

Regulation hazardous waste University of Twente

1 Introduction

The collection of hazardous waste has been outsourced to SUEZ. The hazardous waste is collected directly by SUEZ from the parties offering waste and transported to a waste processor. This means that the hazardous waste is to be offered directly to the collector by the parties offering waste at a designated spot in the building.

The party offering waste has to ensure that the waste is correctly packed and labelled, and is put out on the spot agreed per building.

This scheme contains a description per waste flow and explains which packaging and labelling requirements have to be met. The necessary materials can be ordered through the waste contact person (see Annexe 1). The materials are supplied during SUEZ's weekly round.

2 What is hazardous waste?

The European waste list (EURAL) determines whether a waste substance is hazardous or not. In the course of the years in which the UT has disposed of its hazardous waste, thirty waste flows have been identified as regular hazardous waste within the UT. This scheme has been drawn up for these hazardous waste flows.

If waste flows are released within a faculty that is not included in this scheme, then the waste contact person can contact the Facility Department.

3 Waste contact person

Per building a waste contact person has been appointed who is responsible for the coordination and execution of the activities resulting from this scheme. The contact person can help in disposing of the hazardous waste. In addition, it is also possible to get information from the service desk of the Facility Department.

A list of the waste contact persons has been included in annexe 1.

4 Acceptance conditions Hazardous Substances University of Twente

- 1 These acceptance conditions are applicable to all instances of offering hazardous waste.
- 2 The hazardous waste is to be packed in standard UN coloured packaging. Deviating packaging may only be used in consultation with and after approval of the Facility Department.
- 3 The packaging is to be provided with the correct, legible, fully completed information and hazard labels.
- 4 The waste is to be packaged and labelled in accordance with the acceptance conditions and instructions of the regulation hazardous waste University of Twente and in accordance with the instructions of the collector.
- 5 If packaging is reused, the original labels are to have been removed or to have been made completely illegible and unrecognisable
- 6 The hazardous waste to be removed is collected each week on a fixed day and time (Thursday between 9.00 am and 1.00 pm).
- 7 During the transfer of hazardous waste the contact person waste is attainable.
- 8 The costs of collection and processing of the hazardous waste are passed on to the unit in question.

5 Classification Hazardous Waste Substances University of Twente

Within the University of Twente hazardous waste is divided into six main categories, which in turn are subdivided into different subgroups. These subgroups have been created on the basis of the waste flows of hazardous waste currently being produced and disposed. Each subgroup has to be collected and labelled separately, because each subgroup involves a different method of processing. When subgroups are combined this will result in the processing being less than optimal. This conflicts with the order of preference for removing waste substances as referred to in the Environmental Management Act: preference for prevention, reuse or recycling instead of burning or dumping.

In case of doubt, or new waste flows, you can contact the waste contact person of the faculty or service department or the Facility Department.

Table 1 presents an overview of the current waste flows at the UT, the used container and the transport label. Often the 5-litre cans PE will be used for liquid hazardous waste from the laboratories. None of the cans are allowed to contain solid substances or parts in connection with blockage during the combining of the waste. All packaging must be clean on the outside

For the different waste flows the following transport labels are relevant:

Transport labels:



3
Flammable
Liquid



4.1
Flammable
solid



6.1
poison
substances



6.2
Infectious
substances



8
Corrosive
substances



9 hazardous substances



hazardous to the environment

6 Separation of hazardous waste

The party offering the hazardous waste is to ensure that the hazardous waste as much as possible remains separated in the individual subgroups (see the overview on the next page) at the laboratory. This for reasons of safety and environmental hygiene, as well as from a financial perspective. Annexe 2 includes an overview of hazardous combinations.

Therefore, in principle waste from the same subgroup may be combined. Very occasionally waste items from the same category can react with one another. The department/chair group is to be alert to this and in such a case to always dispose of the waste in separate containers.

