

## Handling of specific waste streams

An important part of a sustainable waste management is to monitor and promote waste stream management in the different sectors of waste generation.

Further to the day-by-day waste produced in households, public institutions and small commercial outlets there are significant waste amounts that accumulate at the above and also at more industry-like sources in the form of worn out materials and products. To facilitate the recycling and/or respond to the particular characteristics, a periodic accrual and specific constraints with regard to an environmentally safe handling a separate collection and disposal of these wastes is usually required. Generally the following streams must be considered:

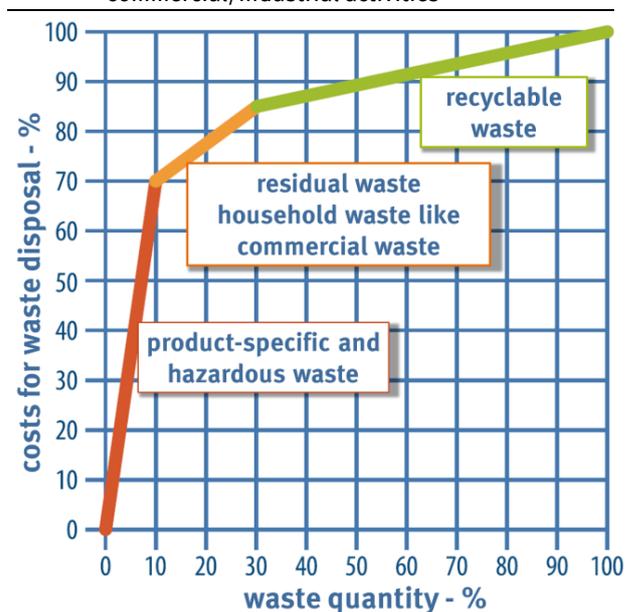
- ▶ **Waste with household waste like characteristics:**  
This waste can be collected and disposed of like and together with household waste.
- ▶ **Waste of hazardous nature or with potentially harmful content:** This is waste material which requires a stricter control regime and to which special provisions apply (e.g. Basel Convention for shipments of such material) because of the potential risks for nature and environment. The classification into hazardous and non-hazardous waste is based on the system for the classification and labelling of dangerous substances and preparations, which ensures the application of similar principles over their whole life cycle. The properties which render waste hazardous are usually laid down in regulatory documents and/or specific lists (such as the European Waste Catalogue). To evaluate the hazard potentials of chemical waste and ensure the safe handling of such material, the work done in the framework of the 'International Program on Chemical Safety' and the EU's policy on chemicals REACH must also be taken into consideration. A waste stream to which must be looked in a similar way as to hazardous waste is infectious or medical waste as well as sewage sludge from waste water treatment. Hazardous and medical waste in general is waste material that contains critical amounts of dangerous substances and can therefore not be utilized without proper precaution. It must be col-

lected separately from other wastes and has to be disposed of in such a manner that no harm is caused to the surroundings. A disposal together with household waste should not take place under any circumstances. The management of sewage sludge should be aimed at the best possible use of nutrients, precious material components and energy content while it must also give respect to special precaution and appropriate treatment due to the broad range of critical substances that such sludge contains.

- ▶ **Waste of (production) specific nature:** These are wastes produced from the manufacturing industry or product-specific waste streams generated by industrial or business processes. Emerging as waste streams with rather uniform compositions, their recycling opportunities are usually good provided that utmost attention and care is given to keep the materials separated from other wastes. Special regulations and appropriate schemes for the pricing of raw commodities vis-a-vis recycled goods shall be helping in the avoidance, minimization and best possible utilization of these wastes.

Avoiding, reducing and -whenever possible- utilizing the waste from industrial/commercial activities is a basic command of proper waste management and increasingly important from the ecological and economical point of view.

Figure 1: General cost proportions for the disposal of different waste types generated in the course of commercial/industrial activities



Under the influence of dwindling resources and soaring price levels for materials, energy and environmental services waste has become a relevant cost factor and the impacts of dealing appropriately with the specific waste streams gets quickly reflected in an enterprises' balance sheet (see also Figure 1).

Environmental policy is increasingly driven by the need to influence manufacturing practices in an effort to decrease the environmental impact of products during their manufacture, use and end-of-life. Sustainable industrial waste management requires the adoption of cleaner production with the use of low waste technologies and a plant-internal as well as a cross-sectorial material flow management. Basically, this comprises all measures which can render the production of a product with less input on material and energy, improve the utilization of production residues and secondary raw materials, achieve closed material loops and avoid or substitute for particularly hazardous substances. It also includes the change of the product itself to achieve the goals. Examples of appropriate measures to realize such a policy are for instance:

- ▶ Making recovery, reprocessing and reuse (recycling) a part of the production process or company's operations (e.g. reprocessing of cooling agents, lubes or diluted acid, etc.),
- ▶ Organizing the recycling between different industrial branches (e.g. waste oil reprocessing),
- ▶ Adopting raw material-saving technologies (e.g. re-treading of waste tyres).

For the utilization and disposal of industrial/commercial waste different models are possible. One option, often labelled as self-disposal or on-site utilization, requires the enterprises to operate their own waste treatment facilities or run processes where the generated waste can be reintegrated or recycled in accordance with the accepted environmental standards. Such solutions are most adoptable for industrial branches with a particularly high generation of specific wastes and well applicable in branches like the steel, wood and paper industry. A large proportion of the rejects from paper making and the manufacturing of paper applications can for example be either reintroduced in paper production or used in the power generation of the plant.

The second option is the external disposal where the generated wastes are collected from a waste disposal

company and forwarded for treatment and/or final disposal to external facilities (see factsheets 'Collection' and 'Treatment'). A problem of particular concern are quantities of hazardous waste, which, aside from a few options for thermal disposal (see for example factsheet 'Grate combustion') need to be disposed of at special landfills (see factsheets 'Landfill for hazardous waste'), mainly because of yet insufficient treatment options.

Effective waste stream management has therefore to put its focus especially on those material streams which have a high environmental relevance, either due to the potential risks they contain, their expected growth rates or because of the high recycling potentials. Such streams can be regarded as priority waste streams and to make them subject of special regulations and laws can be useful. It must be the aim then that particular attention will be paid to measures which ensure an increased utilization and the reduction of risks and any unfavourable practices in handling these wastes, respectively.

Households, commerce and industrial activities can be jointly the sources of waste streams with high priority. Good management practices, technical options for treatment and recycling, and other waste preventing and reducing measures are being described on the example of a selection of such priority streams. One of the reasons for choosing these particular waste streams is also set by the specific regulations and directives which already have been imposed on the level of the European Community for some of them.

*Note: Detailed descriptions of the technology and equipment referenced in the text are provided with the following information sheets*

Table 1: Overview on separately provided fact sheets related to the management of specific waste streams

Factsheets for waste streams
<u>Construction and demolition waste</u>
<u>Waste oil</u>
<u>End-of-life vehicles</u>
<u>Waste tyres</u>
<u>Old batteries and accumulators</u>
<u>Waste of electrical and electronic equipment</u>
<u>Fluorescent, discharge and other lamps</u>
<u>Medical waste</u>
<u>Old paints and lacquers</u>
<u>Old carpets (textiles)</u>
<u>Sewage sludge r from municipal waste water treatment</u>