

Handling of waste in the Skou building

After the walk through of the waste handling in September 2021, there are some updates to make it safer and easier for the users to sort and handle waste correctly.

1. Do not have other waste containers in the lab than those actually used.
Waste racks (buckets) and bags for ordinary household waste are available in the laboratories and are emptied by the cleaning staff.
2. Sort waste in ordinary waste, hazardous chemical waste, autoclave waste, clinical risk waste, GMO and radioactive waste, see attached instructions (Appendix 1 below) – which can be posted in the lab.
3. Use the sorting of chemical waste list, see the attached list (Appendix 2 below) – which can be posted in the lab.
If you have waste that is not on the list, please contact the chemical waste manager in the Skou Building, Hande Login/Henriette Gram Johanson.
4. Label the waste containers with waste fractions, content and identification, as described in the attached instructions (Appendix 3).
Only a maximum of 90% of the chemical waste container must be filled – the chemical waste jerrican is tightened with the wrench that is available in the waste room.
5. Please bring the hazardous chemical and clinical risk waste to the waste room in the driveway by the goods delivery room.
When you enter the door, the room for chemical waste is furthest to the right-hand side. So far there are drums for C1, H1, H2 and B2 waste. You must write on the relevant lists what you put in the drum.
The jerrican must be placed with the closing device upwards and the lid must be screwed on completely. Fill Vermakulite into the drums between each storage bottle and in between each layer in the drums!

It is important that the jerricans cannot tip over as the contents may leak and a hazardous reaction may occur during transport that can cause damage on equipment and persons, and AU would also be fined.

If you have chemical waste from another fraction than the drums contain, you put the waste on the shelf in the metal cage and record it in the notebook, which is available by the metal cage.

H2 waste (solid waste) can be placed in either H waste bags (particularly heavy plastic bags placed on the shelf next to the Blue H2 container in the room) or in the white containers with white screw caps. It is important only to collect hazardous waste contaminated with a high concentration of hazardous chemicals to this H2 solid waste fraction. Do not dispose of common waste through this fraction as it is expensive and an environmental strain. Eg. ELISA plates can be evaporated in a fume cupboard, and then be disposed of as common waste instead of as H2 waste.

If there is a small portion of liquid in the bags from ELISA plates etc., place a napkin in the bag before closing it with strips or masking tape.

Empty containers for chemical waste are available in the waste room.

If there is a shortage of packaging etc., please write to officeaids@biomed.au.dk and they will restock.

The room furthest to the right-hand side is for clinical risk waste.

In the room there is a yellow plastic box where you can place clinical risk waste, such as a filled needle bucket.

If you have a 30 or 60 litre filled yellow plastic box, please place it on the right-hand side of the room. Clinical risk waste is collected every Friday – Mathias Voetmann sends it off.

Dead animals are placed in plastic bags in the yellow buckets directly in the freezers. The animals are sent off together with the other clinical risk waste every Friday.

6. Glass waste from the laboratory cannot be reused, so all glass from the laboratory must go in the Waste container – "Glasaffald deponi".
7. In the Skou goods delivery area there are various waste containers for cardboard, paper, hard plastic, soft plastic, electronic waste, batteries, etc.

Handling of Chemical- and Infectious Substance Waste.

Ordinary waste



Gels, Microplate, microtiter plate, ABL liquid packs, tubes, rod pipettes, pipette tips, paper, gloves that have NOT been contaminated with hazardous chemicals or infectious substances are disposed of as ordinary waste. This includes waste containing diluted chemicals that no longer classify as hazardous.



Pipette tips, rod pipettes, microtiter plates, paper, gloves etc. contaminated with chemicals with irritants properties and other diluted dangerous chemicals, can and **MUST** be collected as ordinary waste.



Disposable covers, surgical wipes, etc. where blood, pus or tissue fluids have been absorbed are collected as ordinary waste.



Empty and rinsed packaging and chemical packaging which have contained harmless chemicals must be collected as ordinary waste.

Glass waste from the laboratory



Glass waste from the laboratory, both clear and colored glass, cannot be recycled as we do with glass from the household at the moment!

Hence, a special container for glass waste from the laboratory is set up.

