 04 gases in pressure containers (including halons) containing hazardous substances	M
16 05 06 laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals	M
16 05 07 discarded inorganic chemicals consisting of or containing hazardous substances	M
16 05 08 discarded organic chemicals consisting of or containing hazardous substances	M
16 06 batteries and accumulators	
16 06 01 lead batteries	A
16 06 02 Ni-Cd batteries	A
16 06 03 mercury-containing batteries	A
16 06 06 separately collected electrolyte from batteries and accumulators	A
16 09 oxidising substances	
16 09 01 permanganates, for example potassium permanganate	A
16 09 02 chromates, for example potassium chromate, potassium or sodium dichromate	A
16 09 03 peroxides, for example hydrogen peroxide	A
16 09 04 oxidising substances, not otherwise specified	A
16 10 aqueous liquid wastes destined for off-site treatment	
16 10 01 aqueous liquid wastes containing hazardous substances	M
16 10 03 aqueous concentrates containing hazardous substances	M
16 11 waste linings and refractories	
16 11 01 carbon-based linings and refractories from metallurgical processes containing hazardous substances	M
16 11 03 other linings and refractories from metallurgical processes containing hazardous substances	M
16 11 05 linings and refractories from non-metallurgical processes containing hazardous substances	M

17 construction and demolition wastes (including excavated soil from contaminated sites)	
17 01 concrete, bricks, tiles and ceramics	
17 01 06 mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances	M
17 02 wood, glass and plastic	
17 02 04 glass, plastic and wood containing or contaminated with hazardous substances	M
17 03 bituminous mixtures, coal tar and tarred products	
17 03 01 bituminous mixtures containing coal tar	M
17 03 03 coal tar and tarred products	A
17 04 metals (including their alloys)	
17 04 09 metal waste contaminated with hazardous substances	M
17 04 10 cables containing oil, coal tar and other hazardous substances	M
17 05 soil (including excavated soil from contaminated sites), stones and dredging spoil	
17 05 03 soil and stones containing hazardous substances	M
17 06 insulation materials and asbestos-containing construction materials	
17 06 01 insulation materials containing asbestos	M
17 06 03 other insulation materials consisting of or containing hazardous substances	M
17 06 05 construction materials containing asbestos	M
17 08 gypsum-based construction material	
17 08 01 gypsum-based construction materials contaminated with hazardous substances	M
17 09 other construction and demolition wastes	
17 09 01 construction and demolition wastes containing mercury	M
17 09 02 construction and demolition wastes containing PCB (for example PCB-containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazing units, PCB-containing capacitors)	M
17 09 03 other construction and demolition wastes (including mixed wastes) containing hazardous substances	M
18 wastes from human or animal health care and/or related research (except kitchen and restaurant wastes not arising from immediate health care)	
18 01 wastes from natal care, diagnosis, treatment or prevention of disease in humans	
18 01 06 chemicals consisting of or containing hazardous substances	M
18 01 08 cytotoxic and cytostatic medicines	A
18 01 10 amalgam waste from dental care	A
18 02 wastes from research, diagnosis, treatment or prevention of disease involving animals	
18 02 05 chemicals consisting of or containing hazardous substances	M
18 02 07 cytotoxic and cytostatic medicines	A
20 municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	
20 01 separately collected fractions (except 15 01)	
20 01 13 solvents	A
20 01 14 acids	A
20 01 15 alkalines	A
20 01 17 photochemicals	A
20 01 19 pesticides	A
20 01 21 fluorescent tubes and other mercury-containing waste	A
20 01 23 discarded equipment containing chlorofluorocarbons	M
20 01 26 oil and fat other than those mentioned in 20 01 25	A
20 01 27 paint, inks, adhesives and resins containing hazardous substances	M
20 01 29 detergents containing hazardous substances	M

20 01 33 batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries	A
20 01 34 batteries and accumulators other than those mentioned in 20 01 33	A
20 01 35 discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components	M
20 01 37 wood containing hazardous substances	M

The right-hand column denotes whether an entry is A (absolute, waste is hazardous regardless of concentration of dangerous substance present), or M (mirror, waste is hazardous only if concentration threshold or property range for dangerous substance is exceeded). See *Appendix 2*.

