Collection « What should I know? »

Management of special waste at EPFL

Do you know how to safely manage your waste?

EPFL VPO-SE OHS

EPFL VPO-SE OHS
Occupational Health and Safety (OHS)

If you have any question, open a support ticket:
https://go.epfl.ch/support-ohs

V.1	Oct. 2022
V.2	Feb. 2023
V.3	Nov. 2023

TABLE OF CONTENT

INTRODUCTION

To ensure a safe elimination of all special waste[1] that also respects the environment, the Swiss legislation imposes strict rules. This booklet will help you follow these rules and will guide you through the management of special waste and materials contaminated by:

- **Chemicals**
- **Biological material**
- **Nanomaterials**
- **Radionuclides**

Note: This booklet does not cover elimination of waste from vertebrate animals[2].

In Switzerland, **the producer is responsible for the waste** until the end of the recycling or destruction process. At EPFL, the assigned consignors (the people in charge of waste collection) take the special waste in charge. Only the consignors can hand over the special waste to external enterprises for valorisation or elimination.

The unit director and **the safety correspondent (CoSec) are responsible** for verifying that the following rules are respected.

Note: there are differences in waste management between the Lausanne, Sion and Neuchatel campuses. For campus Biotech in Geneva, contact: Sébastien Dornier (sebastien.dornier@fcbg.ch).

The producer of the waste is responsible for the correct preparation and packaging of the waste:

- The **waste must be stable**. All unstable waste **must be stabilized** in the room where it was produced.
- All material or solid object contaminated by chemical or biological substances, radionuclides or nanomaterials is also considered a special waste.
- **Mixing incompatible waste must be avoided.** Sort the waste based on its physical-chemical and toxic properties.
- The list of consignors and special waste collection points is available here.

[1] Special wastes are chemical, biological or radiological wastes that are hazardous to human health and/or the environment and that must be collected and disposed of in a specific way.

[2] Contact: animalvetservices@epfl.ch

GENERAL RULES

This manual gives information on the rules to follow at each step of the elimination process.

The **special waste** is subject to the Federal Act on the Protection of the Environment (EPA, ref. 814.01) and the Ordinance on the Transport of Waste (OMoD, ref. 814.610). All waste within the OMoD is classified with a six-digit identification code listed in the ordinance of the Federal Department of the Environment, Transport, Energy and Communications (DETEC) concerning the lists for Transport of Waste (LMoD, ref. 814.610.1).

The treatment of **biological waste** is described in the Ordinance on Handling Organisms in Contained Systems (ContainO, ref. 814.912).

The waste containing **radionuclides** is subject to the Radiological Protection Act (RPA, ref 814.50) and its ordinance (RPO, ref. 814.501).

Our special waste is dealt with by companies specialised in treatment and recycling of special waste. Most of it is sent to the company CRIDEC S.A. in Eclépens.

1) Sorting:

To ensure that the hazardous waste is eliminated correctly it is important that it is sorted as quickly as possible based on its characteristics.

- **Distinction between special waste** (liquid and solid substances) AND **material/ solid objects contaminated by these substances**.
- **Separate** liquids from solids.
- **Separate** sharp/pointy objects that can pierce a plastic bag from other solids waste (“soft solids” like tissues, gloves, etc.).
- **Never mix** waste that can react together.

The reaction between two substances could initiate a spontaneous fire, or even an explosion, and could create new hazardous substances.

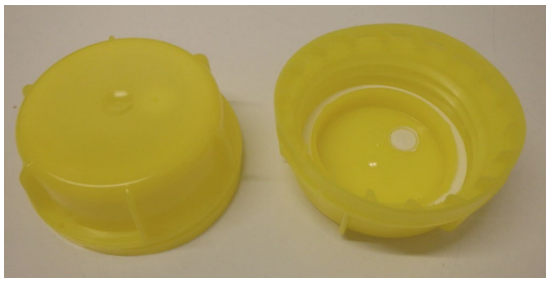
2) Packaging and containers:

The following rules must be followed in order to avoid leaks and unwanted reactions, and to ensure safe packaging of the waste:

- **Only the waste recipients provided by the EPFL shops are accepted.** The use of empty chemical containers for collection of waste is forbidden.
- The recipients must be made out of chemically and mechanically resistant material and the size must be adapted to the waste production rate.
- **Collecting waste in glass containers is forbidden**, unless the liquid is incompatible with other material (f. ex. 98% sulfuric acid weakens HDPE containers in 7 days).
- **It is forbidden to collect waste in food containers**.

