

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 environment 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.

The objective of this study is to trace the BAT for the treatment, use and disposal of waste water treatment sludge. The study deals with municipal sewage sludge as well as with sludge from industrial waste water treatment plants, mainly from the food processing industry. The considered industrial sludge has similar properties as sewage sludge and can be treated, used and disposed off by similar processes.

The BAT selection does not only take account of the final use or disposal processes (e.g. use as a fertiliser or soil conditioner, disposal by landfill, use as a sealing material, incineration, co-incineration, wet oxidation, pyrolysis, gasification, vitrification), but also of the preceding (pre)treatment processes (e.g. thickening, dewatering, digestion, drying, ...). Technical information on the different treatment, use and disposal processes is given in the 54 Technical Descriptions which are added in annex to the report and which constitute the most voluminous part of it.

The use of sludge as a fertiliser or as a soil conditioner is considered to be the highest ranked BAT from an environmental point of view, on condition that the legal conditions related to sludge composition and treatment are fulfilled. When sludge is used as a fertiliser or as a soil conditioner, the organic and inorganic nutrients are recovered. This recovery contributes to the realisation of a closed material cycle. Furthermore, the use of sludge as a fertiliser or as a soil conditioner is evaluated to be as good or better than the other sludge treatment and disposal processes with respect to the aspects air and water pollution, waste, and financial cost.

A large fraction of the Flemish waste water treatment sludge is not suited to be used as a fertiliser or as a soil conditioner because of its high degree of contamination (heavy metals). In order to increase the amount of sludge that can be used in agriculture, it is recommended that prevention measures are taken in order to improve the sludge quality.

For the fraction of waste water treatment sludge which is, because of quality problems, not suited to be used as a fertiliser or as a soil conditioner, alternative treatment and disposal processes are selected as BAT: use as a sealing material, incineration, possibly together with other waste, and co-incineration, e.g. in the cement industry, power stations or the clay processing industry. For each of these treatment and disposal routes, additional conditions are formulated related to the pre-treatment or disposal processes. If these conditions are fulfilled, the three treatment and disposal routes are considered to be mutually equivalent from an environmental viewpoint. In order to allow the total amount of Flemish waste water treatment sludge to be treated and disposed off according to the BAT in the future, it is recommended that the total capacity of these 3 treatment and disposal systems in Flanders is increased. Strategies that can be applied, possibly in parallel to each other, to achieve this are: developing an assessment methodology for the use of sludge as a sealing material, permit

additional sludge incineration capacity, and/or make long term agreements with respect to co-incineration.

BAT selection was brought about on the basis of, among other things, a literature survey, plant visits and discussions with industry experts and specialists from (semi) public institutes. The formal consultation was organised by means of an advisory committee of which the composition is given in Annex 1.