Swansea University
Prifysgol Abertawe

Swansea University

Waste Management Guidance Note WMGN20 Chemical Waste Classification Guidance

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Waste Management Guidance Note WMGN20 Chemical Waste Classification and Storage Guidance	
Location Generated	University-wide
EWC	Various
Type	Chemical and Hazardous Wastes
Disposal Method	Specialist contractor
Receptacle type	Various

Duty Of Care

To ensure the that the University complies with its Duty of Care, as set out in section 34 of the Environment Protection Act 1990, the University must ensure that all waste is stored in such a way as to prevent escape or leakage whilst on site or in storage.

- Waste is only kept, treated, deposited or disposed of in accordance with a waste management licence or other authorisation
- Waste does not escape from the control of the holder
- Waste is only transferred to authorised persons such as registered waste carriers or licensed disposal operations permitted to accept that type of waste
- All transfers / movements of the waste are accompanied by an adequate written description of the waste which will allow waste to be identified and subsequently handled correctly

The University must act to keep stored waste safe against:

- corrosion or wear of waste containers;
- accidental spilling or leaking or inadvertent leaching from waste unprotected from rainfall;
- accident or weather breaking contained waste open and allowing it to escape;
- waste blowing away or falling while stored or transported; and
- scavenging of waste by vandals, thieves, children, trespassers or animals

This Duty of Care begins with the person/s who produced the waste and it cannot be delegated to others. This duty is legally enforceable and breaches can lead to criminal prosecution of individuals and the University. As a result, the University (its staff and students) must make every effort to categorise, segregate and contain waste according to standards imposed by current legislation.

Responsibilities

PSUs/Faculties:

- Must ensure they have a system in place for **Chemical Risk Assessment** of hazardous substances and that assessments identify the correct means of disposal.
- Must ensure that chemicals are stored in suitable containers and are correctly and fully labelled for collection.
- Take chemical waste to the appropriate chemical waste store for disposal
- Must send fully completed chemical waste disposal request forms to Sustainability prior to taking chemical waste to the storage area. A paper copy of the form should be provided when taking the chemical waste to the store.

University Staff and Students are responsible for:

- Minimising raw material consumption and waste production when working, through careful work planning
- Reusing and recycling materials wherever practicable
- Identifying the intrinsic hazards of the waste produced, identifying the appropriate waste disposal route and disposing of waste accordingly
- Segregating, containing and appropriately labelling waste in order to avoid problems of mixing incompatible wastes and to avoid spreading hazards in the work area
- Bringing to the attention of the Faculty/PSU Health & Safety Lead and/or Environmental Officer or other nominated person(s) any non-conformance in relation to this policy / departmental waste management procedures
- Ensuring that ALL unwanted chemicals, samples, accumulations of materials etc, including those in cupboards, fridges and freezers, are disposed of correctly at the end of their studies, project(s) or employment with the University

Sustainability;

- Providing guidance on waste classification
- Management of chemical waste disposal on behalf of the University via an authorised contractor(s)
- Maintain central copies of WTN and HWCN
- Keeping abreast of developments in UK and EU waste and environmental management legislation
- Timely and appropriate communication of classification and storage advice and requirements

Waste Classification for disposal

To dispose of chemical waste via the University Chemical Waste Store, the wastes' primary Hazardous Property (HP) must be identified on the University's Chemical Waste Disposal Form which can be found **here** under the 'Waste Management Guidance Note' section.

To aid with the assessment and classification of waste to determine its Hazardous Property (HP) the following steps should be taken;

1. Determine the chemical composition of the waste

Information on the composition of waste can be found on the manufacturers Safety Data Sheet (SDS) or held on the appropriate Chemical Risk Assessment / COSHH Assessments

A record **must** be kept of the content of all experiment chemical solutions as unknown chemicals may pose a risk and are costly to dispose of as they must be tested to determine composition to enable classification.

2. Assess the Hazardous Properties (HP) of the waste

Numbered HP1 to HP15 there are 3 methods in which to calculate if a waste displays a hazardous property;

a. Calculation: Referring to a concentration limit for a **hazard statement code (s)**,
b. Testing: To prove whether a particular hazardous property is present or not (typically used for the physical properties – explosive, oxidising, and flammable), or
c. The safety data sheet: If the waste is a manufactured product whose composition **has not changed**, the SDS for that specific product can be used

If the composition has not changed and a SDS can be used, the following steps can be taken to complete the Chemical Waste Disposal Form.

