Guidelines for Management of Waste and Hazardous Waste in Ny-Ålesund

Waste is any material, substance or product, which is deemed no longer useful and discarded. In Ny-Ålesund we distinguish three different types of waste:

- Household Waste
- Hazardous Waste
- Other Waste

INTRODUCTION: WASTE MANAGEMENT IN NY-ÅLESUND

SPECIAL NOTE: NO WASTE IN THE SEWAGE

In Ny-Ålesund we have a NO-WASTE-DOWN-THE-DRAIN-Policy. (This is connected to the limits of our sewage system.) Note that it is not allowed to water down solutions to achieve concentrations according to the guidelines under the Regulations relating to the recycling of waste made by The Environment Agency (Miljødirektoratet).

This applies not to cases where it cannot be avoided, e.g. shampoo running down the sink, while someone is showering.

SECTION 1: HOUSEHOLD WASTE

In Ny-Ålesund we have over 16 different disposal categories. Please note, that you are supposed to go to the garbage room, in case you do not find a trash can of the needed category in your building. It is not the task of the cleaning personal to sort the trash for you.

Please do not leave any trash on the floor and ask the harbour master, in case a machine is full/malfunctioning, or you simply wonder what to do.

These categories fall under household waste and you can dispose them in the garbage room. In case you have huge quantities, please contact the harbour master directly.

For the following categories you find presses or containers in the garbage room:

- Plastic:
  - only for clean plastic (dirty plastic goes in rubbish)
- Paper
- Cardboard:
  - Please remove the plastic!
  - Fold the carboard, before you put it in the machine
- Carton:
  - This is often two layered or one layer, e.g. small boxes, Pizza Cartons, Egg cartons
  - Milk cartons go in rubbish
- Soda and Beer cans
- Metal:
  - For metal parts there is a container outside of the mechanical work shop.
  - Small metal pieces can go in the box in the garbage room.
- Metal & tin cans
- Textiles:
  - There are two boxes in the garbage room. One for textiles, which are waste and one for clothes, which people can reuse (e.g. T Shirts people are too big for).
- Light Bulbs & Light Tubes (except when they contain hazardous substances)
  - You find a buckets in the garbage room.
- Food Scraps – the so called “Grisen” (compost machine):
  - No tea bags
  - No bones
  - No tobacco/snus
  - No bags
  - No coffee
  - For larger amounts please ask.
- Styrofoam:
  - You find a box in the garbage room
- Spray cans (Aerosols):
  - There is a wooden box.
- Toner:
  - Place on the rack in the garbage room.
- Batteries:
  - Small batteries (e.g. AA, AAA) go in the little box in the garbage room
  - Lead batteries and all bigger batteries please contact the harbour master
- Rubbish:
  - Dirty Plastic
  - all two-layer components, chocolate wraps, chips bags, aluminum foil
  - Everything else

For the following categories you find containers outside of the garbage room:

- Electrical Waste:
  - All waste that contains any kind of electronic component (including: appliances such as kettles, TV, radios, cameras, computer equipment, telephones, scientific instruments etc.), must be disposed of in a proper manner to not be harmful to the environment. You find a container for electronic waste outside of the garbage room.

- Glass:
  - only for clean glass, all colours
  - You find a container in front of the garbage room.

The container for all type of metals is situated outside of the workshop:

SECTION 2: HAZARDOUS WASTE

1. DESCRIPTION:

Hazardous waste is any product, substance, or organism that is dangerous to the environment and/or to human health and that is no longer used for its original purpose at the time of disposal. Hazardous waste is dangerous because of its quantity, concentration, physical, chemicals, or infectious characteristics. Thus, it may require special disposal techniques to eliminate or reduce the hazard. The disposal of hazardous waste is governed by strict local and national regulations (Avfallsforskriften– Waste Regulations under the Pollution law of 13.03.1981), international transport regulations (IMDG, ADR, IATA), as well as policies and procedures adapted to Ny-Ålesund. The objective of these regulations, is to ensure that hazardous waste be handled in such a way that it does not create pollution or damage to people or animals, or the risk of this, and to contribute to an appropriate and safe system for the handling of hazardous waste.

2. RESPONSIBILITIES

2.1 Kings Bay: Departmental Engineer and Harbour Master

Within Kings Bay the Departmental Engineer and Harbour Master are responsible for handling and shipping hazardous waste.

2.2 Individual users and Institutes

Hazardous Waste becomes waste, when it is determined of no further use by the user. Hazardous waste is often still the same product, as when it was still used, e.g.

- Expired Chemical,
- Chemical which is determined as waste, because its usage or storage is not allowed in Ny-Ålesund,
- Rest of a Chemical after an experiment.