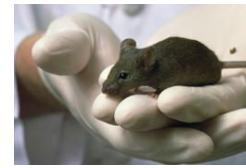


Empty and rinse the empty glass bottle, a complete cleaning of the bottle is not necessary – but no residue must be left in the bottle!

If there is **content** in the glass bottle it **MUST** be collected as chemical waste (Z)!

Handling of Chemical- and Infectious Substance Waste.

Waste Infectious substance (Yellow packagings = Infectious Substance)!



Blood and tissue samples and other samples containing human or laboratory animals.

Pipette tips, paper, gloves, etc. that have been contaminated by materials from humans or animals. However, except for disposable covers, surgical wipes, etc., where blood, pus or tissue fluids have been absorbed, can be handled as ordinary waste.

Needles/sharp objects must be collected in needle boxes.



Autoclave and disinfectants:

Autoclaving and other disinfecting methods can be used to destroy the infectious substance.

Typically, microbial material is autoclaved, equipment and instruments are dry sterilized.

Chemical substances, such as Virkon S, Rodalon og Ethanol, can be used for disinfection.



The procedures by which the laboratory has been approved regarding GMO and class 2 must be strictly followed!

Chemical Waste:

24th April 2023/AU's Safety Advi



Handling of Chemical- and Infectious Substance Waste.

- Collect **liquid chemicals** in UN-approved jerricans.
- **Do not mix chemicals which can react violently when mixed! Read the safety data sheet (SDS) section 10 regarding stability and reactivity.**

- Collect **solid chemical waste** in a plastic bag or a plastic container. Only the above items are collected if the chemical is marked with:



- Collect **needles/sharp objects** contaminated with chemicals in needle boxes o.l.).



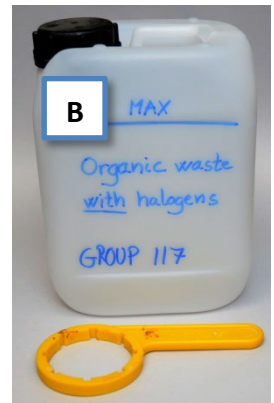
Marking

Packaging containing chemical waste must be marked with:

- Content
- Identification, lab number or initials.
- The letter from the sort key.

Fill the jerrican up to **90 %** of the capacity and tighten the lid using the lid wrench.

Place the jerrican in the waste room.



Indeholder et stof, der er omfattet af dansk arbejdsmiljøregulering med hensyn til kræftisiko

If the waste contains carcinogenic chemicals, you must put this yellow mark on the waste container.

- H350 is collected until 0,1 %
- H351 is collected until 1 %
- Some carcinogenic chemicals have a lower limit, for more information see "Kræftbekendtgørelsen".

Waste must be stored according to the same rules that apply to chemicals, example toxic substances must be placed in a locked cabinet and the storage limits for flammable liquids must not be exceeded.

Radioactive waste:

The radiation protection coordinator must make a waste management plan before the work can commence and this plan **MUST** be followed.




Handling of Chemical- and Infectious Substance Waste.


Fortums Sort Key – Chemical waste:

