

|  |                    |                       |                              |
|--|--------------------|-----------------------|------------------------------|
| <i>Document type</i><br>Instruction                        | <i>Document-ID</i> | <i>Version</i><br>0.2 | <i>Updated</i><br>2020-07-23 |
| <i>TITLE</i><br>Biomedicum Waste Management – Instructions |                    |                       |                              |

# Biomedicum Waste Management

Instructions

## Table of Contents

|   |    |
|---|----|
| Recycling.....  | 3  |
| Hazardous laboratory waste .....                      | 4  |
| Sharp and infectious waste .....                      | 4  |
| Pharmaceutical waste, including cytostatic waste..... | 6  |
| Biological Waste .....                                | 7  |
| Chemical waste.....                                   | 8  |
| Chemical waste pick up .....                          | 8  |
| Solid chemical waste .....                            | 9  |
| Liquid chemical waste .....                           | 11 |
| Empty chemical bottles/containers .....               | 12 |
| Discharge to the sink .....                           | 12 |
| Radioactive waste.....                                | 13 |
| Empty gas tubes .....                                 | 14 |
| Larger waste .....                                    | 14 |
| Contact .....   | 14 |

# Waste management in Biomedicum

Correct sorting of waste is important. By following the waste routines we can minimize the risk of incidents and also create a safe and healthy work environment for everyone. It also makes it possible to recycle materials, which is a way for us at KI to reduce our environmental impact.

Below you can find a summary of the most common waste types at Biomedicum and handling instructions.

Read more about [Waste management guidelines at Karolinska Institutet](#).

Read more about [Laboratory waste guidelines at Karolinska Institutet](#).

If you need help sorting out waste routines for your lab, please contact [FM Helpdesk](#).

## Recycling

In Biomedicum there are well equipped waste rooms in each quarter for recycling of waste. The waste is emptied and taken care of daily by FM personnel, who transports the waste to the main environmental room located on floor 2.

There are several different sorting fractions, for example recovered paper, metal, paper and plastics. Please consult [Fractions by floor](#) (mini poster).

For easy handling of recyclable waste in the lab, you can use the trolley shown in picture with the possibility to recycle up to four different fractions of your own choice.

Please use KI's waste signs for a correct labeling of your containers:

- [Poster](#) (pdf)
- [Labels](#) (pdf)

When full, empty the container in the correct fraction in your quarter environmental waste room.



# Hazardous laboratory waste

In general, the following apply for hazardous waste:

- The waste containers for waste must not weigh more than 12 kg. Do not overfill the containers.
- The outside of the containers must be clean and safe to handle for the personnel taking care of the waste.
- The container must be correctly labelled and with a completely filled-in label.
- Never label containers with several labels. Use the label that relates to the most prominent content. Only ONE label should be used! If several waste labels seem to apply to the content, read more in the sections below on how to handle mixed waste and how to label the waste.
- Liquid waste should always be contained in a container/bottle with a tight lid. Choose proper type of container according to the liquid and its chemical properties.
- Unmarked or wrongly handled waste will not be collected by the FM personnel and will be labelled with the following label;

**Inappropriate waste!**  
**This will not be handled by FM.**

The reason you got this note is that your waste is not labelled correctly or put in wrong waste fraction according to routines. Please contact FM for further information on how to handle your waste.

Read webpage "waste management in Biomedicum"

## Sharp and infectious waste

**Infectious waste** includes for example human blood and blood products, micro-organisms, cell cultures and materials that have come into contact with these waste types, for example gloves, inoculation loops, pipette-tips, pipettes, tubes, paper towels.



**Sharp waste** includes all sharp object such as needles, scalpels, lancets, suture needles and microscope slides. This applies even if the material is not suspected to be infectious, is unused, or if contaminated with biological or chemical contaminants. Plastic pipettes and pipette tips are a special type of pseudo-sharp since they can puncture or cut under special circumstances. If non-contaminated, plastic pipettes and pipette tips may be disposed of as recyclable or household waste. Pipettes and tips then have to be properly contained first, for example in a plastic bag, in order not to be able to cause any punctures/cuts.

