Hazardous waste

Packing, labelling and transportation
What is hazardous waste?

- Hazardous waste is defined as: flammable, explosive, infectious, injurious, hazardous to the environment or other corresponding properties (hazard, GHS)
  - If a chemical is classified as hazardous, or it has fractions of hazards, it becomes hazardous waste when discarding it
Common hazardous waste

- Used grease and oil
- Solid oily waste
- Oily waters and emulsions
- Coolants, brake fluids
- Lead-acid batteries
- Paint waste, adhesive waste and varnish waste
- Solvents and thinners (thinner, acetone)
- Acids and bases
- Drugs and pharmaceutical products
- Strip lights and compact fluorescent light bulbs
- Heavy metal batteries
- Clinical or heat thermometers containing mercury
- Electrical and electronics waste
Starting points when sorting waste

• Different types of waste should be kept away from each other from the start
• The different types of waste should have their own collecting bins as close as possible to the place where the waste is created
• Groups of substances that react with one another must be collected separately, for example:
  – Flammable liquids
  – Acids
  – Bases
  – Oxidizing chemicals
  – Toxic chemicals
• Substances that must be separated when transported to Ekokem are: mercury, cyanide, iodide, bromide, unknown waste
• Do not mix different types of waste, if you are unsure of what you are doing.
Identify the substance according to the Hazard

- Flammable, e.g. Diethylether, xylene and most of the solvents

- Oxidizing, e.g. Silver nitrate, ammonium persulphate
Identify the substance according to Hazard continued...

- Toxic, e.g. carbon tetrachloride, chloroform

- Corrosive, e.g. different acids and bases

  - These must be packed separately:
    - Acids (e.g. Acetic acid)
    - In their own outer casings:
      - Hydrochloric acid (HCl)
      - Sulphuric acid, Phosphoric acid
      - Nitric acid
    - Bases, e.g. sodium hydroxide and potassium hydroxide
Side hazards of a substance

• A substance might except of a main hazard also have a side hazard(s), e.g. methanol, which is flammable and toxic. Methanol has hazard labels flammable (3) and toxic (6.1)
• The main rule is to initially categorize the substance by the main hazard, and secondly according to the side hazard(s) if the substance has these. The substances are given priority by the VAK-directions, the class and the packing group
• Always use the proper package for classified substances
• For safety reasons, never mix substances, keep them in their original packages
Selection criteria for packages

• The quantity of waste
• The chemical and physical properties of waste
• The recycling of waste and/or containers
• The handling of the containers
• The laws of transport (The transport of dangerous goods on the road (VAK))
Noticeable about hazardous waste

• The package must be tight and able to close tightly over again
• The package must stand conventional use, movements and the load and stress caused from the storing conditions
• The package and shutter materials must not react with the waste, to cause danger or hazard to the health or the environment
• The producer of waste must make sure to do the appropriate packing, labelling and storing of the package
• The best collecting containers for hazardous waste are the original containers of the substances
  – Add a label that it is waste in the container
• When choosing and packing a package remember to consider the influence of the substances and the possible heat expansion
Warning labels
Type approval classes X, Y and Z

- Certified containers and packages are marked with a type approval
- The type approval informs you what group of substances can be packed into the constituent container
- Type approved packages are grouped into X, Y and Z:
  - X = packing groups I, II and III
  - Y = packing groups II and III
  - Z = packing groups III
- Example: gasoline: VAK-class is 3, packing group II, means that waste gasoline can be packed into packages with the labelling X or Y
Transport packages, type of approval

• The type of approval is indicated by the package, e.g.

   UN 1 A 1 / Y1.2 / 160/14 / NL / BO123

• The type of approval is always specific to the package and the type of packing

• The sender of the waste is responsible for the selection of the used packages
Packing guide

- Leave room for expansion: fill containers to max. 90% of the maximum level, leaving room for expansion as weather conditions change, without danger of breaking the container.
- Close with care: the package and its shutters must stand normal storing and transport conditions.
- Clean the surfaces: safe handling and sure sticking of the labels to the surface of the containers is accomplished when the surfaces are cleaned from splashes and stains.
- Never store dangerous combinations in the same package!
Laboratory and minor chemical waste packages
Labelling hazardous waste

• Waste can be stored in the original package and the labels of the package can then be used, the labels must be updated as following though:
  – The keeper of the waste (laboratory)
  – The name of the waste
  – Necessary information for organizing the safety and waste disposal

• If the properties of the waste cant be determined within limits, there must be a label with the following text
  - ”hazardous waste, composition unknown”
Labelling of the hazardous waste

- If the hazardous waste belongs to the VAK-regulations, for transportation, the package must be labeled with:
  - The warning label for the category of substances (e.g. 4.1)
  - The UN number of the substance (e.g. UN 3175)

- Other labels
  - The order number of the recipient of the waste (jäteeränumero, the waste batch number) given by Ekokem
Several similar chemicals in the same package

- When combining several UN-numbers, N.O.S.-classification is used
- Make sure that the chemicals are compatible (SDS ch.10.5)
- Flammable fluids (class 3)
  - UN 1203 gasoline 3, II
  - UN 1090 acetone 3, II
    - -> UN 1993 flammable fluid N.O.S., 3, II
- Flammable and poisonous fluids (classes 3 and 6.1)
  - UN 1203 gasoline 3, II
  - UN 1090 acetone 3, II
  - UN 1230 methanol 3 (6.1), II
    - -> UN1992 flammable fluid, toxic N.O.S., 3 (6.1), II
Label sticker for hazardous waste

<table>
<thead>
<tr>
<th>POISTETTU KÄYTÖSTÄ</th>
<th>VAARALLINEN JÄTE, KÄSITTELE HUOLELLA</th>
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<tr>
<td>Sisältö</td>
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Ympyröi vaaraomaisuus

Päivämäärä | Jätteestä vastaava

www.ekokem.fi
Label sticker for hazardous waste

POISTETTU KÄYTÖSTÄ
VAARALLINEN JÄTE, KÄSITTELE HUOLELLA
Sisältö
Halogenated solvent (chloroform+acetone)

Ympyröinyt aominaisuus

Päivämäärä
20.4.2016
Jätteestä vastaava
organisk kemi

www.ekokem.fi
The most important things to remember

• Different types of waste should be kept away from each other from the start
• **Do not mix different types of waste, if you are unsure of what you are doing!**
• Leave room for expansion: fill the containers to max. 90% of the maximum level, leaving room for expansion as weather conditions change, without danger of breaking the container
• Close with care: the package and its shutters must stand normal storing and transport conditions
• **Remember to use UN-approved packages** (for example: you can not send waste to Ekokem in a glass bottle, you must put it in a chemical cardboard box or in an Ekobox)
• DO NOT dispose the chemical cardboard transport boxes that a chemical is sent in, use them as a hazardous waste transport boxes instead
• Put a circle around all hazards on the Ekokem’s sticker and use warning labels for transport (VAK-labels)