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The University of Southern Denmark

Chemical Waste groups

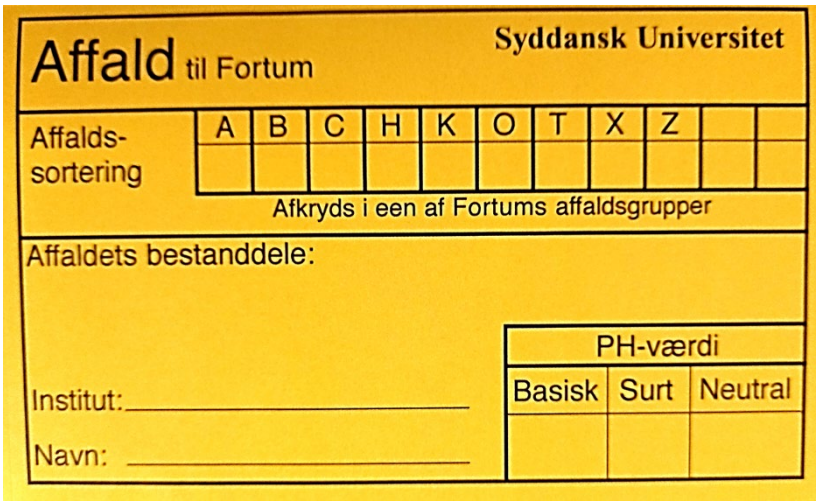

Figure 1. Fortum's approved waste label for all containers with chemical waste etc. at SDU.

All containers for chemical waste must be provided with a special waste label, which must be filled outindicating:

- The waste group symbol.
- The main components. Usually, the 3-4 solvents with the highest concentration are sufficient.
- Legible signature or initials + group name. Waste containers without such a signature will not be received for treatment. This is because it must be possible to request further information regardingthe waste type and properties in special cases (such as accidents etc.).

All the rules above apply, of course, in the distillation room in the basement as well, and it is the responsibility of the user to remove empty packaging and other waste.

New 5-liter bottles and various buckets are available in the solvent room (Ø13-604b-0). Empty solvent cans made of plastic or metal are put in the designated places in the solvent room.

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A: Mineral oil waste

Examples:

- Diesel oil
- Fuel oil
- Hydraulic oil
- Lubricating oil
- Oil filters
- In a mixture with water, soil, or gravel
- Heat transfer oil (PCB free)

Terms:

When the waste is declared in group A, the waste producer guarantees that:

- The waste only contains oil products, possibly mixed with water, soil or gravel.
- No emulsifying substances are added.
- There is at most 1% halogen and sulphur in the waste, however no PCB.
- No inorganic chemicals are added.
- The waste does not contain drilling or cutting oil.
- The waste does not contain reactive waste, as described in group O.
- The waste does not contain mercury.

Important remarks:

- Oil emulsion and other organic waste typically goes in group H or C depending on the calorific value.
- Halogen and sulphurous substances and waste containing PCB goes in group B.
- Organic waste containing at most 50% water normally goes in group C.

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B: Halogen and sulphurous organic chemical waste

Examples:

- Chloroform
- Tetrachloromethane
- Freon
- Methylene chloride
- Other halogen solvents
- Fixing baths with more than 1% sulphur in the form of thiosulfate
- Halogen glue waste
- PVC waste
- Oil containing PCB

Terms:

When the waste is declared in group B, the waste producer guarantees that:

- The waste does not contain reactive waste, as described in waste group O.
- The waste does not contain mercury.
- The waste does not contain isocyanate.
- The waste does not contain herbicides and insecticides.

Important remarks:

- Mercurial waste goes in group K.
- Isocyanates goes in group Z.
- Halogen free and sulphur free cutting oil goes in group H.
- When the sum of halogen and sulphur contents exceeds 1% it is declared as B-waste.

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C: Energy-rich organic chemical waste without halogen and sulphur

Examples:

- Acetone
- Alcohols
- Animal oils
- Benzene
- Benzine
- Dilutants
- Ethers
- Hexane
- Methylethylketone
- Petroleum ether
- Styrene
- Synthetic oil
- Turpentine
- Toluene
- Vegetable oils
- Xylene

Terms:

When the waste is declared in group C, the waste producer guarantees that:

- The water content is at most 50%.
- The waste does not contain: Halogen, sulphur, or mercury.
- The water does not contain reactive waste as described in group O.

Important remarks:

- If the water content is above 50% the waste is declared to belong to group H.
- Halogen or sulphurous substances goes in group B.
- Mercurial waste goes in group K.

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H: Organic chemical waste without halogen or sulphur

Examples:

- Amines
- Acetic acid
- Developer
- Drilling fluid and cutting fluid
- Epoxy compounds
- Ethylene glycol
- Fixing baths
- Formalin
- Organic acids
- Organic salts
- Paint
- Phenol
- Soap
- Synthetic oils

Terms:

When the waste is declared in group H, the waste producer guarantees that:

- The waste does not contain reactive waste as described in group O.
- The waste does not contain mercury, halogen, sulphur or isocyanate.

