

Waste management and routines for disposal

February 7, 2018

This document describe the waste management procedures at Fysikum. Being part of AlbaNova, the procedures can differ slightly from those given by Stockholm University. General information and instructions on waste management procedures for SU can be found in the environmental policy, procedures and instructions.

Waste can be produced by two different activities: office and laboratory. Here are some examples:

Office activities

Separable waste
Paper for recycling
Plastic
Glass containers (coloured and clear)
Batteries
Metals
Furniture
Refrigerators and freezers
Toner cassettes and ink cartridges
Light sources
Stretch and shrink-wrap
Food waste and compostable waste
Wood
Corrugated cardboard and paper packaging/containers

Laboratory activities

Chemicals
Laboratory glass
Sharps
Radioactive waste
Electrical/electronic products
Animal products and by-products
Biological agents
Genetically modified microorganisms
Genetically modified organisms
Human by-products
Antibiotics
Narcotics

Waste produced by either of these two activities can be classified in three categories: Household waste, Industrial waste or Hazardous waste. Examples of industrial waste: glass containers, clean laboratory glass, laboratory plastic, etc. Examples of hazardous waste: chemicals, electronic-waste, antibiotics, radioactive waste, etc.

Instructions concerning Fysikum for handling of chemicals, laboratory glass, sharp waste, etc. are describe hereafter. The waste management center is situated on the first floor (godsmottagning or good delivery). All types of hazardous waste, with the exception of radioactive waste, should be **labeled** and delivered to godsmottagning.

1 Waste from office activities

The information for waste from office activities can be found on AlbaNova's website and is reproduced here for guidance only. Check their website for updated instructions. Any questions can be addressed to Internal Services (godsmottagning) 08-790 9835.

Waste paper baskets

Waste paper baskets are emptied by personnel from Kundia. The bins outside within the AlbaNova area are emptied by personnel from Campus AB. Contact Ann-Christine Eriksson (extension 8424) with any problems about cleaning.

Light-bulbs and strip lights

Internal Services (08-790 9835) takes care of replacing light-bulbs and strip lights.

Recycling stations

There are a number of recycling stations in the main building and the other buildings on the hill. The recycling stations have separate containers for different types of material (e.g. cardboard, colored and clear glass, paper for recycling, burnable refuse, etc.). If you are not sure how refuse should be sorted, or if you have refuse which doesn't fall into any of the available categories, contact Internal service. All refuse deposited in the recycling stations is taken care of by Internal Services before being left to various refuse collection companies.

Batteries

Batteries should be deposited in the special containers in each recycling station. There is also a battery container in the entrance hall on level 5 of the main building.

Bulky refuse

Contact Internal Services if you have bulky refuse. There is a bulky refuse room next to the Goods delivery area on level 1 of the main building.

2 Waste from laboratory activities

2.1 Bulky lab equipment

Disposal of large used lab equipment should be paid for by the institutions themselves. Contact internal services for help with how to get rid of this type of waste.

Moreover, the person depositing the equipment has to sign a certificate that the equipment is not contaminated and does not contain dangerous components, in order to guarantee a safe work environment for the waste management staff. The certificate has to be given to the waste

contractor. In case of any uncertainty regarding whether or not the equipment is contaminated, the depositor should contact AlbaNova's waste contractor for hazardous waste, SEKA Miljöteknik AB, for evaluation and possible collection. The certificate can be found on SU website under sustainable campus.

2.2 Chemicals

Chemical waste is classified as hazardous waste (including goods and liquids) and **must not be poured down drains**. Each group has the responsibility of storing and labeling all hazardous waste safely before disposing of it. 6. Chemical wastes must be stored and transported in shock-proof, sealed and clearly marked containers. Specific instructions can be found hereafter. Waste can then be deposited during opening hours at godsmottagning.