Appendix 2 Hazardous Properties

HP1	"Explosive": waste which is capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic waste, explosive organic peroxide waste and explosive self-reactive waste is included.
HP2	“Oxidising": waste which may, generally by providing oxygen, cause or contribute to the combustion of other materials.
HP3	“Flammable”: • Flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oil’s having a flash point > 55°C and ≤ 75°C; • Flammable pyrophoric liquid and solid waste: solid or liquid waste which, even in small quantities, is liable to ignite within five minutes after coming into contact with air; • Flammable solid waste: solid waste which is readily combustible or may cause or contribute to fire through friction; • Flammable gaseous waste: gaseous waste which is flammable in air at 20°C and a standard pressure of 101.3 kpa; • Water reactive waste: waste which, in contact with water, emits flammable gases in dangerous quantities; • Other flammable waste: flammable aerosols, flammable self-heating waste, flammable organic peroxides and flammable self-reactive waste.
HP4	"Irritant": waste which on application can cause skin irritation or damage to the eye.
HP5	"Specific Target Organ Toxicity/ Aspiration Hazard": waste which can cause specific target organ toxicity either from a single or repeated exposure, or which cause acute toxic effects following aspiration.
HP6	"Acute Toxicity": waste which can cause acute toxic effects following oral or dermal administration, or inhalation exposure.
HP7	"Carcinogenic": waste which induces cancer or increases its incidence.
HP8	"Corrosive": waste which on application can cause skin corrosion.
HP9	"Infectious": substances containing viable micro-organisms or their toxins which are known or reliably believed to cause disease in man or other living organisms.
HP10	"Toxic For Reproduction": waste which has adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring.
HP11	"Mutagenic": waste which may cause a mutation, which is a permanent change in the amount or structure of the genetic material in a cell.
HP12	“Release of Acute Toxic Gas”: waste which releases acute toxic gases (Acute Tox. 1, 2 or 3) in contact with water or an acid.
HP13	“Sensitising”: waste which contains one or more substances known to cause sensitising effects to the skin or the respiratory organs.
HP14	"Ecotoxic": waste which presents or may present immediate or delayed risks for one or more sectors of the environment.
HP15	“Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste”: waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste.
POP	“Persistent Organic Pollutants”: Wastes containing polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF), DDT (1,1,1-trichloro-2,2-bis (4-chlorophenyl)ethane), chlordane, hexachlorocyclohexanes (including lindane), dieldrin, endrin, heptachlor, hexaclorobenzene, chlordecone, aldrine, pentachlorobenzene, mirex, toxaphene hexabromobiphenyl and/or PCB.

Appendix 3 CLP Regulations Hazard Statements

Hazard Statements - Physical

H200 Unstable explosive.
H201 Explosive; mass explosion hazard
H202 Explosive; severe projection hazard.
H203 Explosive; fire, blast or projection hazard.
H204 Fire or projection hazard.
H205 May mass explode in fire.
H220 Extremely flammable gas.
H221 Flammable gas.
H222 Extremely flammable aerosol.
H223 Flammable material.
H224 Extremely flammable liquid and vapour.
H225 Highly flammable liquid and vapour.
H226 Flammable liquid and vapour.
H228 Flammable solid.
H240 Heating may cause an explosion.
H241 Heating may cause a fire or explosion.
H242 Heating may cause a fire.
H250 Catches fire spontaneously if exposed to air.
H251 Self-heating; may catch fire.
H252 Self-heating in large quantities; may catch fire.
H260 In contact with water releases flammable gases which may ignite spontaneously.
H261 In contact with water releases flammable gas.
H270 May cause or intensify fire; oxidizer.
H271 May cause fire or explosion; strong oxidizer.
H272 May intensify fire; oxidizer.
H280 Contains gas under pressure; may explode if heated.
H281 Contains refrigerated gas; may cause cryogenic burns or injury.
H290 May be corrosive to metals.