1. Identify the Hazardous Statement on the SDS

Safety Data Sheet

Product name :	**PETROSOL D 24/27**	Date of issue: 28/03/2012.
Cod. CEPSA :	32272	Version: 3

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : UVCB

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]
Asp. Tox. 1, H304

Classification according to Directive 67/548/EEC [DSD]
Xn; R65
R66

See Section 16 for the full text of the R phrases or H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H304 May be fatal if swallowed and enters airways.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention :

Response : IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients : Hydrocarbons, C12-C16, isoalkanes, cyclics, <2% aromatics

Supplemental label elements : Repeated exposure may cause skin dryness or cracking.

2. Convert the Hazardous Statement into the Hazardous Property HP [1]

Hazard statement	Description	Hazard Class and Category In Table 3.1 of CLP		Threshold[2]	Hazardous Property
	Heating may cause a fire.	Self-React.	C, D, E, F	See Appendix C3	
		Org. Perox.	C, D, E, F		
H250	Catches fire spontaneously if exposed to air.	Pyr. Liq.	1	See Appendix C3	HP 3
		Pyr. Sol.	1		
H251	Self-heating; may catch fire.	Self-heat.	1	See Appendix C3	HP 3
H252	Self-heating in large quantities; may catch fire.	Self-heat.	2	See Appendix C3	HP 3
H260	In contact with water releases flammable gases which may ignite spontaneously.	Water-react.	1	See Appendix C3	HP 3
H261	In contact with water releases flammable gases.	Water-react.	2	See Appendix C3	HP 3
H270	May cause or intensify fire; oxidiser.	Ox. Gas	1	See Appendix C2	HP 2
H271	May cause fire or explosion; strong oxidiser.	Ox. Sol.	1	See Appendix C2	HP 2
H272	May intensify fire; oxidiser.	Ox. Sol.	2, 3	See Appendix C2	HP 2
H280	Contains gas under pressure; may explode if heated.	n/a	n/a	n/a	n/a
H281	Contains refrigerated gas; may cause cryogenic burns or injury.	n/a	n/a	n/a	n/a
H290	May be corrosive to metals.	Met. Corr.	1	n/a	n/a
H300	Fatal if swallowed.	Acute Tox.	1	Sum (0.1%)	HP 6
		Acute Tox.	2	Sum (0.25%)	HP 6
H301	Toxic if swallowed.	Acute Tox.	3	Sum (5%)	HP 6
H302	Harmful if swallowed.	Acute Tox.	4	Sum (25%)	HP 6
H304	May be fatal if swallowed and enters airways.	Asp. Tox.	1	Sum (10%)	HP 6

[1] WM3 Waste Technical Guidance P13

Hazard Statement

These are standardised phrases and alpha-numerical codes used to describe particular hazards (similar to Risk Phrases). The coding relates to a primary hazard, followed by a two digit sequential code and descriptive text.

Hazardous Statement	Hazardous Property	WM3 Appendix C - HP Assessment
Physical Hazards: **H2** ## e.g. H221 Flammable gas.	HP1 Explosive HP2 Oxidiser HP3 Flammable	Page C3 Page C7 Page C9
Health Hazards: **H3** ## e.g. H312 Harmful in contact with skin	HP4 Irritant HP5 Specific Target Organ/ Aspiration Toxicity HP6 Acute Toxicity HP7 Carcinogenic HP8 Corrosive HP9 Infectious (Clinical Waste) HP10 Toxic for reproduction HP11 Mutagenic HP12 Acute Toxic Gas HP13 Sensitising	Page C15 Page C19 Page C23 Page C27 Page C29 Page C33 (Not accepted in Chemical waste store) Page C33 Page C37 Page 41 (Not accepted in Chemical waste store) Page C45
Environmental: **H4** ## e.g. H401 Toxic to aquatic life	HP14 Ecotoxic	Page C47

The system also includes two signal words, which appear on chemical labels to relate the severity of the hazards to the user.