YES 

NO 

Description:	Group:	Examples:
Does the waste contain oxidizing substances, organic peroxides, substances that react violently with water or substances that emit acid vapors or flammable gasses when it is in contact with water?	O 	<i>Chlorates and perchlorates, Chromates and dichromates Hydrogenperoxide, Manganates and permanganates Nitrite- and nitrate salts, Perchloric acid, Picric acid, Silvernitrate. Inorganic/organic peroxides, Zinkchloride, Alkalimetals and – Hydrides, Lithiumaluminiumhydride, Phosphides, Silicides etc.</i>
Does the waste contain mercury?	K	<i>K5 COD-reagents, Kjeldahl reagents, Energy saving bulbs, Mercury lamps, Mercury etc.</i>
Does the waste contain aerosols, pressure bottles, emptied packaging, asbestos, medicines, isocyanates, batteries without mercury or mixed waste in small packages?	Z	<i>Small packages with chemicals from clean-up or pilot trail, batteries, aerosols etc. Z1 Cytostatics. Z2 Medicine, toxins, etc.</i>
Does the waste contain pesticides?	T	<i>Pesticides, etc.</i>
Does the waste contain inorganic substances?	X	<i>Inorganic X1 Hydrochloric acid, sulfuric acid and phosphoric acid. X2 Nitric acid X3 Sodium and potassium hydroxide, hypochlorite solutions. X5 Potassium cyanide solutions. X6 Silvernitrate solutions.</i>
Does the waste contain mineral oil products, but no emulsifiers?	A	<i>Diesel oil, heating oil, gear oil, engine oil, oil filters, lubricating oil tc.</i>
Does the waste contain organic substances with halogens or sulfur?	B	<i>Organic with halogens or sulfur. B2 liquids and B5 solids: Chloroform, Bromoform, Dichlormethane, Ethidumbromide, Mercaptoethanole etc</i>
Is the waste liquid and has a calorific value of a least 18 MJ/kg and is the water content not more than 50%?	C	<i>C1 Organic with < 50% water Methanol, Ethanol, Acetone, Acetonitrile, Hexan, Xylen, Isopropanole etc.</i>
Are the waste organic chemicals without halogens and sulfur or mixed organic and inorganic substances?	H	<i>Organic with > 50% water H1 liquids. H2 solids. H3 vials. H4 dyes. C-waste diluted in water, formaldehyde solutions, glutaraldehyde solutions, refrigerants and lubricants, paints etc.</i>

LIST OF CHEMICAL WASTE:


WASTE GROUP:	COMPONENTS:
C1	Mixtures of organic liquids without halogenes and sulfur, with a concentration > 50% For example, ethanol, acetone, methanol, and isopropanol conc. > 50%.
H1	Mixtures of organic liquids without halogenes and sulfur, with a concentration < 50% For example, ethanol, acetone, methanol, and isopropanol conc. < 50%. For example, > 0,1 % formaldehyde/para formaldehyde, > 0,1% glutaraldehyde, solutions from RNA-, DNA- and protein purification if dangerous and small amounts of dye (otherwise H4).
H2- SOLID	Eppendorf tubes and centrifuge tubes with minor amounts of chemicals (max. 25 ml), contaminated napkins, pipette tips, gloves etc. with major amounts of chemicals, the chemical must be marked with one of following hazard pictograms: 
H3	Vials containing C1 and H1 liquids or vials containing counting liquid from Isotopic analysis released as chemical waste.
H4	Dyes: Tryphan blue, hematoxylin, scarlet red, etc.
B2	Mixtures of organic liquids containing > 1 % halogenes or sulfur and the mixtures are flammable. Chloroform, dichlormethane, > 1 % ethidiumbromide, > 1% mercaptoethanol and trizol.
B3	Trichloric acid (TCA) solutions > 0,25%.
B5 - SOLID	Solid waste containing > 1% Chloroforme/Trizole and > 1% mercapto ethanol solutions.
X1	Acidic inorganic acids: Phosphoric acid > 10%, Hydrochloric acid > 10% and Sulfuric acid > 5% (Nitric acid is not included – see X2).
X2	Nitric acid > 1%.
X3	Basic inorganic liquids: Sodium hydroxide > 0,5%, Potassium hydroxide > 0,5%, Ammonia > 1% and Hypochlorite solutions > 0,25%.
X5	Potassium cyanide solutions > 0,5%.
X6	Silver nitrate solutions > 2,5%.
Z1	Cytostatica waste liquid and solid. For example, BTB1, Doxyrubicine, Vincristin.
Z2	Pharmaceuticals and toxins .
Z	Chemicals from cleanup and chemicals you cannot place in other groups.
K5	Mercury waste, thermometers etc.
A	Waste oil , engine oil and oil from vacuum pumps.
Z	Aerosols and empty aerosols.
Z	Gas cans (Butane gas cans).
O	Oxidizing chemicals, must be collected and kept separate. Ex.: perchloric acid (O1), hydrogen peroxides Z 20% (O2), permanganates, chromates, persulphates, nitrates etc. (O3, O4, O5, O6 etc.)
	Clinical Hazardous waste.