Hazard Statements - Health

H300 Fatal if swallowed.
H301 Toxic if swallowed.
H302 Harmful if swallowed.
H304 May be fatal if swallowed and enters airways.
H310 Fatal in contact with skin.
H311 Toxic in contact with skin.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H330 Fatal if inhaled.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

H340 May cause genetic defects state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H341 Suspected of causing genetic defects state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H350 May cause cancer state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H350i May cause cancer by inhalation.
H351 Suspected of causing cancer state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H360 May damage fertility or the unborn child state specific effect if known, state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H360F May damage fertility.
H360D May damage the unborn child.
H360FD May damage fertility. May damage the unborn child.
H360Fd May damage fertility. Suspected of damaging the unborn child.
H360Df May damage the unborn child. Suspected of damaging fertility.
H361 Suspected of damaging fertility or the unborn child state specific effect if known, state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H361f Suspected of damaging fertility.
H361d Suspected of damaging the unborn child.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
H362 May cause harm to breast-fed children.
H370 Causes damage to organs state specific effect if known, state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H371 May cause damage to organs state specific effect if known, state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H372 Causes damage to organs or state all organs affected, if known through prolonged or repeated exposure state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.
H373 May cause damage to organs or state all organs affected, if known through prolonged or repeated exposure state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard.

Hazard Statements - Environmental

H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.
H413 May cause long lasting harmful effects to aquatic life.

Supplemental Hazard Information (EU hazard statements)

EUH 001 Explosive when dry.
EUH 006 Explosive with or without contact with air.
EUH 014 Reacts violently with water.
EUH 018 In use may form flammable/explosive vapour-air mixture.
EUH 019 May form explosive peroxides.
EUH 044 Risk of explosion if heated under confinement.
EUH 029 Contact with water liberates toxic gas.
EUH 031 Contact with acids liberates toxic gas.
EUH 032 Contact with acids liberates very toxic gas.
EUH 066 Repeated exposure may cause skin dryness or cracking.

EUH 070 Toxic by eye contact.
EUH 071 Corrosive to the respiratory tract.
EUH 059 Hazardous to the ozone layer.
EUH 201/ Contains lead. Should not be used on surfaces liable to be chewed or sucked by children.
201A Warning! Contains lead.
EUH 202 Cyanoacrylate. Danger. Bonds skin and eyes in seconds. Keep out of the reach of children.
EUH 203 Contains chromium (VI). May produce an allergic reaction.
EUH 204 Contains isocyanates. May produce an allergic reaction.
EUH 205 Contains epoxy constituents. May produce an allergic reaction.
EUH 206 Warning! Do not use together with other products. May release dangerous gases (chlorine).
EUH 207 Warning! Contains cadmium. Dangerous fumes are formed during use. See information supplied by the manufacturer. Comply with the safety instructions.
EUH 208 Contains name of sensitising substance. May produce an allergic reaction.
EUH 209 Can become highly flammable in use.
EUH 209A Can become flammable in use.
EUH 210 Safety data sheet available on request.
EUH 401 To avoid risks to human health and the environment, comply with the instructions for use.

UNIVERSITY OF BIRMINGHAM
Edgbaston, Birmingham,
B15 2TT, United Kingdom
www.birmingham.ac.uk

Appendix 4 Particular Cases

The following guidance is based on that in Environment Agency Technical guides. Many wastes previously considered non-hazardous because of the small quantity of hazardous substance present or because of the dilution effect when mixed with non-hazardous waste are now identified as hazardous waste under the new legislation.