In those cases, the same safety precautions apply in handling the waste, as they applied during usage. In case chemical waste is a mixture of different products it may be more or less hazardous than the original product. In that case, the risk assessment done before the work began should state, how the end product needs to be handled.

In Ny-Ålesund the waste is handled by Kings Bay. In case you have chemical waste, please contact the Departmental Engineer or Harbour Master before your departure and discuss with him the procedure. To facilitate the process please fill out the "Form for Chemical Waste for researchers". You find most of the information you find in the Safety Data Sheet, section 14, Transport Information, IMDG. In case of mixtures, please note exactly which different substances are used and in which concentration. Please submit for each substance in the mixture the same information, as for single substances. This facilitates the process, to determine how to send the mixture at the end.

Please do not:

- DO NOT fill the waste in less good bottles, than when you worked with it. The bottles for the waste are subject to the same strict criteria, as the original product. You find information about the quality of the container in the UN certification.
- DO NOT mix chemical waste. And please be aware, that if you do, you have to carry the additional costs.
- DO NOT leave chemical waste in the laboratory.
- DO NOT throw sharpies in normal waste. People are working with the waste afterwards and do not want to be injured by syringes, or similar.
- DO NOT empty anything in the sinks.

3. TREATMENT OF HAZARDOUS WASTE

3.1 General information on hazardous waste

All waste management begins with purchasing. When purchasing items that contain hazardous compounds, be sure that Kings Bay has a way to properly dispose of any debris and / or products after use. This is restated as the substitution requirement of hazardous chemicals outlined in the Working Environment Act § 4-5, which means that one should always consider replacing highly toxic and toxic chemicals with less hazardous chemicals wherever possible. This also applies to ionizing substances and biological factors.

Whoever produces hazardous waste should always ensure:
• the waste is properly labeled (see guidelines below) and securely stored while in the laboratory,
• the laboratory has the necessary hazard labels,
• that waste is in the appropriate container (see guidelines below) when being transported.

The Harbour Master and the Departmental Engineer have the responsibility of sending the waste to a certified company by ship transport. The waste is packaged appropriately and delivered to the waste company on the

mainland accompanied by declaration forms. A completed "Deklarasjonsskjema for farlig avfall og radioaktivt avfall" must accompany each type of waste, if applicable this is accompanied by "Multimodal Dangerous Goods Form". The declaration forms can be only filled out by qualified personal (= with a course for the handling of dangerous waste for maritime transport).

The purpose of the declaration form is to provide information needed for safe handling and transport of the waste as well as to select proper treatment, it is therefore very important that all waste is described well by the producer to ensure that this safe handling information can be passed on to those who will be transporting it later.

3.2 Classification of hazardous waste

All chemicals classified as hazardous, and all wastes included in the classification below are defined as hazardous waste by Kings Bay. All hazardous waste must be stored and handled properly and according to the International, Norwegian and Svalbard regulations. The various categories of hazardous waste shall not be mixed together unless as part of the work protocol; it must therefore follow the guidelines of both categories.

Hazardous waste categories:
1. Batteries
2. Chemical waste
3. Oil products/Petrol/Paint related materials/Spray Boxes
4. Radioactive waste
5. Biohazardous waste
6. Sharp objects waste
7. Non-Hazardeous waste from fieldwork

3.3 Packaging, labelling and storing of hazardous waste

1) Batteries

Batteries:

- Small Batteries: AA, AAA, etc. → Please deliver them in the battery bucket in the garbage room.
- All other Batteries: Lead Batteries, Car Batteries, VHF Radio Batteries, Laptop Batteries, UPS batteries, etc. → Please contact the Harbour Master.

2) Chemical Waste (Laboratory Chemicals)

Chemical Waste is waste or residues of chemical substances, that can lead to contamination or risk of injury to people and animals. This applies to all chemical waste from laboratory.

Contaminated lab waste is also handled like chemical waste. The following gives some examples:

<u>Contaminated Lab Waste:</u>

- Contaminated absorbents, molecular sieves, and desiccants, (e.g. silica gel, ammonium acetate, potassium hydroxide, sodium chloride, aluminium oxide, sodium hydroxide, and florisil), which

have been used with organic solvents. They can be left to evaporate until dry in the fume hood, before delivering as contaminated solid lab waste. Identify all hazardous components on the waste identification label.

- Contaminated disposable equipment from the laboratories (e.g. Pasteur pipettes, plastic pipettes, pipette tips, gloves, vials, caps, filter paper and other paper that has been contaminated with toxic chemicals (formalin, gluteraldehyde, lugol, pesticides, PAHs, PCBs) Note separate chemicals
- Note: these examples do not include infectious or highly toxic chemicals.

