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 its 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.

Appendix 1: Handling of Chemical and Infectious Substance Waste.

Ordinary waste

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

Paper and gloves contaminated with flammable liquids can evaporate overnight in a fumehood and afterwards be disposed of as ordinary waste.

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 is 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 the glass from the household at this moment!
Therefore, a special glass waste container to glass waste from the laboratory is set up.

Evaporate and rinse the empty glass bottle, a complete cleaning of the bottle is not necessary – but there must not be any residue in the bottle!

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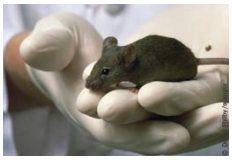
Appendix 1: Handling of Chemical and Infectious Substance Waste.

If there is content in a glass bottle, it must be collected as chemical waste (Z).

Waste Infectious substance **(Yellow packaging = Infectious Substance)!**





Blood- and tissue samples and other samples containing human or experimental animals.

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

Needles/sharp components must be collected in needle boxes.




Autoclave and desinfectants:

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



Appendix 1: Handling of Chemical and Infectious Substance Waste.

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

Appendix 1: Handling of Chemical and Infectious Substance Waste.

Chemical Waste:

- Liquid chemicals are collected in UN-approved jerricans.
- **You must not mix chemicals which can react dangerously when mixed together!**

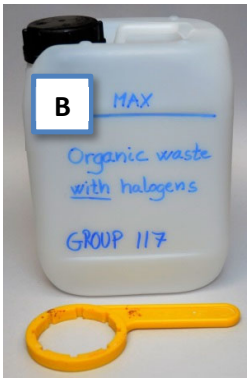
- Solid chemical waste is collected to a plastic bag or a plastic container. Only the above items are collected if the chemical is marked with:

- Needles/sharp components contaminated with chemicals must be collected in needle boxes o.l.).

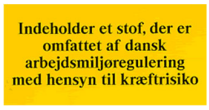
Marking

Packaging containing chemical waste must be marked with:

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



Fill the jerrican up til **90 %** of the capacity and tighten the lid with the lid wrench.
Place the jerrican in the waste room.



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 after 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 start and this plan MUST be followed.

Appendix 1: Handling of Chemical and Infectious Substance Waste.

Fortum's Sort Key – Chemical waste:

YES →

NEJ ↓

Description:	**Group:**	Examples:
Does the waste contain oxidizing substances, organic peroxides, substances that reacts violently with water or substances that emit acid vapors or flammable gasses when it is in contact with water?	**O** 	*Chlorates and perchlorates, Chromates and dichromates* *Hydrogenperoxide, Manganates and permanganates* *Nitriet- and nitrate salts, Perchloricacid, Picricacid, Silvernitrate* *Inorganic/organic peroxides, Zinkchloride, Alkalimetals and – Hydrides,* *Lithiumaluminiumhydride, Phosphides, Silicides etc.*
Does the waste contain mercury?	**K**	*COD-reagents, Kjeldahl reagents, Energy saving bulbs,* *Mercury lamps, Mercury termoKviksølvlamper, Kviksølvthermometer etc.*
Does the waste contain aerosols, pressure bottles, emptied packaging, asbestos, medicines, isocyanates, batteries without mercury or mixed waste in small packages?	**Z**	*Small packages with chemicals from clean-up or pilot trail, medicine,* *batteries, aersols etc.*
Does the waste contain pesticides?	**T**	*Pesticides, etc.*
Does the waste contain inorganic substances?	**X**	*Inorganic* *Hydrochloric acid, sulfuric aci, nitric acid, phosphoric aci, sodium and potassium hydroxide, hypochlorite solutions etc.*
Does the waste contain mineral oil products, but no emulsifiers?	**A**	*Diesel oil, heating oil, gear oil, engine oil, oil filters, lubricating oil tc.*
Does the waste contain organic substances with halogens or sulfur?	**B**	*Organic with halogens or sulfurl.* *Chloroform, Bromoform, Dichlormethane, Ethidiumbromide, Mercaptoethanole etc*
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**	*Organic with < 50% water* *Methanol, Ethanol, Acetone, Acetonitrile, Hexan, Xylen, Isopropanole etc.*
Is the waste organic chemicals without halogens and sulfur or mixed organic and inorganic substances?	H	Organic with > 50% water C-waste diluted in water, formaldehyde solutions, glutaraldehyde solutions, refrigererants and lubricants, paints etc.

Appendix 2

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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.
K1	**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.

Appendix 3

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WASTE JERRICANS

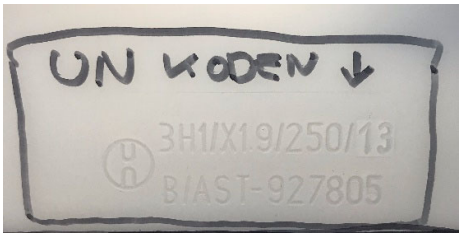
At AU, only UN approved plastic jerricans are used to collect chemical waste and the plast jerricans must be of X-quality.
The UN approved plastic jerrican have a shelf life of **only 5 years**!

You must therefore know where on the jerrican you can find the information regarding 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 = plastic jerrican with screw cap
- ✓ X = the quality of the packaging, which **must be an 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 should 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 2021 it **cannot** be used for chemical waste!

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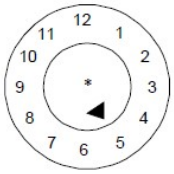
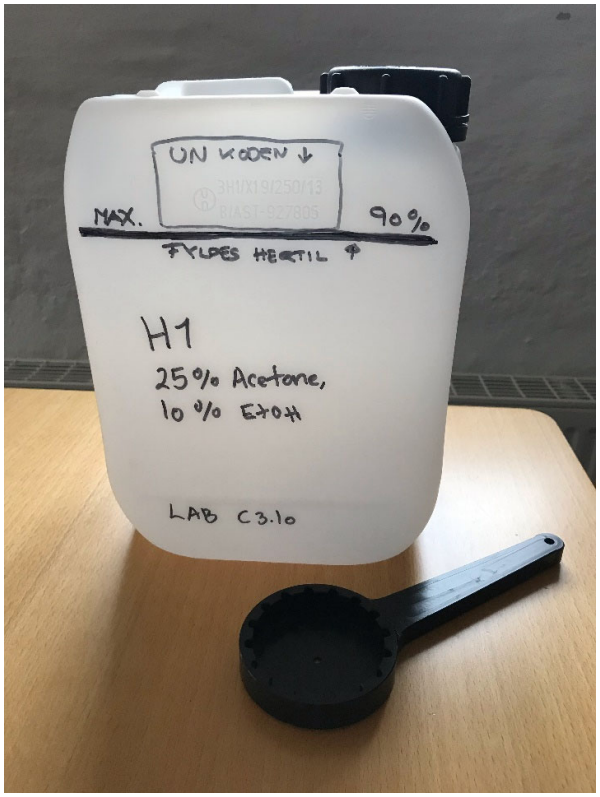


Plastic jerricans must also be marked with the month of manufacture, typically affixed by using a clock, with an arrow indicating the month of manufacture.

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.



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

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

8th October 2021/AU´s Safety Advisor.