Table 1: Classification waste flows University of Twente

	Artikel number	Waste flow	Explanation	Container	Transport label (ADR) (see chapter 5)
1 Acidic and neutral inorganic waste products in solutions					
1.1	W.HW.S-00304	Various inorganic acids (diluted)	Acids such as sulphuric acid or hydrochloric acid	Can 5L UN	
2 Alkaline inorganic waste products in solutions					
2.1	W.HW.S-00026	Ammonia	Ammonium hydroxide (<25%)	Can 5L UN	
2.2	W.HW.S-00178	Various inorganic lyes (diluted)	Lyes such as sodium hydroxide, potassium hydroxide, calcium hydroxide.	Can 5L UN	
3 Non-halogenated organic waste products					
3.1	W.HW.S-00213	Organic liquids, non-halogenated	Solutions of various organic liquids: acetone, ethanol, hexane	Can 5L UN	
3.2	W.HW.S-00204	Materials polluted with oil	Absorbing materials polluted with oil, gloves polluted with oil, cleaning cloths, no oil filters.	Drum 60L	
3.3	W.HW.C-09799	Consumed oil	(Consumed) engine oil, lubricating oil, system oil, not halogenated.	Can 5L UN	
3.4	W.HW.S-00133	Low calorific liquids	Watery solutions polluted with organic liquids (<25% and halogenated< 0,1%)	Can 5L UN	
3.5	W.HW.S-00290	Paint residues	All types of paints that are stored in small packaging, e.g. tin cans or plastic buckets.		 
4 Halogenated organic waste products					

	Artikel number	Waste flow	Explanation	Container	Transport label (ADR) (see chapter 5)
4.1	W.HW.C-09785	Halogenated solvents	Various organic liquids in which the percentage of halogens is > 0,1%) such as chloroform, dichloromethane, trichloorethene.	Can 5L UN	
5 Waste containing heavy metals and special waste products					
5.1	W.HW.S-00180	Lead-acid batteries		Accubak	
5.2	W.HW.S-00132	Mercury containing objects	Objects that contain mercury such as mercury thermometers, mercury relays.		 
5.3	W.HW.S-00140	Laboratory chemicals with packing list	Superfluous liquid and solid chemicals that are packed in properly sealed packaging. Classified according to the ADR-category.	Drum 60L	Depending on the ADR-category of the chemicals
5.4	W.HW.S-00072	Filtermats	Filters polluted with chemicals residues/dust	Drum 60L	
5.5	W.HW.S-00335	Different object contaminated with chemicals residues	Weighing papers, tissues ed. contaminated with chemicals residues	Drum 60L	
5.6	W.HW.S-00172	Glues, Resins plastic/metal mixed	Non-cured glue, resins and polymers		
5.7	W.HW.S-00032	Batteries (dry)	All types of batteries	Milieubox 30 L + binnendoos	
5.8	W.HW.S-00184	Medicins and cosmetics	Medicins in packing		
5.9	W.HW.S-00106	Small Hazardous Waste from offices (no	Waste from office environment, for example typ-ex, cartridges,	Milieubox 30 L + binnendoos	

	Artikel number	Waste flow	Explanation	Container	Transport label (ADR) (see chapter 5)
		batteries)	toner powder reservoirs.		
5.10	W.HW.S-00150	Fluorescent tubes	Fluorescent tubes (PL/SL)	TL box, black with lid	
5.11	W.HW.S-00145	Lamps, unsorted		Drum 60L	
5.12	W.HW.S-00261	Spray cans, mixed	Spray cans, maximum content 1000 ml	Drum 60L, special box	
5.13	W.HW.C-00522	Tonerpowder	Tonerpowder in bag	Drum 60L	
6 Waste products posing special risks					
6.1	W.HW.S-00254	Specific hospital waste (EURAL MENS - European Waste Substances List Human)	Waste from medical treatment of - or research involving - humans or animals with a risk of the presence of infectious substances, for example materials with blood, needle containers, agar plates, etc. Waste with a risk of infection, materials that have been in contact with (infectious) micro-organisms.	Specific hospital waste (EURAL MENS -European Waste Substances List Human)	
6.2	W.HW.S-00256	SZA (specific hospital waste), genetically modified organisms	Biological waste (cells, bacteria) and (potentially) infected materials (for example pipette tips, tissues, etc.) from laboratories with an ML-I or ML-II classification.	SZA (specific hospital waste), genetically modified organisms	
6.3	W.HW.C-05073	SZA (specific hospital waste, Eural 18.02.02 animals),	Carcasses, animal tissue	SZA (specific hospital waste, Eural 18.02.02 animals),	

	Artikel number	Waste flow	Explanation	Container	Transport label (ADR) (see chapter 5)
6.4	W.HW.S-00260	Needles	Needles in needlecontainer	SZA vat, 30/50 L bleu flat lid	
6.5	W.HW.S-00030	Asbestos containing material	Discarded equipment contaminated with asbestos		
6.6	W.HW.S-00264	Straalgrit	straalgrit	Drum 60L	

7 Labelling hazardous waste

All packaging of hazardous waste has to be labelled with labels obtained from SUEZ. There are specific labels for each waste flow and per building, which have a specific waste flow number. See example.