For liquid waste:

- The recipients must: 1) **never be filled more than 80%** to avoid splashes, spills and overpressure; 2) be eliminated **at the latest 2 months after the first addition** to the recipient.
- Unless contraindicated, liquids must be collected in **high density polyethylene (HDPE)** containers equipped with a **safety cap** (with a pressure relief valve).



Safety caps (also available in black)

The following pages describe the different types of packaging and containers available for your waste.

Packaging and recipients	Type of SOLID waste
	**A** – BLUE bag. Exclusively household waste NOT contaminated by chemical, biological, nanomaterials or radionuclides. Campus SION: these bags are BLACK.
	**B** – GREY bag with toxic pictogram (110 L). Toxic waste or "soft"[3] objects contaminated by chemicals. No glass, not sharp or pointy objects. No needle, no scalpel blade. No pipette tips. Campus SION: these bags are BLUE.
	**C** – WHITE bag with RED stripes for biological waste of P1 type (BSL1) Solid waste from BIO labs. Possible to put some pointy objects (pipettes, tips) if they are double packed. No glass, no needle, no scalpel blade.
	**D** – RED bag with *biohazard* pictogram. Solid P2 and P3 waste (autoclave bag).

[3] "Soft" objects mean "not able to pierce a plastic bag".

	**E** – Rigid, yellow container (60 L). Pointy or sharp objects such as glass, pipettes, pipette tips or TLC or microscope plates. Soft or sharp waste. No needle, no scalpel blade.
	**F** – White bucket (different sizes available). Chemical absorbent OR, Waste or solid objects contaminated by chemicals. Soft or sharp waste. No needle, no scalpel blade.
	**G** – HDPE container with large neck. Small amounts of solid waste. No needle, no scalpel blade.
	**H** – Rigid plastic yellow bin (30 or 60 L) - with round opening on top. Biological semi-solid waste for autoclaving.

I – Cardboard box with yellow bag (50 L).

Waste contaminated by genetically modified organisms. For BIO laboratories only.

Sharp objects (pipette tips and serological pipettes) may be discarded here.

No glass, no needle, no scalpel blade.

J – Yellow containers with safety cover for needles; “Sharpsafe”.

Clean and chemically/biologically contaminated needles and scalpel blades.

The OMoD code for these needle containers must always be: **18 01 01**.

K – Chemical in its original container.

Bring to waste collection point as it is (with the original cap and a readable label).

Caution: always inform the consignors if your products are to be stored in a fridge or protected from light, humidity or oxygen.

L - Eurobox at collection point.

<u>EMPTY</u> glass, aluminium or plastic containers with lid.

Bring to waste collection point as it is.

Campus LAUSANNE and SION.

Campus NEUCHATEL: use the white buckets or deposit in the green plastic box in the waste room.

	Nétosol® absorbent to use for intercalation. Fireproof.

Packaging and recipients	Type of LIQUID waste
	**M** – HDPE bottles with safety cap (0.5 or 1 L). Liquid waste such as solvents, aqueous solutions (acidic, basic, neutral, cell cultures).
	**N** - HDPE containers with safety cap (5 L). Liquid waste such as solvents, aqueous solutions (acidic, basic, neutral, cell cultures).
	**O** - Autoclavable HDPE flasks (30, 60, 125, 250 or 500 mL). Small amounts of liquid chemical or biological waste.
	**P** - **For the SV faculty only:** 680 L containers (SV 0515 et AI 0235). Only liquid waste with unique OMoD code : **18 01 06** 1. Aqueous biological solutions containing chemically inactivated microorganisms. 2. Saline solutions, buffers and biomolecular kits. **Beware of incompatibilities**: as a general rule, do not mix these two types of waste, even if the OMoD code is similar. See: LABORATORIES THAT WORK WITH BIOLOGICAL MATERIAL.

Note: EPFL does not oblige the use of a universal bin model; each research unit can buy the model they prefer (even outside Catalyse), as long as it complies with the following requirements:

1. Fireproof metal bins are highly recommended, in particular for chemistry laboratories.
2. Plastic bins are authorised.
3. Bag-supports are authorised.
4. Bins must either be without lid OR equipped with a lid opened with a pedal.
5. The bins must be adapted to the size of the official EPFL waste bag for contaminated solid waste (90-110 L).