#### Solids:

- Sharp and infectious solid waste must be collected and placed in a yellow container.
- If the “smaller” sharp/infectious containers with red lids are used, put these when full into a larger yellow waste container (the 25L or 50 L).
- You may, if preferred, autoclave infectious waste **as long as it does not contain any sharp waste** and fulfill certain criteria’s. For more information see “Autoclaving service” on the Biomedicum staff pages.

#### Liquids:

- Infectious liquid waste must first be collected in leak-proof sealable bottles or containers, and then placed in a yellow container. Note that the containers should not weigh more than 12 kg.
- You may, if preferred, autoclave infectious waste as long as it fulfill certain criteria’s. For more information see “Autoclaving service” on the Biomedicum staff pages.

#### Full containers:

- Label the container with the label for sharp and infectious waste “SKÄRANDE/STICKANDE SMITTFÖRANDE AVFALL” and fill in all the fields.
- Full, labelled, clean and sealed containers are placed in the waste room in your quarter. This will be picked up by FM personnel on regular basis.  
New labels and waste containers are available in the room for clean lab glassware on each floor.

#### Note:

- Small amounts of antibiotics/cytostatic/chemicals are often used in the same experiment as infectious agents. This mixed waste can always be handled as sharp and infectious waste.
- In cases when infectious reagents have been inactivated/sterilized - due to its pharmaceutical/chemical content - the waste should be handled as either “Pharmaceuticals/cytostatic waste” or “Chemical waste”.

## Antibiotics

Swedish sewage facilities are not equipped to handle pharmaceutical residues. Several common antibiotics are classified as non-biologically degradable which means that release to the drains entails a risk to the environment.

**DISCHARGE OF ANTIBIOTICS INTO THE SINK IS NOT PERMITTED!**

#### **Antibiotic waste, no contamination with infectious material/GMM:**

Provided that there is no contamination with live microorganisms that are infectious and/or genetically modified, antibiotic waste shall be handled as “Chemical waste”. Choose a suitable container and label a chemical waste label with “Antibiotic-containing solution”. For more information read the “Chemical waste” section below.

### **Antibiotic waste, contamination with infectious material/GMM:**

Medium or other, that contains antibiotics where the live material has not been destroyed or which might contain infectious material, is handled as “Sharp and infectious waste”. For more information see section “Sharp and infectious waste” above.

You may, if preferred, autoclave infectious waste containing antibiotics as long as it fulfill certain criteria's. For more information see “Autoclaving service” on the Biomedicum staff pages.

Autoclaving does not result in complete degradation of the majority of antibiotics, and the degradation products that are formed can in turn have negative impacts on the environment. These solutions will for this reason after autoclaving be handled as “Chemical waste” by FM personnel.

## Pharmaceutical waste, including cytostatic waste

**Pharmaceutical waste** includes antibiotics, hormone preparations and cytostatics, vaccines, narcotic drugs and objects that come into contact with these materials, for example packaging that contained antibiotics, cytostatics or other pharmaceuticals.

Pharmaceuticals and cytostatics can pose an environmental risk if incorrectly handled. These substances are often slow to degrade and can be biologically active for a long time after use. They can also be highly toxic, induce mutations or cause hormonal disruptions.



### Solids:

- Waste that has been contaminated with cytostatic and other pharmaceuticals must first be placed in a sealed inner packaging (sealed plastic bag or similar) and then placed in a yellow container.

### Liquids:

- Liquid pharmaceutical waste must first be collected in leak-proof sealable bottles or containers, and then placed in a yellow container.

### Full containers:

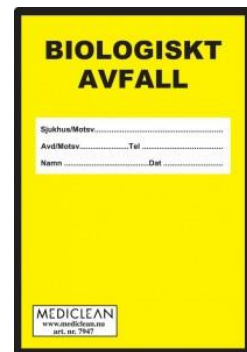
- Label the container with the two joint labels for pharmaceutical waste “CYTOSTATIKA OCH LÄKEMEDELSFÖRORENAT AVFALL” and the “HAZARDOUS TO ENVIRONMENT” and fill in all the fields.
- Full, labelled and sealed containers are placed in the waste room in your quarter. This will be picked up by FM personnel on regular basis. New labels and waste containers are available in the room for clean lab glassware on each floor.