WASTE JERRICANS

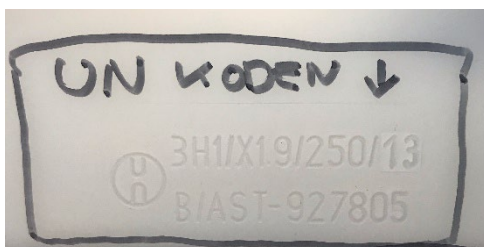
At AU, only UN-approved plastic jerricans are used to collect chemical waste and the plastic jerricans must be of X-quality. The UN-approved plastic jerrican have a shelf life of **only 5 years!**

You must therefore know where on the jerrican you can find information that tells you the quality of the jerrican and what year the jerrican was produced. This information can be read in the jerrican's UN code, for example:

UN 3H2/X1.8/250/16/DK/ETI

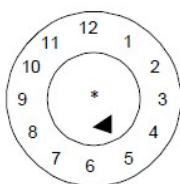
- ✓ (UN) = United Nations packaging symbol. 
- ✓ 3H2 = removable head plastic jerrican
- ✓ X = the quality of the packaging, which **must be X**. If it says Y or Z, the can **cannot** be used for chemical waste at AU!
- ✓ 1.8 = the relative density (may be omitted if it does not exceed 1,2).
- ✓ 250 = the hydraulic test pressure that the packaging can withstand in kPa.
- ✓ 16 = the year of manufacture of the packaging. If the year is **more than 5 years** ago, the jerrican **cannot** be used for chemical waste!
- ✓ DK = Approved in Denmark.
- ✓ ETI = the name of the manufacturer or another identification of the packaging provided by the competent authority.

You need only be aware of the data marked in yellow!




Example from a 5-liter plastic jerrican: It is UN approved, it is X-quality, and it was manufactured in 2013, which means that in 2023 it **cannot** be used for chemical waste!

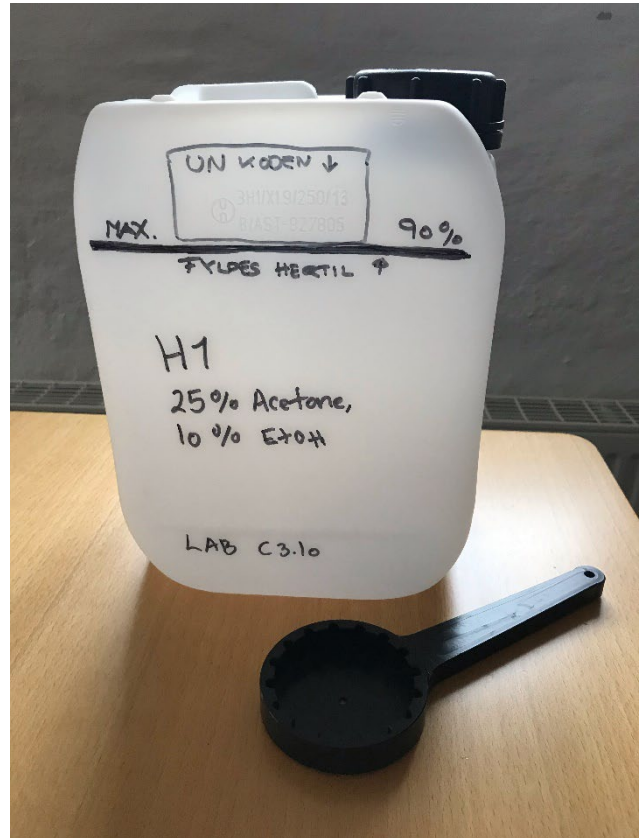
Jerricans made of plastic must also be marked with the month of manufacture, typically affixed by using a clock, with an arrow indicating the month of manufacture.



WASTE JERRICANS

Label the UN-approved waste jerrican clearly and durable with:

- Waste group (e.g., H1)
- Content
- Identification (e.g., initials or lab no).
- The CLP hazard pictograms are not requested, but  okay if you put them on.
- You are allowed to make your own label.



Do not fill above the upper ridge, max. 90% filling!

When the waste jerrican is ready for delivery in the waste room, make sure that the jerrican is **intact, clean on the outside** and that you **tighten the lid with the wrench!**

It is important to protect your health, and the safety and health of those who transport and handle your chemical waste!