Fridges and freezers

Old fridges and freezers are likely to have CFCs as refrigerant. CFCs are ozone depleting substances, R59, and therefore classified HP14. Refrigerators and freezers containing CFCs do not have a specific entry in the List of Wastes. However, they can be accommodated by a more general entry relating to discarded electrical equipment in chapter 20 of the list:

- 20 Municipal Wastes (Household waste and similar commercial, industrial and institutional wastes) including separately collected fractions.

The appropriate code in this chapter for discarded fridges and freezers containing CFCs is:

- 20 01 23* discarded equipment containing chlorofluorocarbons.

This is a mirror entry. However, fridges and freezers will easily exceed the threshold concentration of 0.1% for R59 substances.

PCB wastes

A specific entry for transformers and capacitors containing PCBs is found in chapter 16 of the List of Wastes, under the sub-heading:

- 16 02 Wastes from electrical and electronic equipment.

The appropriate code is:

- 16 02 09 transformers and capacitors containing PCBs.

This is a mirror entry and the threshold concentration of PCBs for HP14 is 0.005%.

Old fluorescent light fittings should be inspected for PCB capacitors. If the capacitor is removed it will be hazardous waste, classified as above and the fitting will then be non-hazardous. If the PCB containing capacitor is not removed the fitting will be classified as under the same sub-heading as above but with the code:

- 16 02 10 discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09.

This also is a mirror entry and the threshold concentration of PCBs for HP14 is 0.005%.

Fluorescent light tubes

Fluorescent tubes are treated differently under the new Hazardous Waste Regulations. All fluorescent tubes, from the large strip-lights to the smaller energy saving bulbs, are believed to contain mercury in varying quantities. The List of Wastes identifies discarded fluorescent tubes as a hazardous waste without recourse to analysis. The specific entry in the Hazardous waste list for a discarded fluorescent tube is found in chapter 20 of the List of Wastes:

- 20 Municipal Wastes (Household waste and similar commercial, industrial and institutional wastes) including separately collected fractions.

The appropriate code in this chapter for a single or a number of separately collected fluorescent tubes is:

- 20 01 21* fluorescent tubes and other mercury-containing waste.

This is a so-called absolute entry, which means that it is hazardous waste regardless of the concentration of mercury. Mercury is classified as a dangerous substance and has the following hazard statements:

- H330 Fatal if inhaled,
- H372 Causes damage to organs through prolonged or repeated exposure,
- H360D May cause damage to the unborn child,
- H400/H410 Very toxic to aquatic life, with long lasting effects.

These hazard statements relate to hazards HP6 acute toxic, HP10 toxic for reproduction and HP14 ecotoxic, respectively. As the mercury is present in fluorescent tubes in elemental form, they will also possess these hazards HP6, HP10 and HP14.

Sodium lamps

There are two types of sodium lamps:

- Low pressure lamps – which contain sodium only,
- High pressure lamps - which contain sodium and mercury.

Sodium lamps do not have a specific entry in the List of Wastes. However, they can be accommodated by a more general entry relating to discarded electrical equipment in chapter 16 of the list. Chapter 16 of the list is a 'catch-all' chapter that relates to wastes that are not identified elsewhere in the list. Waste electrical and electronic equipment is captured in the sub heading:

- 16 02 Wastes from electrical and electronic equipment.

The appropriate List of Wastes code is:

- 16 02 13* discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12; or
- 16 02 14 discarded equipment other than those mentioned in 16 02 09 to 16 02 13.

Such wastes are called "mirror" entries and require an assessment to determine which entry is appropriate. If the waste contains hazardous component(s) then the waste is hazardous and the entry with the asterisk is the correct code. If the waste does not contain a hazardous component(s) it is not hazardous and the alternative entry is appropriate. The assessment of the hazardous component(s) is as follows:

Low-pressure sodium lamps contain a component that contains sodium in its elemental form (concentration does not apply). Sodium is classified as a dangerous substance. It has been classified with the following hazard statements:

- H260 In contact with water releases flammable gases which may ignite spontaneously,
- H314 Causes severe skin burns and eye damage burns.