The contractor for the chemical waste is SEKA Miljöteknik AB. For questions and detailed description of the sorting and packing of chemical residues, contact Daniel Sellberg 070-795 00 26 daniel.sellberg@sekamiljoteknik.se at SEKA Miljöteknik AB.

The same requirements apply to the storage of chemical residues as to pure chemicals. Chemical residues for destruction and pure chemicals should be kept apart from one another.

2.2.1 Chemicals in small original containers

Chemicals in small containers can be deposited in their original containers if the packaging and seal are intact and the contents clearly stated on the label. Every container should be marked with a waste label, on which certain information must be entered, see the Marking/labeling section. It is very important that substances that can react with one another are kept separate (for example acids and alkalis, cyanide and acids, sodium azide and heavy metals). The jars are preferably transported in a shopping basket, plastic boxes or equal. Do not transport larger amount at a time than what a basket hold.

Solid chemicals without risk of reaction with each other (e.g. some salts) may be packed directly in a cardboard box for hazardous waste, if a list of all content is attached. If you are unsure of what you are allowed to pack together, contact the SEKA Miljötekniks staff before packing.

Holders of large quantities of small containers of chemicals to be sent for destruction are recommended to contact SEKA Miljötekniks staff before disposal. They can pack the chemicals on site and then remove them.

2.2.2 Solvents (organic, water-based, pure or mixtures)

Empty, cleaned glass bottles can be used for the collection of solvents. Solvents must not be kept for long-term storage in plastic drums since the plastic can be affected by the contents. Different types of solutions, such as halogenated and non-halogenated, must be collected separately since the destruction costs are different for different types.

The procedure is the following. Solvents should be separated in 4 different waste bottles.

- One for solutions containing **acids**.
- One for solutions containing **bases**.
- One for solutions with **halogens and/or heavy metals** but NO acid or base. Heavy Metals are Cr, Co, Ni, Cu, Zn, Ag, Cd, Hg, As, Se, Sb or Pb. Halogens are F, Cl, Br, I or At.
- The last one for **organic only** (without any of the substances mentioned above).

The diagram in Figure 1 can help you sorting out which bottle should be used.