Note:

- ➔ **IMPORTANT!** Pharmaceutical waste CAN NOT be autoclaved!
- Needles and other sharp waste contaminated with cytostatics should be handled as “Sharp and infectious” waste.
- Drugs are subjected to additional regulations, for more information contact your lab manager or FM helpdesk.

## Biological Waste

**Biological waste** includes “larger samples” of human and animal body parts, tissues, teeth and organs, as well as anatomical preparations and similar.



Handling:

- Biological waste must always be stored **frozen**. Store biological waste in sealed bags in a freezer in your lab until you have enough material to fill a container.
- Biological waste must be placed in black containers.
- The material must be placed in plastic bags before placing it in the container. Absorbents should be placed in the bottom.
- You may autoclave liquids containing biological material as long as it fulfill certain criteria's. For more information see “Autoclave service” on the Biomedicum staff pages.

Full containers:

- Label the container with the label for biological waste “BIOLOGISKT AVFALL” and fill in all the fields. Regardless of whether the animal/samples has been exposed to GMM/microorganisms at Level 2 or a pharmaceutical, only the label “BIOLOGISKT AVFALL” is to be used.
  - Full, labelled and sealed containers are placed in a freezer room at floor 2. Contact [FM Helpdesk](#) for room number and access. You may also place a ticket to FM Helpdesk if you want help with disposal.
- New labels and waste containers are available in the room for clean lab glassware on each floor.

Note:

- Sharp waste (e.g. tissue slides, needles) and cultures with cells or microorganisms (contaminated with biological material), human blood and blood products, as well as material contaminated by these, is handled as “Sharp and infectious” waste. All consumables that come into contact with biological material can be handles as “Sharp and infectious” waste.

## Chemical waste

All chemical waste should be handled, packaged and labelled according to Karolinska Institute's [rules for laboratory waste management](#). For a summary of the waste routines, please see below.

Note that it is important to store the chemical waste according to the properties of the chemical itself. For example flammable waste should be stored ventilated and separated from other chemicals. Consult Karolinska Institute's [rules for chemical storage](#). More information regarding management of a specific chemical product can also be found in [KLARA, the chemical database](#).

Chemical waste includes:

- Chemicals marked with hazard symbols including reagent solutions, solvents, oils, paints, adhesives, disinfectants, and so on.
- Unidentified chemicals (must be denoted with "Unknown chemical").
- Materials such as gloves, paper towels and test tubes, that are contaminated with chemicals labelled with the hazard symbol for "Highly toxic", "Carcinogenic/Mutagenic" and/or "Environmentally toxic".
- Bottles and cans labelled with the symbol for "Highly toxic", "Carcinogenic/Mutagenic" and/or "Environmentally toxic". This also applies to empty containers.
- Photochemical waste; developers, scintillation fluid, fixing solutions and films.
- Certain objects containing environmentally hazardous metals such as mercury thermometers and lead aprons from radiography.

Note:

Containers that contain chemicals for which a permit is required (A/B classified) must be labelled with the chemical name and with "Regulated chemical".

For waste handling of highly flammable substances such as butyl lithium etc., seek guidance from the FM helpdesk before disposal.

## Chemical waste pick up

All chemical waste is picked up by FM personnel on regular intervals. A person responsible for the waste have to be present to hand over the chemical waste to the FM personnel at the time of the collection.