These hazard statements relate to hazards HP3(5) flammable and HP8 corrosive. The whole lamp is therefore hazardous by virtue of these two hazardous properties. The appropriate List of Wastes code is:

- 16 02 13* discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12.

High-pressure sodium lamps contain both mercury and sodium, both in elemental form (concentration does not apply). Mercury is classified as a dangerous substance and has the following hazard statements:

- H330 Fatal if inhaled,
- H372 Causes damage to organs through prolonged or repeated exposure,

- H360D May cause damage to the unborn child,
- H400/H410 Very toxic to aquatic life, with long lasting effects.

These hazard statements relate to hazards HP6 acute toxic, HP10 toxic for reproduction and HP14 ecotoxic, respectively. As the mercury is present in fluorescent tubes in elemental form, they will also possess these hazards HP6, HP10 and HP14. The sodium contained in the high-pressure lamp will have the same hazard statements and hazards as described above for low-pressure lamps. So the component(s) in the lamp which contains sodium and mercury is hazardous by virtue of hazardous properties HP3, HP6, H8, HP10 and HP14. High pressure sodium lamps are captured in the sub heading:

- 16 02 Wastes from electrical and electronic equipment.

The appropriate List of Wastes code being:

- 16 02 13* discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12.

Cathode-Ray tubes (televisions, computer monitors, etc.)

Cathode-Ray Tubes (CRTs) are components of electronic equipment that convert electronic signals into visual displays. They are found in computer monitors, televisions and industrial equipment such as oscilloscopes and medical imaging equipment. They largely comprise a sealed evacuated tube made up of differing glass types. The screen consists of glass containing heavy metals such as lead and barium, and a phosphor coating onto which a beam of electrons is projected to form the image. The sides of the tube have a conductive coating to absorb excess electrons.

CRTs from households

A television with a CRT collected separately from a household, should be coded under chapter 20 of the List of Wastes:

- 20 municipal Wastes (Household waste and similar commercial, industrial and institutional wastes) including separately collected fractions.

The appropriate entry is:

- 20 01 35* discarded equipment containing hazardous components other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components.

This entry is a ‘mirror entry’ and normally assessment is needed to determine the appropriate hazard and threshold. However a footnote to this entry states:

- ‘Hazardous components from electrical and electronic equipment may include accumulators and batteries mentioned in 16 06 and marked as hazardous, mercury switches, glass from cathode ray tubes and other activated glass, etc.’

Therefore a CRT is already identified as a component with specific reference to hazardous properties. Further consideration is unnecessary.

Other electronic equipment not from households

These CRTs are classified under chapter 16: Wastes from electrical and electronic equipment the appropriate entry is:

- 16 02 13* discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12.

A similar footnote to that for chapter 20 also refers to CRTs and other activated glass as a hazardous component. If a CRT is removed from equipment then it would be coded as:

- 16 02 15* hazardous components removed from discarded equipment.

This is an "absolute" entry and is always a hazardous waste without the need for assessment.

Batteries

There are various types of battery: lead acid, non-rechargeable, rechargeable and primary button cells. The non-rechargeable, which includes alkaline manganese, zinc carbon and zinc chloride, are not considered hazardous waste.

There is a specific, absolute entry for batteries that are hazardous waste in chapter 20 of the List of Wastes:

- 20 01 33* batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries;
- 16 06 batteries and accumulators;
- 16 06 01* lead batteries.

Lead-acid batteries comprise sulphuric acid electrolyte, lead, lead oxide and lead sulphate on the plates. Lead acid batteries have an absolute entry in the List of Wastes and therefore, are hazardous waste regardless of concentration of components. The hazardous properties of the components are HP5 STOT, HP8 corrosive, HP10 toxic for reproduction and HP14 ecotoxic.

