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LABORATORY WASTE

Project *"Waste generated in the Chemicals and Chemical Engineering teaching laboratories, School of Science and Technology"*, with the collaboration of the offices of the Vice-rector for Students, Employment and Social Responsibility. 2015

WHAT IS WASTE?

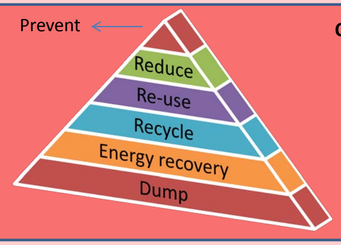
- The substance/item being disposed of.
- In practical classes in the chemistry laboratories we use chemical materials and substances. Consider constantly whether they should be classed as waste.

In laboratory trials, we will use the SMALLEST POSSIBLE QUANTITIES in order to generate the minimum of waste.

Do these count as waste?


Glucose


NaCl



1. MINIMISATION

Criteria for reducing laboratory waste

- ✓ Work properly in lab practicals and only use the quantity of reagents and solvents you need.
- ✓ After preparing solutions, store any surplus and if possible, re-use it.
- ✓ Improve the design and scale of lab practicals and experiments.
- ✓ Upgrade laboratory instruments, try to find increasingly sensitive techniques.
- ✓ Adapt the stock of reagents to the specific needs of each laboratory; it is advisable to make a regular inventory of products. Use the oldest chemicals first.
- ✓ Consider re-using empty containers.
- ✓ Share chemicals between laboratories.
- ✓ Use any waste generated in practicals for other experiments.
- ✓ Replace hazardous substances with products that are not as dangerous or not dangerous at all.

2. MANAGEMENT

1. Classify the waste generated in the laboratory using the categories established by the University of the Basque Country.

Waste	Example
Halogenated solvents	Organic liquids with a higher-than-1% content of any halogen.
Non-halogenated solvents	Inflammable organic liquids with a halogen content below 1% .
Inorganic acid solutions	Inorganic acids and their concentrated aqueous solutions (over 10% in volume).
Absorbents. Filtering material	Cleaning material: cloths, sepiolite, contaminated paper, gloves, etc. Plastic or glass/Pyrex material such as pipette tips, test tubes, vials, plugs, needleless/tipless syringes, etc. Paper filters, disc filters, activated charcoal filters, etc.
Laboratory reagents	Chemicals which should not be included in any of the previous groups because of their hazard, as well as obsolete, unused or expired pure reagents in their original containers. For example, containers with remains of the chemical reagent with a volume of less than 5 litres, vial or closed tubes with samples.
Empty glass containers	Bottles, jars and other empty glass containers not containing solid or liquid remains. Maximum waste content: 1% of total volume of content.

2. The authorised external manager working with the UBC will dispose of the waste collected.

SAFETY

Check the safety cards for all chemical compounds

Some examples:

PICTOGRAM	OBSERVATIONS	PRECAUTIONS
TOXIC	Harmful if inhaled, ingested or absorbed through the skin in small quantities.	Avoid bodily contact.
HARMFUL	Can cause serious or chronic harm if inhaled, ingested or absorbed through the skin.	Avoid bodily contact. Consult a doctor if you feel unwell.
DANGEROUS FOR THE ENVIRONMENT	Environmental harm: may alter natural ecosystem balance.	Avoid dumping, depending on potential risk. See instructions for disposing of special waste.
CORROSIVE	Destroys skin tissue.	Avoid contact with eyes, skin and clothing. Do not inhale vapours.
FLAMMABLE	Flammable gas, aerosol, liquid or solid.	Keep away from open flames, sparks and heat sources.

PACKING HAZARDOUS WASTE

- ✓ **Use of suitable containers**
  - Narrow mouth for liquid waste: *jerry cans*.
  - Wide mouth for solid waste: *blue bins*.
- ✓ **Use of standardised containers**
  - Expiry: 5 years from production date
- ✓ **Label containers before beginning to fill them**
  - Complete the information on the label.

- ✓ **Close the containers properly**
  - In the case of jerry cans for liquids, *the plastic sealing washers on the cap must be removed*.
  - In the case of bins for solids *the seal and spring-clip system must be well secured*.
- ✓ **Filling containers**
  - Never fill above the mark (horizontal line).
  - In other words, never fill to above 80% of the container's total capacity .

- ✓ **Only re-use empty containers when you can be sure of chemical compatibility and homologation.**