Please consult time schedule for collection of chemical waste below (order of collection from Quarter A to D).



| Time schedule per floor* | Weekday   | Approximate time |
|--------------------------|-----------|------------------|
| 4                        | Tuesday   | 13:00            |
| 5                        | Tuesday   | 13:30            |
| 6                        | Wednesday | 13:00            |
| 7                        | Wednesday | 13:30            |
| 8                        | Thursday  | 13:00            |
| 9                        | Thursday  | 13:30            |

*\* The time schedule for collection will be evaluated and may therefore be changed. On public holidays the time schedule may be changed, in which case information on the changes to collection times will be published/announced here.*

*If you need pickup of chemicals more often or outside of the regular intervals, please send a ticket to FM helpdesk.*

## Solid chemical waste

**Solid chemical waste** can be disposed of in its original packaging or other suitable material – preferably the same type of material that the chemical was originally stored in. Never mix chemicals of different types. The container must be properly sealed, clean on the outside and the lid must be intact.

**Chemical waste mixed with contaminated consumables** can be placed in a white bucket for chemical waste, or in the cardboard boxes (with thick black bags) for chemical waste. Please be sure to store these waste boxes safely according to their chemical content – most often this waste fraction needs to be kept ventilated. If stored openly in the lab, first contain the waste in plastic bags or similar so that **no fumes or contaminants can slip out into the surroundings and expose the people in the room.**

Use the different labels available for “Chemical waste” directly on the container/the bucket or cardboard box. The container must be marked with the content, date, dispatcher, and department affiliation. There are different labels that corresponds to how the waste fractions are collected and stored: Toxic or Serious Health Hazard, Flammable, Oxidizing, Corrosive - Base or Acid, Halogenated organic solvent or Toxic to the environment and Health Hazard (exclamation mark).

If your chemical has several hazardous properties/pictograms, choose the first pictogram as that is always the most prominent/hazardous content.

Labels and empty containers for chemical waste are available in room for clean lab glassware on each floor. Cardboard boxes (including black bag and “bunt band”) for chemical waste are available in the waste rooms in each quarter.

Examples:



Note:

- Small (!) amounts of chemical solid waste can be placed in the “sharp and infectious” waste bin, if it is contained, and it does not pose any hazard for you or your colleagues. You still label with the sharp and infectious label.
- Sharps contaminated with chemicals should always be placed in the “sharp and infectious” waste fraction. Use the label for “Sharp and infectious”.
- Contaminated consumables, such as pipette tips, plastic tubes or similar, that have been in contact with chemicals that are NOT labelled with the hazard symbol for “Highly toxic”, “Carcinogenic/Mutagenic” or “Environmentally toxic” can be placed in a sealed inner bag and then handled as recyclable waste, that is, sorted according to content, e.g. “plastic waste”, “combustible waste” etc.

## Liquid chemical waste

**Liquid chemical waste** should be poured into a suitable container (glass bottle/plastic bottle/container etc.) – preferably into a container of the same type of material that the chemical was originally stored in. **The can, bottle, jerry can must not be affected by the contents.**

Never mix chemical liquids of different types! Acids should never be mixed with bases, flammable should never be mixed with toxic etc. Some liquid chemicals such as for example some buffer solutions can be mixed but verify this before you combine them by reading the Safety Data Sheets of the chemicals.

The container must be properly sealed and the lid must be intact. The container must be clean on the outside and safe to handle.

Use the different labels available for “Chemical waste” directly on the flask or container. The container must be marked with the content, date, dispatcher, and department affiliation. There are different labels that corresponds to how the waste fractions are collected and stored: Toxic or Serious Health Hazard, Flammable, Oxidizing, Corrosive - Base or Acid, Halogenated organic solvent or Toxic to the environment and Health Hazard (exclamation mark).

If your chemical has several hazardous properties/pictograms, choose the first pictogram as that is always the most prominent/hazardous content.

Labels and empty containers for chemical waste are available in room for clean lab glassware on each floor. Cardboard boxes (including black bag and “bunt band”) for chemical waste are available in the waste rooms in each quarter.

Examples:



## Empty chemical bottles/containers

**Empty bottles and cans labelled with the following hazard symbols for “Toxic”, “Serious Health Hazard” and/or “Environmentally toxic” must always be handled as “Chemical waste”!**

Handle these in the same way as “Liquid chemical waste” and label the bottles and cans directly with the label for chemical waste.