- 16 06 02* Ni-Cd batteries Nickel/Cadmium batteries contain cadmium hydroxide (8%), nickel (20%), nickel hydroxide (6.5%) and potassium hydroxide (8%). However, nickel cadmium batteries have an absolute entry in the List of Wastes and therefore, are hazardous waste regardless of concentration of components. The hazardous properties of the components are HP5 STOT, HP7 carcinogenic, HP8 corrosive and HP14 ecotoxic.
- 16 06 03* mercury-containing batteries. Mercury containing batteries have an absolute entry in the List of Wastes and therefore, are hazardous waste regardless of the concentration of mercury. The hazardous properties are H6 toxic, HP10 toxic for reproduction and H14 ecotoxic.

N.B. These are all absolute entries.

Oils and wastes containing oil (excluding edible oils and pure biodiesel)

Waste oil

Waste mineral oils

All waste oils such as fuel oil, diesel, biodiesel, or lubricating oils, *etc.* are legally classified as a hazardous waste, under absolute hazardous entries in the List of Wastes. The only two exceptions to this rule are edible oil and in certain circumstances some biodiesel. This rule applies to all types of oil regardless of composition, hazardous properties and source. This means that even waste oil possessing no hazardous properties must legally be classified as a hazardous waste.

Oils are listed in chapters 12 and 13 of the List of Wastes, *e.g.*, 12 01 for machining oils, 13 01 for hydraulic oils, and 13 02 for engine, gear and lubricating oils.

The hazardous properties (HP number), if any, of the oil must be assessed and entered on the hazardous waste form. The hazard statement numbers can be identified from the substances classification on their material safety data sheet and then using the flow diagrams in this document.

Waste oils are generally considered to possess the following hazardous properties; HP5 harmful, HP7 carcinogenic and HP14 ecotoxic. Certain oils possess other hazardous properties such as unleaded petrol (HP3, HP4, HP5, HP7, HP10, HP14).

Wastes containing or contaminated with oil

The hazardous properties of wastes contaminated with or containing oils need to be determined to assess whether it is hazardous waste or not.

If the contaminant is known then the hazardous properties can be identified from the substances classification on their material safety data sheet and then using the flow diagrams in this document.

Where the identity of the oil can only be identified down to a petroleum group (*i.e.* the contaminant is known to be diesel but the specific type/brand is unknown) then the classification of that petroleum group should be used in the assessment.

Petroleum Group							
Petrol (Gasoline)		**Diesel**		**Heavy/Residual Fuel Oils**		**Crude Oils**	
Flam. Liq 1	H224	Flam. Liq. 3	H226	Muta. 1B	H340	Flam. Liq, 2	H225
Skin Irrit.2	H315	Skin Irrit. 2	H315	Carc. 1B	H350	Carc. 1B	H350
Muta. 1B	H340	Acute Tox. 4	H332	Acute Tox. 4	H332	Eye Irrit. 2	H319
Carc. 1B	H350	Carc. 2	H351	Repr. 2	H361d	Asp.Tox. 1	H304
Repr. 2	H361d	Asp.Tox. 1	H304	STOT RE 2	H373	STOT RE2	H373
STOT SE3	H336	STOT RE 2	H373	Aquatic Chronic 2	H411	STOT SE3	H336
Asp. Tox.1	H304	Aquatic Chronic 2	H411			Aquatic Chronic 2	H411
Aquatic Chronic 2	H411						

Further advice where the petroleum group is not known can be found in the Environment Agency WM3 guidance or from Safety Services.

There are a number of references to wastes containing or contaminated with oil, for example, chapters 15 and 17 of the List of Wastes.

15 - waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified:

- 15 02 absorbents, filter materials, wiping cloths and protective clothing,
    - 15 02 02* absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances.