The document Laboratory waste bins: rules and recommendations for solid contaminated waste gives you some examples of bins and supports that can be used with the grey bags (toxic waste) and the white and red striped bags (biological waste).

3) Labelling:

All waste must be labelled at all times with a label that describes the content, the OMoD code and the associated hazard pictograms. This label must be completely filled in and must be present on the recipient **from the first addition.**

- The label is chosen based on the "Special waste management" decision tree found on: https://www.epfl.ch/campus/security-safety/en/lab-safety/waste/

By answering a series of questions, the user will find the label number with the associated OMoD code (legal obligation). To avoid **unstable waste and incompatibilities,** it is important to search for the procedure by starting from **the top of the decision tree, without taking any shortcuts**. At the end of the decision tree, you will obtain a procedure to follow (if applicable) and what label to use.

The waste must be identified with a label that contains the following information:

The **Content**	The **OMoD* code**
The **Hazard Pictogram(s)**	The **Name of the producer**
The **Name of the research group**	The **Date of the first addition** to the recipient

* 6-digit code from the Ordinance on the Transport of Waste.

- The labels are available in the waste collection points or through your assigned consignor.
- To avoid interpretation errors, it is forbidden to use acronyms.

4) Storage:

No matter the storage area (laboratory, workshop, chemistry shops), recipients that contain **liquid waste must be stored in retention trays.**

It is strongly recommended to use a funnel with a lid and a fill level indicator.

	
Closed recipients in retention trays in a ventilated space (fume hood)	Funnel with fill level indicator and lid

It is mandatory to:

- **Store waste separately to limit the risk of hazardous reaction in case of a spill or leak.**
- **Make sure that the recipient is compatible with the content.**

This is essential in order to guarantee safe transport from your laboratory until the destruction of the waste. **All waste that could release volatile compounds (ex: flammable, toxic, etc.) must be stored in ventilated areas and be kept closed to avoid evaporation.**

Authorised ventilated storage areas are ventilated cabinets (preferred) and chemical hoods. A laboratory is not in itself ventilated enough to be used for storage of volatile liquid waste.

While waiting for waste collection, it is imperative to follow the safety requirements:

- Each recipient is identified with a correctly filled in waste label.
- The waste is stored in an appropriate storage area (ventilated cabinet, fume hood).
- Incompatible waste is stored separately.

EXAMPLES/REMARKS :

- **Acids and bases** have the same pictogram, but **must be stored separately** because they react with each other (gas and heat release, etc.).
- **Oxidizers et flammable compounds must be stored separately** to avoid ignition.
- **Strong reducing agents (combustibles) and strong oxidizers** can react violently and cause fires or even explosions.
- Pay particular attention to **products that react with water, oxygen** or are **temperature sensitive**.

It is therefore crucial to be aware of the chemical incompatibilities between compounds, both pure and as waste. You can find this information in the **Safety Data Sheet (SDS)**. The essential sections are 2 (hazards), 7 (handling and storage) to get information on ventilation and storage temperature, and 10 (reactivity and stability) that gives information on conditions to avoid and incompatible substances.

5) Transport:

The waste must be transported using **baskets, buckets or trollies** that are available at the shops or through the consignors. After use, these tools must be returned to their place.

- Pay attention not to trip and to unexpected door openings.
- If possible, avoid taking the stairs with your waste.
- Only one person is allowed in the elevator with the waste.

	 
Forbidden transport	Correct transport

6) Elimination:

<u>Only stable special waste that is correctly packaged will be accepted by the consignors.</u>
Unstable waste must be stabilized in the laboratory where it was produced.

Dispose of your waste at the waste collection points as illustrated below:

	
Collection point at the CH/ PH shop	Collection point of the BCH shop

SPECIAL WASTE CATEGORIES

In the following pages the most common waste categories at EPFL are described. If your research unit produces waste that does not figure in this document, please contact OHS.

Each unit sets up their waste recovery process that follows the rules described in this document. The user determines what categories can be expected and gets equipped with the appropriate recipients in the shop or from the consignors.

The head of the unit and the safety correspondent (CoSec) are responsible to verify that the rules are respected.