N.B.!

- Acidic waste is neutralised before combustion against extra charge.
- If the waste is acidic, this is to be indicated on the declaration.

Important remarks:

- Reactive waste goes in group O.
- Halogen or sulphurous waste goes in group B.
- Mercury waste goes in group K.
- Isocyanates goes in group Z.

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K: Mercurial waste

Examples:

- All mercury compounds
- Mercury from manometers and similar
- Mercury lamps
- Mercury thermometers

Terms:

When the waste is declared in group K, the waste producer guarantees that:

- The waste does not contain reactive waste, as described in group O.
- For the waste in group K, there are no special prerequisites except of course that the waste iscorrectly packaged and marked.

Important remarks:

- Never mix mercurial waste with other types of waste!
- If the waste is mercurial (contains mercury) it must be clearly indicated on the declaration.

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O: Reactive waste

Examples:

Oxidizing substances with reference to ADR class 5.1

- Borate and perborate
- Bromates and perbromates
- Chlorates and perchlorates
- Hydrogen peroxide
- Hypochlorites (solid)
- Iodates and periodates
- Manganates and permanganates
- Nitrate and nitrite salts
- Inorganic peroxides

Organic peroxides with reference to ADR class 5.2

Substances which, in contact with water, generate acidic fumes, with reference to ADR class 8 section 11and 12

- Aluminium chloride (anhydrous)
- Chlorosulphuric acid
- Ferric chloride (anhydrous)
- Phosphoryl chloride
- Sulphur dichloride
- Thionyl chloride

Substances which, in contact with water, emit flammable gases, with reference to ADR class 4.3

- Alkali metals and alloys
- Aluminium (powder)
- Amides and metals
- Hydrides
- Silicides

Important remarks:

- It is desirable that compounds in waste group O are decomposed into less active compounds.
- The above compounds and groups are only examples. There are many other compounds in each of the fourcategories.

Packaging:

- Even if the different types all go in group O, they must be kept separate. Unless the waste is shipped in the original packaging, clean plastic packaging must be used.

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T: Pesticides

Examples:

- Seeds and seed corn
- Containers/packaging, empty (from pesticides)
- Fungicides
- Herbicides
- Insecticides
- Mouse poison
- Pesticides
- Rodenticide

Terms:

When the waste is declared in group T, the waste producer guarantees that:

- The waste does not contain reactive waste, as described in group O.
- The waste does not contain mercury.
- The waste does not contain isocyanates.

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X: Inorganic chemical waste

Examples:

- Alkaline cyanide-containing solutions
- Chromosulphuric acid
- Hydrofluoric acid
- Galvanic baths
- Hypochlorite solutions
- Metal hydroxide
- Phosphoric acid
- Nitric acid
- Hydrochloric acid
- Sulphuric acid
- Inorganic salts

N.B.!

- If the waste contains ammonium, chromium, cyanide, hydrofluoric acid, fluorides, or complexing agents itmust be indicated on the declaration.

Terms:

When the waste is declared in group X, the waste producer guarantees that:

- The waste does not contain organic compounds, such as oil, fat, and complexing agents.
- If the waste contains cyanide, the pH must be above 10 and the cyanide content below 3%.
- The waste does not contain reactive waste, as described in group O.
- The waste does not contain mercury.

Important remarks:

- Mercurial waste goes in group K.
- Isocyanates goes in group Z.
- If the waste contains organic compounds, it is the type of these which decide which group the waste goes in.
- Waste containing cyanide may only be transported if the pH is above 10 and the cyanide content isbelow 3%. If above 3%, dilution is required.

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Z: Other waste

Examples:

- Asbestos, packaged according to the asbestos declaration
- Mixed waste from labs in small glass packaging containing analytical material - e.g. HPLC-vial and such (typically from courses)
- Isocyanates
- Needles, scalpels, and other sharp objects in yellow boxes approved by Fortum
- Spray cans
- Pressure cylinders
- Empty or broken glass packaging or glassware that cannot be cleaned
- Medicine
- Clinical hazardous waste including:
    - Biologically active material
    - Genetically modified organisms
    - Scintillation liquid and other low-level radioactive waste
- Batteries including:
    - Mixed batteries
    - Mixture of alkali and rutile batteries
    - Lead batteries
    - Lithium batteries
    - Lithium-ion batteries
    - Nickel-cadmium batteries
    - Nickel-metal hydride batteries
- Unknown chemical waste – see Important remarks!

Terms:

When the waste is declared in group Z, the waste producer guarantees that:

- The waste does not contain reactive waste, as described in group O.
- The waste does not contain mercury.
- The waste does not contain loose needles and/or sharp objects.

Important remarks:

- Loose needles are an unacceptable risk for the staff at Fortum, and the waste will normally be returned at the sender´s expense.
- Unknown waste can always be declared in group Z. Fortum will then identify the waste at the sender´s expense.