17 - construction and demolition wastes (including excavated soil from contaminated sites):

- 17 04 metals (including their alloys),
    - 17 04 09* metal waste contaminated with dangerous substances,
    - 17 04 10* cables containing oil, coal tar and other dangerous substances,
- 17 05 soil (including excavated soil from contaminated sites), stones and dredging spoil,
    - 17 05 03* soil and stones containing dangerous substances.

Asbestos

There are several different types of asbestos which are part of either the amphibole or serpentine mineral groups. Amphibole asbestos, which includes crocidolite – 'blue asbestos' and amosite - 'brown asbestos', may cause cancer such as mesothelioma if the fibres are inhaled. Asbestos that has been manufactured into useful materials can only be identified under a microscope.

Asbestos products have been used in many building applications due to their thermal insulation, chemical and thermal stability, and high tensile strength. Most common applications include moulded thermal lagging around pipes and boilers, sprayed asbestos fire protection and insulation panels and ducts. Cement bonded asbestos sheets used as roofing, gutters and water tanks are also common. Asbestos materials were used extensively between the 1950's and mid-1980 and so may be present in many buildings built or renovated during this period.

There are 5 chapters within the List of Wastes that include asbestos and asbestos contaminated wastes:

Chapter 6 of the List of Wastes provides the following codes:

- 06 07 wastes from the MFSU of halogens and halogen chemical processes,
    - 06 07 01* waste containing asbestos from electrolysis.

This entry is a 'mirror entry' and normally the waste will need to be assessed to determine if the 0.1% w/w hazard threshold for asbestos is exceeded. If the threshold is exceeded, the waste will be hazardous.

- 06 13 wastes from inorganic chemical processes not otherwise specified,
    - 06 13 04* waste from asbestos processing.

This entry is an absolute entry and as such the waste is hazardous. No further assessment is required.

Chapter 10 of the List of Wastes provides the following code:

- 10 13 wastes from the manufacture of cement, lime and plaster and articles and products made from them'
    - 10 13 09* waste from asbestos-cement manufacture.

This entry is a 'mirror entry' and normally the waste will need to be assessed to determine if the 0.1% w/w hazard threshold for asbestos is exceeded. If the threshold is exceeded, the waste will be hazardous.

Chapter 15 of the List of Wastes provides the following code:

- 15 01 packaging (including separately collected municipal packaging waste).
    - 15 01 11* metallic packaging containing a dangerous solid porous matrix (for example asbestos), including empty pressure containers.

This entry is a 'mirror entry' and normally the waste will need to be assessed to determine if the 0.1% w/w hazard threshold for asbestos is exceeded. All hazardous properties however must be considered and so this waste may be hazardous by virtue of another hazardous property.

Chapter 16 of the List of Wastes provides the following codes:

- 16 01 end of life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end of life vehicles and vehicle maintenance (except 13, 14, 1606 and 1608),
    - 16 01 11* brake pads containing asbestos.
- 16 02 waste from electrical and electronic equipment,
    - 16 02 12* discarded equipment containing free asbestos.

Both of these are 'mirror entries' and normally these wastes will need to be assessed to determine if the 0.1% w/w hazard threshold for asbestos is exceeded. If the threshold is exceeded, the waste will be hazardous.

Chapter 17 of the List of Wastes provides the following codes:

- 17 05 soil (including excavated soil from contaminated sites), stones and dredging spoil.
    - 17 05 03* soils and stones containing dangerous substances.

This entry is a ‘mirror entry’ and normally the waste will need to be assessed to determine if the 0.1% w/w hazard threshold for asbestos is exceeded. All hazardous properties however must be considered and so this waste may be hazardous by virtue of another hazardous property.

- 1706 insulation materials and asbestos-containing construction materials.
    - 17 06 01* insulation materials containing asbestos.
    - 17 06 05* construction materials containing asbestos.

These two entries are ‘mirror entries’ and normally these wastes will need to be assessed to determine if the 0.1% w/w hazard threshold for asbestos is exceeded. If the threshold is exceeded, the waste will be hazardous.