Afvalstroomnummer: 01CH8Y0DFA88 Omschrijving: Filtermatten, brandgevaarlijk	 Gevaar
Productcode W.HW.S-00072 EURALCode 150202* Orderdatum 01.01.2017 Ordernummer 4748130 / 0026	GEVARENAANDUIDINGEN/ VEILIGHEIDSAANBEVELINGEN H228 Ontvlambare vaste stof. P210 Verwijderd houden van warmte, hete oppervlakken, vonken, open vuur en andere ontstekingsbronnen. Niet roken. P240 Opslag- en opvangreservoir aarden. P241 Explosieveilige elektrische/ventilatie-/verlichtings-/...apparatuur gebruiken. P280 Beschermende handschoenen/beschermende kleding/oogbescherming/gelaatsbescherming dragen. P370+P378A In geval van brand: gebruik droog zand, droog bluspoeder of alcohol-resistent schuim.
Ontdoener / Plaats Universiteit Twente ENSCHEDA Plaatsingsadres: Carre gebouw 15 Drienerloaan 5 ENSCHEDA Bestemming SITA EcoService Veendam	
UN 1325	
Etiketten: 4.1	

8 Collection of hazardous waste at the laboratory

Waste containers are to have the correct label when in use. The label is to be filled in correctly and clearly. A waste container is preferably to be (re)filled in a fume cupboard. Turn the cap of the container after filling it. It is important that the waste substance is poured into the correct waste container (check the label), this in order to prevent undesirable reactions. In connection with leakage as a result of overpressure due to temperature fluctuations, the waste containers may only be filled up to a maximum of 90 %.

It is not permitted to discharge hazardous waste into the sewer. Very occasionally it is however permitted to flush diluted solutions of chemicals down the sink. However, this is only permitted for chemicals which are not harmful to the (aquatic) environment and moreover occur in low concentrations. This involves:

- diluted aqueous solutions (< 10mmol/l) of acids, bases, buffers and salts;
- aqueous solution of alcohols (<15% v/v), acetone and ethyl acetate (< 5% v/v).

It is not permitted to deliberately dilute solutions in order to meet the above criteria. Furthermore, the solutions may not contain any additions of other chemical substances. The degree of acidity (pH) of the solutions must lie between 6.5 and 9 in order not to incur any damage of the sewer. The concentration of acetone and ethyl acetate may not exceed 5% in connection with the possible risk of explosion by the accumulation of vapours in the sewer.

Pursuant to the permit under the Pollution of Surface Waters Act (WVO) granted to the UT, the following applies with respect to cleaning glassware and extractions:

- In cleaning chemically contaminated glassware only the 3rd fraction may be discharged down the sewer. The higher rinse fractions still contain concentrations of chemicals which are too high.
- The water fraction of extractions must always be discharged as hazardous waste, because the water fraction usually still contains too much solvent.

Clean chemicals bottles (rinsed and/or de-aerated bottles without residual chemicals) can be disposed of via the bottle bank. Glassware that is chemically contaminated must be disposed of as laboratory waste.

10 Storage of hazardous waste

Hazardous substances need to be stored in a storage space especially equipped for this purpose. Containers with hazardous waste are to be stored in accordance with the rules applicable for the chemicals which the waste is composed of. In general with respect to the storage of hazardous substances the packaging is to be placed in drain trays and compartmentalisation is to be applied: substances that react with one another may not be stored together.

The joint storage in one compartment is forbidden for, among other things, the following combinations:

- Acids and caustic solutions;
- Acids and chlorite and hypochlorite solutions;
- Nitric acid together with formic acid, acetic acid or formaldehyde solutions;
- Acids and cyanides;
- Acids and sulphides.