In the laboratories that work with biological material, part of the waste is sent through a different transport and disposal channel. If you work in this type of laboratory, refer to the chapter "Laboratories that work with biological material".

CHEMICAL RESIDUE

Residual chemicals can be brought to the collection point if they are:

1. Still in their original container,
2. Closed with the original cap that is still in good state,
3. Have a legible label.

If this applies, it is not necessary to put a label with an OMoD code in the recipient.

COMPLETELY UNKNOWN WASTE

Waste can only be managed as completely unknown waste if it is impossible to identify. This is both hazardous and expensive, so it is only accepted in exceptional cases. If you have completely unknown waste to dispose of, you must contact your consignor who will deal with the waste together with OHS.

Label n°1; OMoD 16 05 98

UNSTABLE WASTE

All unstable (auto-reactive) substances/mixtures must be deactivated (made inert) in the production laboratory.

Label n°2; OMoD 16 05 06
Type of packaging/recipient: M, N, O (See Section Packaging and recipients; page 6-10).

- For some products, such as nitric acid, piranha solution and aqua regia, standardized procedures are available through OHS.
- If the waste remains unstable (reacts with air moisture, with oxygen and/or at ambient temperature) it must be placed under inert atmosphere (nitrogen or argon, or an inert oil) and protected from light. It must be placed in a UN certified transport container that is filled with Nétosol® absorbent, sealed and labelled.
- If the waste must be transported at low temperature, it must be placed in a refrigerator or freezer until it can be accepted by the consignor. Contact the consignor in advance to organise refrigerated transport.

PYROPHORIC WASTE

Label n°2; OMoD 16 05 06

<u>Type of packaging/recipient</u>: Original container

Pyrophoric substances (substances that can catch fire spontaneously in contact with air at temperatures < 54°C) must be kept in their original container.

A pyrophoric substance can be taken to the collection point if it respects the following:

• It is in its commercial flask that is not damaged • The label is legible • It is under inert atmosphere (nitrogen or argon), closed with its original cap • Parafilm® or Teflon® tape has been used to seal the part between the neck of the flask and the cap	

The flasks are brought to the consignor or shop following the established transport rules. At the assigned collection point, they will be wedged into a bucket filled with Nétosol® that is then placed in a transport box in metal.	

STABLE CHEMICAL WASTE

1) GASES/BOTTLES UNDER PRESSURE

Take the cylinder, spray or cartridge to the shop or to your waste collection point.
No label is necessary.

2) LIQUID CHEMICAL WASTE

Note: Following the introduction of the Laboratory Directive (CFST 1871), the maximum volume of flammable and/or health hazardous waste containers is 5 liters.

CONTAINS NANOMATERIALS
Label n°2; OMoD 16 05 06
Type of packaging/recipient: M, N, O (See Section Packaging and recipients; page 6-10).

The liquid waste is placed in plastic recipients for special waste and kept ventilated without any incompatible material present. The flask is labelled and sealed in a transparent plastic secondary containment. Both heat-sealing plastic bags and zip lock bags are accepted.

Examples of double packed liquid waste

CONTAINS CYANIDES (CONCENTRATION > 50 mg/kg)
Label n°4; OMoD 06 03 11
Type of packaging/recipient: M (See Section Packaging and recipients; page 6-10).
INCOMPATIBILITIES: Do not store with acids.

If the waste contains more than 50 mg/kg of cyanide, it has to be basified to pH ≥ 9 in the laboratory. The solution is then transferred to a white plastic waste bottle and kept in a ventilated area.

CONTAINS MERCURY OR ITS DERIVATIVES

Label n°5; OMoD 06 04 04

Type of packaging/recipient: M (See Section Packaging and recipients; page 6-10).

INCOMPATIBILITIES: Do not store with oxidizers.

If the waste contains mercury or any of its derivatives, it must be collected in a white plastic bottle for special waste and kept in a ventilated area.

AQUEOUS SOLUTION WITHOUT SOLVENTS

Acidic aqueous solution (pH ≤ 3)

Label n°10; OMoD 06 01 06

Type of packaging/recipient: M, N (See Section Packaging and recipients; page 6-10).

INCOMPATIBILITIES: Do not store with basic solutions.

Collect in a white plastic container or other compatible recipient adapted to the volume of the waste. Keep in ventilated area. Small amounts (< 20%) of water miscible solvent is allowed in this type of waste.