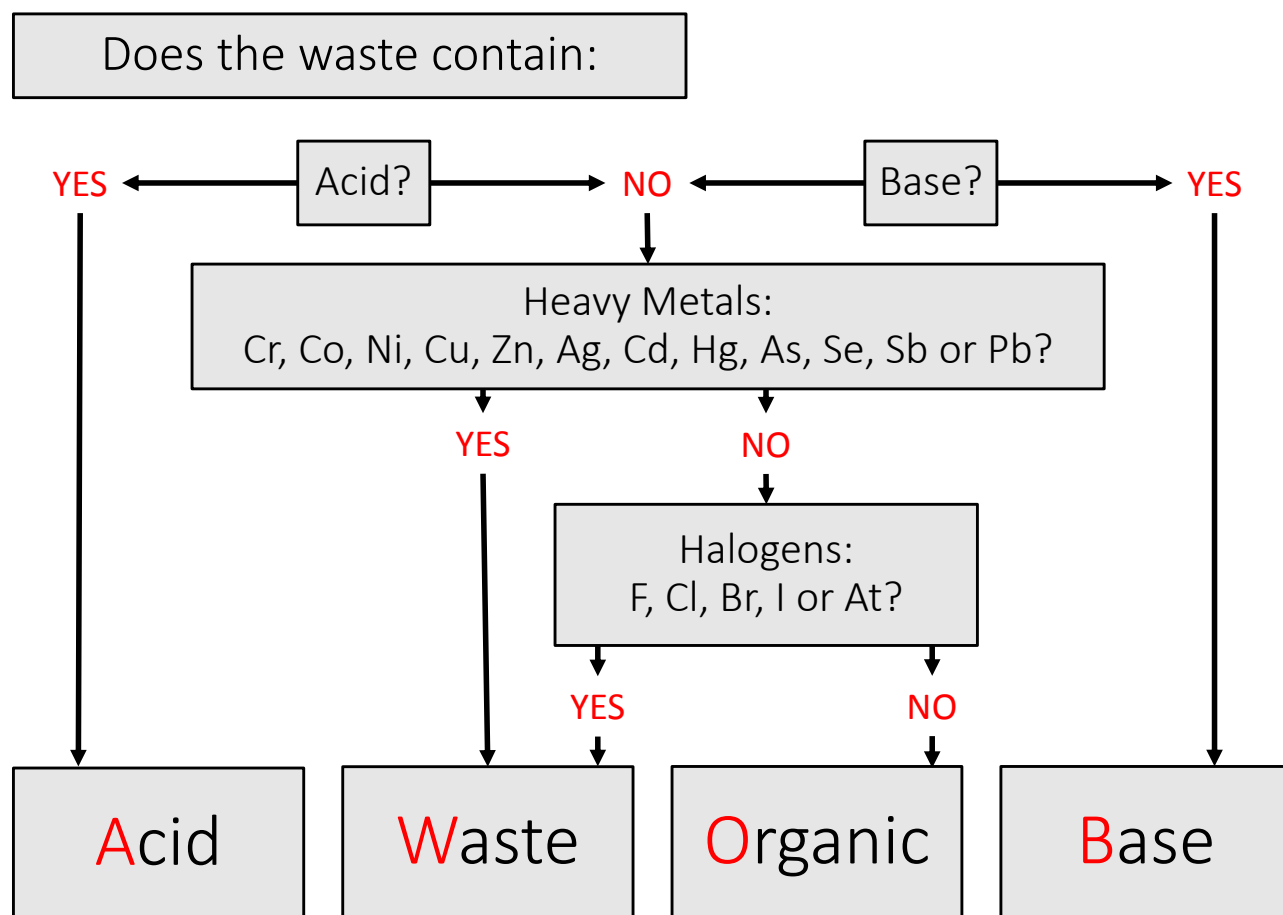


Figure 1: Waste sorting diagram.

A list should be attached to each bottle containing the following information:

- the molecule,
- the concentration,
- the solvent,
- the quantity,
- and the hazard linked to those chemicals,

of all the solutions poured in the bottle. For example: Pyrene, 1mM, in dichloromethane, 8 mL, GHS 07 (Irritant) - 09 (Environment Hazard) - 08 (Health Hazard). Please write down the full name, no chemical formula or abbreviation. If you don't know what your waste is, mark it as "unknown" and provide only the quantity. Regarding strong acids or bases, there is no pH limits. But for the safety of handling, they should be diluted first to lower concentrations. It is strongly advisable to pour the acid into water. The other way around may result in explosion due to concomitant heat and hydrogen evolution. It is also better to store different acids (or bases) in separated bottles.

Absolutely NO chemicals should go down the drain! Everything should go in one of the waste bottles even if it is only methanol or water used to clean glassware which contained chemicals. Note: Always contact SEKA Miljötekniks' staff if you are not sure what to do!

2.2.3 Packaging for hazardous waste

The types of packaging used in transportation must be approved for the transport of dangerous goods. It is important that the contents are known and documented on the waste label, and that substances that may react with each other are not mixed. For more information contact SEKA Miljötekniks.



Figure 2: A. Cardboard box for hazardous waste, with inner bag. Art-nr: 6344-038. B. Plastic container for infectious waste and/or sharps. Art-nr: 6342-030, 6342-050. C. Plastic container for hazardous waste with double lids. Art-nr: 6343-030, 6343-050. D. Drums, UN-approved. Art-nr: 6305-005, 6305-010, 6305-025. E. Containers for infectious and/or sharp. Art-nr: 3900-001-3900-002. ADR-approved container.