11 Transport of hazardous waste

Try to transport the waste as much as possible on a cart and in a drain tray along the corridor and in the lifts. Keep the transport of hazardous waste separate from the transport of persons. Use a goods lift if available. The following instructions are important in transporting hazardous waste:

- make sure before you transport the hazardous waste to the storage space that the cap of the waste containers is closed tightly. This way it is prevented that the person carrying out the transport, people in the corridors and people in the lift are exposed to toxic substances.
- never touch the containers without wearing protective gloves!
- never transport bulging containers; contact the (faculty) [health, safety and environment coordinator \(HSE\)](#).

12 Summery instructions for disposal of hazardous waste

- If you have hazardous waste, contact the waste contact person (annexe 1) in your building.
- Package and label the waste in accordance with this scheme.
- Any necessary materials can be ordered via the waste contact person.
- During the collection round the waste contact person is attainable during the transfer of the hazardous waste.
- The waste will only be weighed and collected if it meets the regulations.
- Each month the faculty / service department receives an invoice.
- Each building has a number of waste flow numbers, which it alone is allowed to use. In these numbers have been included all waste substances which the building has had regularly in the past period.
- If a building wishes to dispose of a new waste flow for which no waste flow number is present, this can be reported to the service desk of the Facility Department via the waste contact person. The collector will then be asked to provide a new waste flow number. Once this number is known, the hazardous waste can be disposed of.
- It is not allowed for the UT to change the 'notification form hazardous waste'.
- In case of questions about hazardous waste you can always contact the waste contact person in your building or the service desk of the Facility Department.

Annexe 1. Waste contact persons UT

<i>Building</i>	<i>name</i>
Carré	B. Dierink
Nanolab	S. Ooijman-Geerdink
Horst-complex (ET)	T. Klaver
Horst-complex (Zuidhorst/ Meander)	B. Dierink
Vrijhof	Servicedesk Vrijhof
Bastille	Servicedesk Bastille
Paviljoen (FB)	Servicedesk FB
Waaier	Servicedesk Carré
Zilverling	Servicedesk Carré
Cubicus	Servicedesk Cubicus
Spiegel	Servicedesk Spiegel
Ravelijn/Citadel	Servicedesk Ravelijn
Euros	L. van Hout
Sleutel	Receptie Sleutel
Linde	Receptie Linde (HCC)
Drienerburght	M. Schmand

The waste contact person is responsible for the coordination and execution of the activities resulting from the removal of hazardous waste. The contact person can help in disposing of the hazardous waste. In addition, it is also possible to get information from the service desk of the Facility Department (https://www.utwente.nl/fb/contact-info/contact_sd/)

Annexe 2. Hazardous combinations

Dangerous reactions with combinations of different chemicals

acetic acid	chromic acid
	nitric acid
	alcohols
	phenols
	perchloric acid
	peroxides
	permanganates
	ammonia
	chloroacetic acid
acetone	concentrated HNO ₃ +H ₂ SO ₄
	HNO ₃ +acetic acid
	hypobromite
	chloroform
	hydrogen peroxide
acetylene=ethyne	chlorine
	bromine
	copper
	fluorine
	silver
	mercury
	iodine
	Cu and Hg salts
	Ag salts in NH ₃
activated carbon	hypochlorite
	oxidizing agents
	ammonium nitrate
	chlorine monoxide
alkaline solution	zinc
aluminium powder	water
	chlorinated hydrocarbons (CO ₂) fire extinguisher
	halogens
	hydrocyanic acid (a.k.a. prussic acid)
	carbon monoxide
ammonia	mercury
	chlorine
	hypochlorite
	iodine
	bromine
	anhydrous hydrogen fluoride
ammonium nitrate	acids
	metal powders
	flammable liquids
	chlorates
	nitrites
	sulphur
	organic compounds in powder form
	nitrates
	sulphides
aniline	nitric acid
	hydrogen peroxide