3) Oil products/Petrol/Paint related materials/Spray Boxes:

- All types of oil, (e.g. waste oil, oil emulsions and crude oil), petroleum products, silicone oil and mineral oil, (e.g. oil for vacuum pumps) are sorted separately. Check the SDS in order to fill out the List for hazardous waste correctly.
- If the oil is contaminated with any other compounds make sure to label their hazards and list the contaminants on the waste identification label.
- For the following products you can ask us, and we can see, if they fit in our bulk categories:
    - Cooking Oil
    - Waste Diesel
    - Waste Petrol
    - Waste Oil
    - Oil filters
    - Paint related materials
    - Spray Boxes

4) Radioactive waste

In case you have radioactive waste, please contact the departmental engineer. The following applies to radioactive waste from the isotope lab. For other radioactive waste, the process is more complicated.

It is important to limit the amount of radioactive waste being produced; if an item is known to be uncontaminated with radioactive residues, do not place it in the radioactive waste. Make sure radioactive waste does not come into contact with the outside of the waste container; if this does happen then the waste container itself is designated as waste and needs to be placed in another container. You can get containers for radioactive waste from the Isotope Lab from Kings Bay.

In general Kings Bay needs the following information:

- Specific name of radioisotope(s)
- Volume liquid waste – specify liquid (e.g. water or chemical name)
- Type of solid waste (e.g. pipette tips, gloves, paper)
- Waste generators name and contact details
- Date
- Names of any hazardous chemicals contained inside (e.g. formalin)

4) Biohazardous waste

Biohazardous waste is biological waste that is infectious, potentially infectious, or recombinant (genetically modified). This includes waste items that are, contain, or are contaminated with:

- Human, plant or animal pathogens

- Genetically modified organisms (GMOs)
- E.Coli bacteria used in culturing/plating

Items contaminated with biohazardous waste include anything which has come into contact with the infectious material and includes, but is not limited to: petri dishes, pipette tips, gloves, culture tubes, and Eppendorf tubes. These are treated as biohazardous waste.

The waste must be treated to kill any living organisms before disposal. This is achieved by autoclaving, or by chemical disinfection.

Solid waste should be put into autoclave bags and autoclaved at 121˚C for at least 20 minutes. Do not fill bags more than ¾ full and do not seal tightly. The bag must have a piece of autoclave tape placed loosely around the neck so that autoclaving can be visually confirmed afterward (the stripes on autoclave tape will turn black after autoclaving). The autoclave bag can now be disposed of in the regular trash.

We do not have the possibility to autoclave liquid waste. In case this is necessary, Kings Bay has to be contacted before the researchers arrive to find possible solutions.

Sharps waste should not be disinfected. Place all sharps waste into a sharps container that is specifically designated for biohazardous waste, i.e. has a biohazard sticker on the top. Do not use regular sharps containers for sharps contaminated with biohazardous waste.

Packaging:

- Solid waste in autoclave bags
- Liquid waste is to be disposed of in leak proof sealed containers
- Sharps in designated biohazardous sharps container

Labelling:

- Autoclave bags should have autoclave tape placed on them for proof of autoclaving
- Biohazard sticker to be placed on sharps container

5) Pointed, sharp objects and glass

Includes glassware, bottles, and other sharps like syringes, needles, and scalpels. The glassware and bottles must be evaporated in fume hoods and/or clean, and dry. Lids and corks should be taken off and disposed of in regular trash bins. They must not contain traces of chemicals, blood or other contagious or health hazardous substances in the clean glass container, as remaining vapors can cause people to be exposed.

Packaging:

- Needles and scalpel blades: In hard case yellow plastic boxes and then handling as hazardous waste. You can get these boxes from Kings Bay.
- Clean glass waste without chemical residues (NOTHING BUT CLEAN GLASS): Small amounts can be placed in the glass waste containers in the laboratory, bigger amounts in the glass container next to the garbage room. Please mark the chemical bottles as waste.
- Glass waste with chemical residues: Empty chemical glass bottles that can be evaporated are left in a fume hood overnight – clearly labeled as evaporating – then are recycled as regular clean glass. Others have to be sent as chemical waste.

6) Non-Hazardeous waste from fieldwork

Non-Hazardeous waste from fieldwork : Material including, but not limited to, non-hazardous animal carcasses, parts of animals, animal, plant and bacterial cells (e.g. any non-pathogenic organisms, or parts of those organisms) collected on fieldwork in and around Svalbard, as well as used lab ware including pipette tips, Eppendorf tubes, and petri dishes.

This waste does not require treatment. For disposal please contact the departmental engineer.

SECTION 3: OTHER WASTE

Other waste describes all waste, which exceeds common household quantities or does not fall into the categories described in section 1 or 2. For disposal contact the harbour master.