NEUCHATEL MICROCITY ONLY: there are two additional specific OMoD codes for:

- Hydrofluoric acid waste (**label n°20; OMoD code 06 01 03**).
- Nitric acid waste (**label n°19; OMoD code 06 01 05**).

Alkaline aqueous solution (pH ≥ 10)

Label n°11; OMoD 06 02 05

Type of packaging/recipient: M, N (See Section Packaging and recipients; page 6-10).

INCOMPATIBILITIES: Do not store with acidic solutions.

Collect in a white plastic container or other compatible recipient adapted to the volume of the waste. Keep in ventilated area. Small amounts (< 20%) of water miscible solvent is allowed in this type of waste.

Aqueous solution with 3 < pH < 10

Label n°13; OMoD 07 01 01

Type of packaging/recipient: M, N (See Section Packaging and recipients; page 6-10).

Collect in a white plastic container or other compatible recipient adapted to the volume of the waste. Keep in ventilated area. Small amounts (< 20%) of water miscible solvent is allowed in this type of waste.

ORGANIC SOLVENTS (mixed or pure)

Halogenated solvent waste

Label n°8; OMoD 07 01 03

Type of packaging/recipient: M, N (See Section Packaging and recipients; page 6-10).

INCOMPATIBILITIES: Do not store with strong oxidizers or strong bases.

Collect in a white plastic container or other compatible recipient adapted to the volume of the waste. Keep in a ventilated area. The label must indicate if the waste contains polychlorinated biphenyls (PCB).

Non-halogenated solvent waste

Label n°9; OMoD 07 01 04

Type of packaging/recipient: M, N (See Section Packaging and recipients; page 6-10).

INCOMPATIBILITIES: Do not store with acids or strong oxidizers.

Collect in a white plastic container or other compatible recipient adapted to the volume of the waste. Keep in a ventilated area.

USED OIL WASTE

Label n°7; OMoD 13 02 08

Type of packaging/recipient: M, N (See Section Packaging and recipients; page 6-10).

INCOMPATIBILITIES: Do not store with acids or bases.

The waste is collected in a plastic container that is then sealed and labelled.

PAINT WASTE

Label °18; OMoD 08 01 11 (note: this category does not appear on the waste decision tree).

Type of packaging/recipient: M, N (See Section Packaging and recipients; page 6-10).

INCOMPATIBILITIES: Do not store with acids or bases.

If the waste is still in its original container with its original lid, it can be relabelled as waste by covering the old label with the waste label. If not, the paint is collected in a white plastic container or other compatible recipient adapted to the volume of the waste. Keep in a ventilated area.

3) SOLID CHEMICAL WASTE

It is important to distinguish between sharp or pointy waste from blunt or soft waste. To make sure that the plastic waste bags are not pierced, and to avoid all risk of cuts, all sharp and pointy objects must be placed in **rigid plastic containers** (or in some specific cases, double packed; see biological waste chapter).

Contact OHS if you have any questions regarding this subject.

CONTAINS NANOMATERIALS
Label n°2; OMoD 16 05 06
Type of packaging/recipient: B (only in double packaging) or **F, G** (See Section Packaging and recipients; page 6-10).

- To avoid inhalation of nanomaterials, it is highly recommended to generate nanomaterial waste in suspension.
- Label the recipient and double pack it in a transparent secondary container. Transparent heat-sealable bags and zip lock bags are accepted as double packing. Large containers can be placed in transparent plastic bags sealed with a cable tie.

CONTAINS MERCURY OR ITS DERIVATIVES
Label n°5; OMoD 06 04 04
Type of packaging/recipient: F, G (See Section Packaging and recipients; page 6-10).

Place in a plastic container adapted to the waste volume.

CONTAINS MINERAL WASTE
Label n°6; OMoD 16 03 03
Type of packaging/recipient: F, G (See Section Packaging and recipients; page 6-10).
INCOMPATIBILITIES: Do not store with acids or bases.

Mineral waste (alumina, used silica, silica gel, TLC plates, etc.) must be collected in a recipient or bucket adapted to the waste volume. Keep in ventilated area.

4) CONTAMINATED MATERIAL AND CONTAMINATED SOLID OBJECTS

CONTAMINATED GLASSWARE

Type of packaging/recipient: L, E, F (See Section Packaging and recipients; page 6-10).