aniline	ozone
	peroxides
benzene	sulphuric acid
	manganites
boron	acetylene
	ammonia
	benzene
	butadiene
	butane
	carbides
	methane
	hydrogen
	turpentine
bromine	ammonia
	ethyne
	butadiene
	butane
	methane
	propane
	hydrogen
	carbides
	turpentine
	benzene
	metal powder
	hydrocarbons
calcium carbide	water
	silver nitrate
	peroxides
carbon	see: activated carbon
carbon disulphide	ether
	potassium chloride
	nitric acid
	manganese chloride
charcoal	see: activated carbon
chlorine	see: bromine
chlorates	ammonium salts
	acids
	metal powders
	sulphur
	organic substances in powder form
	cyanides
	silver sulphide
chlorine oxide	ammonia
	methane
	phosphine PH ₃
	hydrogen sulphide
	mercury
	organic substances
	sugar
	phosphides
chloroacetic acid	bismuth (alloys)
	acetic anhydride
	organic compounds

chloroform	acetone
	potassium
	sodium
chromic acid	acetic acid
	naphtalene
	camphor
	glycerol
	turpentine
	alcohol
	pyridine
	flammable liquids
copper	ethyne
	hydrogen peroxide
	chlorates
	bromates
	iodates
cumene hydroper acids	organic and inorganic acids
	flammable liquids
cyanides	acids
ethanol	manganites
	oxidising acids
ethyne	see: acetylene
flammable liquids	ammonium nitrate
	chromic acid
	hydrogen peroxide
	nitric acid
	peroxides
	halogen
	Barium oxide
fluoride	ALL substances
glacial acetic acid	see: acetic acid
glycerol	manganese carbonate
halamid	sodium sulphate
halogen hydrocarbons	aluminium powder
	alkali metals
	magnesium
hydrocarbons	halogens
	chromic acid
	barium oxide
	sodium peroxide
hydrocyanic acid (a.k.a. prussic acid)	nitric acid
	lye
	alkali metals
	potassium nitrite
	potassium chloride
hydrogen fluoride	ammonia (gas or watery anhydrous solutions)
	phosphorus pentoxide
hydrogen peroxyde	various metals
	flammable liquids
iodine	ethyne
	ammonia
	hydrogen
	phosphorus

magnesium powder	see: aluminium powder
mercury	ethyne
	oxalic acid
	ammonia
	fulminic acid
	fulminates
nitrates	sulphur
	carbon
	organic compounds
nitric acid	acetic acid
	aniline
	alcohols
	thiophene
	chromic acid
	hydrocyanic acid (a.k.a. prussic acid)
	hydrogen sulphide
	flammable liquids
	flammable vapours
	nitrobenzene
	sulphates
	thiosulphate
	acetone
	metal powders
	hydrogen peroxide
	hydrogen sulphide
nitrites	ammonium nitrate
	ammonium salts
	cyanides
nitrobenzene	nitric acid
organic solvents	see: flammable liquids
oxalic acid	mercury
	silver
	chlorates
	hypochlorates
perchlorates	acids
	sulphides
	sulphites
perchloric acid	acetic anhydride
	bismuth (alloys)
	alcohols
	paper
	wood
	charcoal
	ether
	organic substances
permanganates	glycerol
	benzaldehyde
	ethylene glycol
	sulphuric acid
permanganates	metal powders
peroxides	ethanol
	methanol
	glacial acetic acid

peroxides	acetic anhydride
	benzaldehyde
	carbon disulphide
	glycerol
	ethylene glycol
	ethyl acetate
	methyl acetate
	furfural
	aniline
phosphorus (white/yellow)	air
	oxygen
	hydroxides
	ammonium nitrate
	Potassium permanganate
	sulphur
	silver nitrate
picric acid	heavy metals
	salts
potassium	bromine
	chlorine
	iodine
	hydrocyanic acid (a.k.a. prussic acid)
	carbon monoxide
	carbon dioxide
	water
	halogen hydrocarbons
	carbon disulphide
	hydrochloric acid
	sulphuric acid
	hydrogen fluoride
	maleic anhydride
	ethyne
	Silver halides
potassium sulphide	diazo compounds
prussic acid	see: hydrocyanic acid (a.k.a. hydrogen cyanide)
silver (metal)	acetylene
	oxalic acid
	tartaric acid
	fulminic acid
	ammonium compounds
sodium	see: potassium
sulphuric acid	chlorates
	perchlorates
	permanganates
	carbides
	fulminates
	picrates
	metal powders