- Warning: indicates a less severe hazard
- Danger: indicates a more severe hazard

3. Record the Hazardous Property (HP) of the Waste on the Chemical Waste Disposal Form

CHEMICAL WASTE DISPOSAL REQUEST FORM
ONCE COMPLETE PLEASE SEND TO ESTATES-WASTE@SWANSEA.AC.UK

Prifysgol Abertawe Swansea University

Faculty:		**Faculty / Dept:**	
Contact name:		**Ext No:**	
Date:		**Laboratory:**	

Substance Name (mandatory filed)	**CAS number** *(if applicable)*	**Quartzy ID number**	**Description of container** e.g. winchester bottle (mandatory field)	**State** (Liquid, solid, powder etc.) (mandatory field)	**Weight/ Volume** (kg/ ml) (mandatory field)	**Quantity / number of item** (mandatory field)	**Laboratory/ Location disposing of** (Building & room no) (mandatory field)	**Hazard Property (s) (HP1-HP15) e.g. HP3 - Flammable See SDS Safety Data Sheet** (mandatory field)	**Is the container fully labelled?** (mandatory field)	**Have you provided the SDS for the substance** (if appropriate)	**Storage requirements (from SDS Safety Data Sheet)**	**Date of disposal**

To ensure safe storage, if the waste's Hazardous Property is HP4 or HP8 (Category 1A 1B 1C) it must be identified on the Chemical Waste Disposal form in the 'Substance Name' section if the waste is;

- Corrosive; Acid – Mineral Inorganic
- Corrosive; Acid – organic
- Corrosive; Acid – organic base

Once the Chemical Waste Disposal Form has been completed, with all mandatory fields complete, it must be emailed to estates-waste@swansea.ac.uk along with a copy of all the listed wastes' SDS for assessment. An example of a correctly completed form is in Appendix A.

If the composition of the waste is unknown then WM3 Waste Classification Technical Guidance, under the guidance of the Sustainability team, must be consulted. If the HP cannot be identified wastes must be tested at cost to the Faculty/PSU.

It is the producers responsibility to classify their chemical waste, however guidance will be provided by contacting estates-waste@swansea.ac.uk

If a European Waste Code (EWC) for waste disposal is required by any Faculties or PSUs, please consult estates-waste@swansea.ac.uk.

Waste Segregation and Safe Storage According to Hazard Classification

Poor or incorrect chemical storage practices can lead to inadvertent reactions between incompatible materials with the potential to cause harm, fire or even explosions. All chemicals should be stored in such a manner as to prevent incompatible materials from being accidentally mixed together in the event of the breakage of one or more containers in the storage area, or to prevent the formation and build-up of reactive vapours.

Chemicals should not be stored alphabetically unless they have first been separated into their hazard classes. There are no absolute rules on how many classes of chemicals should be segregated as the degree of segregation will depend upon the risk. However, isolation of chemicals into the basic hazard classes will eliminate most accidental adverse reactions that may occur due to breakages or leakages in storage areas.

The table Chemical Storage By Hazard Category[2] acts as a reference guide for chemical compatibility. However always consult the SDS (with relevant storage information transposed onto the Chemical Waste Disposal Form) and chemical risk assessment.

Chemical Storage By Hazard Category

Principle Container symbol		Flammable liquids	Halogenated Solvents	Acids – Mineral (inorganic)	Acids - Organic	Acids - Oxidising	Alkalis (bases)	Oxidisers	Highly toxic - inorganic	Organic bases	Water / Air reactive
	Flammable liquids	Methanol Toluene THF, Acetone									
	Halogenated Solvents		Chloroform Dichloromethane								
	Acids – Mineral (inorganic)			Hydrochloric acid Phosphoric acid Sulphuric acid							
	Acids - organic				Acetic acid Benzoic acid Formic acid						
	Acids - oxidising					Nitric acid [1] Sulphuric acid Perchloric acid					
	Alkalis (bases)						Sodium hydroxide Sodium carbonate				
	Oxidisers							Permanganates Perchlorates Selenium dioxide			
	Highly toxic - inorganic								Fluorine Chorine		
	Organic Bases[2]									Triethylamine Diethylamine triethanolamine	
	Water / Air reactive										Alkyl lithium LiAlH4

Key

	Can be stored together in same cabinet		The ideal is to store in a separate cabinet. If deviating from this, there is a requirement to justify why and add additional controls. These may be to store on a different shelf within the cabinet or utilise a secondary container as appropriate. **Consult the safety data sheet (SDS).**		Must not be stored together. **Check the safety data sheet.**

Further guidance on chemical storage please consult the Faculty H&S Lead/Environmental Officer.