Chemically contaminated glassware cannot be evacuated with the recycled glass. Contaminated glassware is brought to the waste collection point (**L**) without OMoD code on the recipient. If the glassware is broken or cracked: place it in a UN certified container (**F, E**) and label it with the OMoD code 15 02 02.

NEEDLES AND SCALPEL BLADES

Label n°14; OMoD 18 01 01

Type of packaging/recipient: J (See Section Packaging and recipients; page 6-10).

Needles and scalpel blades **must imperatively** be collected in containers for needles ("sharpsafe"), whether they are contaminated or not.

Reminder: it is not recommended to recap needles. If it must be done, a one-hand technique should be used.

MATERIAL CONTAMINATED BY CHEMICALS

This category concerns material contaminated by substances that have at least one of the GHS pictograms (ex: corrosive, flammable, toxic, etc.). For laboratories that work with biological material, refer to page 25 in this booklet.

Label n°16 or 17; OMoD 15 02 02 (label n°16 if contaminated with an oxidizer).

Type of packaging/recipient: B (soft materials).

As long as it is **not sharp, nor pointy**: put all contaminated material (e.g. gloves, wipes and or clothing, plastic tubes, etc.) in a grey plastic bag. Always separate material and objects contaminated with an oxidizer from material and objects contaminated with the other GHS pictograms.

Label n°14; OMoD 15 02 02

Type of packaging/recipient: E, F (sharp/pointy material).

Pointy or sharp objects: place in a rigid container.

CONTAMINATED ABSORBENT

Label n°16; OMoD 15 02 02

For contaminated absorbent, reuse the bucket as illustrated below:

When the absorption is done, place the absorbent material and all contaminated items (gloves, broom, shovel) in the white UN certified bucket, seal it and take it to the waste collection point. After use of the absorption kit, cover the label on the bucket with label n°16 as illustrated below.

BULKY OBJETS OR EQUIPMENT CONTAMINATED WITH CHEMICALS

Labelled by the consignors (OMoD 16 02 13)

Type of packaging/recipient: original packaging OR packaging on pallet.

This concerns bulky objects or equipment that have been contaminated by chemicals and that cannot be decontaminated easily (e.g. oven, rotavap, laser, refrigerator, etc.).

1. Contact OHS – describe the object and the type of contamination.
2. After OHS has answered, the object will be packaged on a pallet and discarded with the chemical waste according to recommendations given by the elimination company.

LABORATORIES THAT WORK WITH BIOLOGICAL MATERIAL

The Ordinance on Handling Organisms in Contained Systems stipulates that the management of biological waste is organised by the BioSafety Officer (BSO) as part of the biosafety program.

The BSO ensures that measures are respected in terms of:

- Inactivation methods and decontamination.
- Collection and elimination of solid and liquid waste.

Elimination procedures vary based on the biohazard level and the type of waste (liquid, solid, semi-solid). This document describes the elimination of level 1 and 2 biological material (P1 and P2). For any questions, contact the biosafety team (biosafety@epfl.ch) for information on inactivation and decontamination procedures adapted to your research.

Liquid waste

All liquid biological waste must be **inactivated** before being taken to the collection point. SV faculty laboratories must put this type of waste in the tanks in the rooms AI 0235 and SV 0515.

- **Biological liquids** must be inactivated by **autoclaving** or by **chemical treatment**; in the latter case the use of an authorised biocide is mandatory. The biosafety team (biosafety@epfl.ch) can help determine the best adapted procedure, since this depends on the type and volume of waste.

After inactivation, the **biological waste** is labelled (**label n°3; OMoD 18 01 06**) and taken to the waste collection point. Solutions inactivated by autoclave cannot be eliminated in the sink: they are still considered special waste and must be eliminated with the same OMoD code (**label n°3; OMoD 18 01 06**).

! Never autoclave a biological solution that contains toxic or hazardous chemicals, solvents or bleach (hypochlorite). This can cause **intoxication, explosion and corrosion of the autoclave.**

- **Saline solutions, buffer solutions and molecular biology kits** should not be disposed of down the drain: they are also considered special waste and therefore disposed of under the same OMoD (**label n°12; OMoD 18 01 06**).

