

## ABSTRACT

The Centre for Best Available Techniques (BAT) is founded by the Flemish Government, and is hosted by VITO. The BAT centre collects, evaluates and distributes information on environmentally friendly techniques. Moreover, it advises the Flemish authorities on how to translate this information into its environmental policy. Central in this translation is the concept "BAT" (Best Available Techniques). BAT corresponds to the techniques with the best environmental performance that can be introduced at a reasonable cost. This report deals with the BAT for contaminated rainwater at waste recovery and recycling companies.

Rainwater runoff from industrial sites where waste is stored, contains various contaminants, and is legally considered as industrial wastewater. This BAT study evaluates the measures that can be taken at the storage area to prevent pollution of rainwater as much as possible, as well as the available waste water treatment options, and the emission levels that can be achieved. On this basis, recommendations for environmental regulation and further research are given.

From an environmental and technical viewpoint, the problem of contaminated rainwater differs fundamentally from that of other industrial wastewaters in different aspects:

- The flow rate varies greatly **depending on the weather conditions** (e.g. long dry periods during which no contaminated rainwater is generated, versus periods of heavy rainfall, during which large amounts of contaminated rainwater can be generated in short time).
- Contamination of the rainwater is caused partially by the storage activities themselves, but there may also be **contributions** from other sources (industry, traffic, ...) via atmospheric deposition. Especially for PAHs, there are indications that the contribution of **atmospheric deposition** is relatively large, especially for companies located in areas with high air pollution (industrial areas). Also own activities (other than the actual storage, for example shredder activities) can play a role.
- A **wide range of contaminants** is found in contaminated rainwater at waste storage areas, in variable concentrations. It is difficult to trace the exact origin (the stored material, external sources) for all these pollutants.

To tackle the problem of contaminated rainwater, the first BAT is to take **prevention measures** related to the acceptance policy, the layout of the site, and procedures to deal with activities and materials. Prevention measures aim to prevent as much as possible that rainwater is enriched with contaminants. Some important prevention measures are mentioned here as examples:

- Storage of materials from which environmentally harmful substances may leach or leak on a liquid proof floor
- Regular cleaning of the area and the drainage system
- Covered storage of materials that have a potentially important contribution to pollution
- Dust abatement measures.

To complement the prevention measures, it is BAT for all companies, large and small, to apply a pre-treatment (**oil/water separation/separation of solids**). The separators should be regularly inspected and maintained (removal of sludge and oil layers).

For economic reasons, **further waste water treatment** is not BAT for small companies, but it is BAT for large companies. Because the contamination is largely bound to particles, it is important to reach a good removal of particles from the waste

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water during the treatment. This will also result in a reduction of other parameters (such as heavy metals, PAHs).

Table 21 shows the BAT-associated emission levels (BAT-AEL) for large companies. For some parameters, especially for PAHs, the BAT-AEL are a multiple of the IC (Flemish classification criterion hazardous materials) or the RG (reporting limit). This is not in line with the current permitting practice in Flanders, which aims to reduce emissions of hazardous substances below the IC, or a small multiple of the IC. Considering the specific problem of contaminated rainwater, especially the contribution of atmospheric deposition, a modified permit approach is appropriate. Chapter 6 discusses various options for this based on the BAT analysis. The ultimate choice for a specific permitting approach is a policy decision.

Reduction of emissions to air, both from own processes (other than storage) and from external sources (industry, traffic, ...), is a possible measure to further prevent the contamination of rainwater. Such measures, however, are outside the scope of this study. For a better understanding of the contribution of deposition, deposition measurements and analyses of the quality of runoff rainwater in various locations (industrial and others) are recommended, as well as research on the sources that contribute significantly to this deposition (e.g. . own operations, external industrial sources, traffic, ...). After the main sources have been identified, one can investigate which measures are technically and economically available to reduce air emissions from these sources, and thus limit the contamination of rainwater through deposition.

The BAT selection in this study was based on a socio-economic sector study, cost calculations, comparisons with foreign BAT documents, company visits and consultation with representatives of the federations, suppliers, and specialists from the authorities. The formal consultation took place in an advisory committee, the composition of which can be found in Annex 1.