Clean and decontaminated packaging that do not have the above hazard symbols can be handled as recyclable waste, i.e. sorted as glass, hard plastics, etc. Please just be sure to remove all the hazard labels before placing them in the recycling bins.

Packaging and bottles that has contained flammable goods must be opened and rinsed carefully with water to prevent the contents giving off flammable vapor after the packaging/bottles are placed in the source sorting bins. Bottles with ethanol can be recycled as hard plastic once they have been rinsed and dried.

In cases of doubt, bottles shall be handled as chemical waste.

## Discharge to the sink

Please consult the [KI rules for laboratory waste management and emissions of chemicals into wastewater](#)

Disposing chemicals subject to “compulsory labelling regulations” (all chemicals that have hazard statements and hazard pictograms) down the sink is forbidden!



**If a chemical product with compulsory labelling regulation is to be discharged into the drains, all three of the conditions below must be met:**

1/3 - **Only small amounts (<10 ml)**, for example experiment residues or solvents that are difficult to collect when dishwashing glassware.

2/3 - **The pH must be no lower than 5 and no higher than 11.5** - highly acidic or basic solutions can damage the pipe systems. Substances with the Corrosive hazard symbol can be poured into the drains if they have no other hazardous properties and if the pH has been adjusted.

3/3 - **The chemical is neither an environmental hazard nor harmful i.e. it cannot be marked with hazard codes H400-H413**, such as heavy metals and certain organic substances that are difficult to degrade, toxic, bio accumulative (stored in living organisms) or affect nitrogen separation in the treatment plant.

If uncertain, apply the “safety first”-principle and handle as chemical waste.

Note:

- Disinfectants can contain substances that are harmful for aquatic organisms, for example Gigasept and Chemgene should be handled as chemical waste.
- Nutrient solutions that only contain vitamins, electrolytes, amino acids, peptides, proteins, carbohydrates and lipids are not considered to result in any significant effects on the environment. Residues from such nutrient solutions can be poured into the drains.

## Radioactive waste

Isotope waste handling is subjected to special KI regulations and additional Biomedicum specific rules. Contact [Radioactive Facility Coordinator](#) for more information.

Please read more about Karolinska Institutes [Radiation protection](#).

Handling:

- All radioactive waste must be dealt with separately and must not be disposed of with normal waste.
- Designated cardboard boxes or green containers should be used for all radioactive waste. Liquid waste should always be contained in e.g. plastic containers with tight lid before it is placed in a box.
- Always separate between different isotopes.
- Scintillation fluid should be separated from other radioactive waste. Sort scintillation waste separately, and label the box with the label “Chemical waste scintillation fluid” as well as the radioactive waste label.

- Radioactive waste mixed with infectious waste should be placed in the yellow container for sharp and infectious waste, and the container should be labelled with both the label for “sharp and infectious”, as well as the “radioactive waste” label.
- When the container is full, use the radioactive waste label. Fill in all fields; name, radionuclide, activity, department and date.
- For pickup place a ticket to the [FM Helpdesk](#).

Labels and waste boxes for isotope waste are available in each isotope lab. If materials are missing, send a ticket to [FM Helpdesk](#).

| <b>RADIOACTIVE WASTE</b><br>Karolinska Institutet |  |
|---|--|
| DATE  |  |
| RADIONUCLIDE(S)                                   |  |
| ESTIMATED ACTIVITY (MBq)                          |  |
| DEPARTMENT  |  |
| NAME  |  |

## Empty gas tubes

Always keep gas tubes chained, even when empty. Always keep full tubes and empty tubes separate.

Empty gas tubes will be transported to floor 2 by FM personnel. Contact [FM Helpdesk](#).

## Larger waste

If you have larger objects for example refrigerators, freezer, instruments etc. that needs to be discarded, contact [FM Helpdesk](#) for help with transport to floor 2.

The objects need to be cleaned and decontaminated before transport. A decontamination waste label must be filled out and placed on the object. [Decontaminated waste label](#).

## Contact

If you have any questions please contact the [FM Helpdesk](#)