! Beware of incompatibilities: The same OMoD code does not mean that waste can be mixed together. It is recommended not to mix chemically inactivated biological solutions with saline solutions, buffer solutions and especially molecular biology kits.

Solid level 1 waste (BSL1 or P1)

Solid P1 biological material is collected in:

a) **White and red striped bags** if there is **no** contamination with genetically modified (GM) material. Pointy waste, such as pipette tips and serological pipettes, must be double packed before being placed in these bags.
b) The **double packed boxes** (yellow bag + carton) are for waste **contaminated by GM**. Cultures on agar can be disposed of in this kind of container.

These types of waste do not need an OMoD label and they must be brought to the assigned waste collection point. For example, for the basic sciences the room is CH B0 93.4.

! Never put needles, scalpel blades or glass in the biological waste bins. The sharp waste must be collected in yellow boxes for sharps (**label n°14; OMoD 18 01 01**).

Solid level 1 waste (BSL1 or P1) contaminated by chemicals

In the laboratories that work with P1 biological material it is in some **specific cases** allowed to put chemically contaminated material in the white and red striped bags or the GM boxes.

The following rules must be respected:

- The chemical is not a volatile toxic compound or an oxidizer,
- There is only a small amount of the chemical,
- Pipette tips and pipettes must be double packed before being placed in the white and red striped bags to avoid piercing the plastic bag.

Solid level 2 waste (BSL2 or P2)

Solid P2 waste must be inactivated by **autoclave**:

- If there is a risk of leakage (ex: solid cultures on agar), it is recommended to use a rigid container for the autoclaving. (**H** - see Section Packaging and recipients; page 6-10).

- For other types of solid waste, autoclavable bags with a biohazard symbol must be used (**D** - see Section Packaging and recipients; page 6-10). After autoclaving, the bag is placed in a red and white striped bag, sealed hermetically and taken to the waste collection point. For example, for the basic sciences the room is CH B0 93.4.

- If the waste contains non-autoclavable material (particularly toxic substances, radioactive waste or nanomaterials), the waste must be eliminated through a particular infection waste channel. Contact the biosafety team (biosafety@epfl.ch) to organise the elimination and to request authorisation from the authorities.

! **Systematically separate liquid waste from solid waste.**

RADIONUCLIDE WASTE

The Radiological Protection Ordinance (ORP) sets activity limit, the **clearance limit (LL)**, for each radionuclide.

At EPFL, the waste that contains only short-lived radionuclides (less than 60 days) is stored on campus until they are no longer considered radioactive or their activity is below the authorised decay rate. This waste then is eliminated through the waste collection point as inactive waste. Otherwise the waste is sent to the Paul Scherrer Institute (PSI) in Villigen, the Swiss waste central for radioactive waste.

- If the radioactivity is below the clearance limit (LL), the substance is not subject to the legislation and the waste is treated according to its other characteristics.
- **Only the radioprotection expert is authorised** to determine if the waste can be eliminated as non-radioactive, if it has to be stored for a certain period or if it has to be sent to PSI.
- **Each unit that works with radionuclides must imperatively contact the radioprotection team before starting work:** https://go.epfl.ch/support-ohs.

CONCLUSIONS

What is the key message?

All **stable special waste** is taken in charge by the assigned consignors and the chemical shops if the waste is **correctly packaged and labelled**. Contaminated material is equally considered special waste.

Auto-reactive or unstable waste must be stabilized or rendered inert in the laboratory where it has been produced.

The recipients must be made out of chemically and mechanically resistant material and be adapted to the elimination process:

- A chemical compound can be brought to the assigned collection point if it is in its original container, closed with its original cap and with its label intact.
- Liquid special waste must be eliminated **at the latest 2 months** after it was produced **or** when the recipient is **80% full**.
- The **reuse** of containers is **forbidden**.
- Liquid waste must be collected in plastic recipients that are closed with **a safety cap**.
- Recipients that contain **liquid waste** are stored in **retention trays**.
- The use of **glass recipients or food containers is forbidden**.

Mandatory information on the label:

- The content
- The OMoD code
- The name of the producer and the research group
- The date of the first addition to the recipient.
- The hazard pictogram(s)

Incompatibilities: the waste must be stored separately based on the risk of hazardous reactions in case of a leak or a spill.

Respect these rules will protect you, your infrastructure as well as all the people involved in the different steps to eliminate your waste.