Some examples of suitable packaging that can be ordered from SU butiken are shown in Figure 2, such as waste containers in plastic and cardboard. Contact Patrik Löfgren to purchase waste containers patrik.lofgren@fysik.su.se, 08 5537 8893.

Small quantities of chemicals in small containers can be placed in a cardboard box, for example. Bottles must be marked with waste labels. It is important to separate substances that can react with one another!

Solvent residues must either be deposited in type-approved plastic drums intended for transport (max 5 years old) or the glass bottles of solvents must be packed in cardboard boxes for hazardous waste with an inner plastic bag. NB: Do not fill the drum to more than 80 percent! Plastic drums containing solvents must not be packed together in large waste containers. The SU Shop sells approved plastic drums for transportation.

2.2.4 Marking/labelling

Use waste labels available at godsmottagning filled in with the following information:

1. Tick the box "Hazardous"
2. Institution: AlbaNova University Center, Stockholm University, Fysikum
3. Type of waste: "Chemicals" and specification. Note that all components of the contents must be stated on the label or adjoining spec sheet. Markings such as "slop" or "waste" must not be used! A or B substances and CMR substances (see below for more details) should be clearly stated here.
4. Submitter's name, phone number and date

2.2.5 Hand-over

Waste can be deposited during opening hours at godsmottagning, in the room dedicated to hazardous waste. Ask someone from godsmottagning to open the room for you.

2.2.6 CMR Substances

CMR (Carcinogenic, Mutagenic or toxic for Reproduction) substances should be treated like other chemicals but with a few extra precautions. They should be packed with an outer protection: The container of the hazardous chemical is placed in a suitable outer packaging for protection when the container is moved. The packages should be stored so that unauthorized persons can not access them, by locking the cabinets, room or area. They can be left in the same room as other chemicals at godsmottagning (but inform them that it's a CMR), unless they require frozen or refrigerated storage. In that case, they must be collected at agreed time by a chemist from SEKA. Contact Daniel Sellberg daniel.sellberg@sekamiljoteknik.se 070-795 00 26 to arrange a pick-up time. In any cases, it is very important to clearly indicate on the label that it is a CRM substance and what chemical it is.

2.3 Sharps

Sharps waste includes discarded injection needles, knife blades, Pasteur pipettes, pipette bags, etc. Sharps that can be contaminated with chemical residues, microorganisms or radioactivity must be handled based on the contamination concerned, for more information see the sections about each type of waste. They should be collected in puncture-safe jars, which are then packed in a cardboard box for hazardous waste, with inner bag. Alternatively, they are collected directly in the containers for infectious waste and/or sharps or plastic container for hazardous waste with double lids that can all be purchased at SU butiken.

Marking/labelling Waste specification: "Sharps". Contaminated sharps must be labeled based on the contamination in question. Waste labels are available at godsmottagning.

2.4 Laboratory glass

Laboratory glass includes, for example, bottles, cans, bowls and glass tubes. They can be divided into three groups and should be treated as follow:

1. Contaminated laboratory glass (whole or broken): glass that for example, may contain chemical residues, microorganisms or radioactive substances must be handled based on the contamination. This waste must be packed in approved containers i.e. containers for hazardous waste or containers for infectious waste and/or sharps (see section 2.2.3), and marked with waste labels. They can be deposited at godsmottagning.
2. Non-contaminated laboratory glass not defined as a recyclable container (beakers, petri dishes etc) should be placed in a container for hazardous waste.
3. Non-contaminated laboratory glass defined as a recyclable container (bottles and cans, whole or broken) must be empty, well cleaned and evaporated. It can be placed in the recycling containers for coloured or clear glass.

Marking/labelling Recycling of containers for non-contaminated laboratory glass not used as containers must be marked "Laboratory glass". Contaminated laboratory glass must be marked based on the contamination in question. Waste labels are available at godsmottagning.

2.5 Radioactive waste

Contact Per-Erik Tegnér tegnér@fysik.su.se for questions and procedures.