[22] Table Chemical Storage by Hazard Category (Warwick.ac.uk)

Guidance on Waste Organic Solvent Classification

Organic solvents can be bulked up for waste disposal. However, some are incompatible with one another so it is necessary to collect in two separate categories**: Halogenated and Nonhalogenated.** This segregation is also necessary because halogenated substances require more extensive treatment in order to minimise environmental pollution during waste disposal.

All efforts should be made to record the composition of Halogenated and Non-halogenated waste to aid disposal. Composition should be captured as best as possible on the chemical waste disposal label placed on the external surface of the Winchesters, and on the Chemicals Waste Disposal Form for disposal.

Aqueous Solvent Waste

All efforts should be made to record the composition of aqueous waste to aid disposal. Composition should be captured as best as possible on the chemical waste disposal label placed on the Winchester, and on the Chemical Waste Disposal Form for disposal.

Chemical Waste Containers

Winchesters must be suitable for the type of waste being stored within, therefore the following guidelines should be followed:

- Glass Winchesters: may be used for most chemicals, but **not** hydrofluoric acid waste.
- Plastic Winchesters: suitable for acids and alkalis. However, do **not** use for aggressive solvents, or mixtures containing aggressive solvents.
- Containers/bottles designed for solids must **not** be used for liquids wastes.

The condition of all Winchesters and containers must be checked (responsibility of the waste producer) before disposal. Winchesters must **not** be overfilled. Winchesters should be filled only filled to the shoulder and **no** higher. Caps should not be over tightened, with Winchesters containing a highly or extremely flammable liquid (HP3) not being filled above 3/4 full.

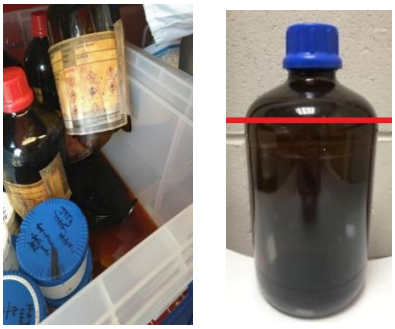

Figure 1 – Example of an incorrectly used Winchester and guide fill point

Disposal

Once the wastes primary hazardous property has been identified, please see **8.1.5 WMP Chemical Waste Store User Procedure** which can be found **here**.

For further guidance please contact Estates-Waste@Swansea.ac.uk

Forms & Labelling

All relevant forms, labels and further waste guidance can be found **here.**

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Appendix A
Example – Completed Chemical Waste Disposal Form

CHEMICAL WASTE DISPOSAL REQUEST FORM

ONCE COMPLETE PLEASE SEND TO ESTATES-WASTE@SWANSEA.AC.UK

Prifysgol Abertawe
Swansea University

Faculty:		**Faculty / Dept:**	
Contact name:		**Ext No:**	
Date:		**Laboratory:**	

Substance Name (mandatory filed)	**CAS number** *(if applicable)*	**Quartzy ID number**	**Description of container** e.g. winchester bottle (mandatory field)	**State** (Liquid, solid, powder etc.) (mandatory field)	**Weight/ Volume** (kg/ ml) (mandatory field)	**Quantity / number of item** (mandatory field)	**Laboratory/ Location disposing of** (Building & room no) (mandatory field)	**Hazard Property (s) (HP1-HP15) e.g. HP3 - Flammable See SDS Safety Data Sheet** (mandatory field)	**Is the container fully labelled?** (mandatory field)	**Have you provided the SDS for the substance** (if appropriate)	**Storage requirements (from SDS Safety Data Sheet)**	**Date of disposal**
Halogenated waste			Glass winchester bottle	liquid	2.5l	1	C06	H3-B, HP4, HP5, HP6	Yes	Yes		
Gloves/Foil/Wipes/Blue roll contaminated with IPA/Acetone/AZ photoresist			Red plastic bag	solids	3kg	3	ILS2 B06	HP3, HP4	Yes	Yes		