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.

The BAT selection in this study was based on plant visits, a literature survey, a technical and socio-economic study, cost calculations, and discussions with industry experts and authorities, …. The formal consultation was organised by means of an advisory committee,in which the sector and the government were represented. This advisory committee met three times (30/03/2017, 03/06/2019, and 18/06/2021). In parallel, this study was read by a panel of external lecturers with diverse backgrounds in terms of expertise. The composition of the advisory committee and the external lecturers is shown in Appendix 1.

The scope of the study was established in consultation with the advisory committee. Within the scope are companies which internally clean, usually on their own site and on behalf of third parties, containers which are used for the storage and transport of (solid or liquid) substances by road or rail. Outside the scope are the external cleaning of vehicles (truck wash), the (internal) thermal cleaning of containers, the (internal) cleaning of permanently installed containers, and the (internal) cleaning (incl. degassing) of containers for storage and transport of gases.

Most of the techniques selected as BAT are aimed at improving the quality of the discharged wastewaters during the internal cleaning of containers, with a particular focus on preventing (or, if not possible, limiting) harmful emissions to water and air, as well as limiting water consumption. In addition, emissions to the soil, production of waste, energy use, and noise and vibrations are also relevant environmental aspects in the internal cleaning of containers.

In chapter 4 of this study, 49 techniques are described that qualify as candidate best available techniques (candidate BAT). After evaluation 39 BAT have been selected in chapter 5. On the one hand, a number of preventive measures are selected as BAT in the field of (pre)acceptance, such as refusing containers containing critical loads, using a registration system and a product database, and on the other hand, techniques were selected related to the actual cleaning process, such as the judicious dosing of cleaning agents and auxiliary materials and the optimization and follow-up of the physicochemical pre-treatment of waste water. The BAT study also pays attention to the possibilities for saving water by, for example, maximizing the removal of residual loads, using rainwater, and (re)using treated wastewater. Finally, BATs are selected to limit air pollution (e.g. the closed discharge of (pre)rinse water containing volatile substances), odor nuisance (e.g. extracting vapors to an air treatment installation), soil pollution (construction of a liquid-tight/impermeable floor), noise nuisance (preventing and limiting noise and vibration emissions), energy consumption (e.g. using a blower instead of a drying system based on compressed air), and finally measures related to the handling of waste (e.g. pre-cleaning of drums that are removed for recycling).

Chapter 6 formulates recommendations for sectoral conditions in VLAREM for internal cleaning of containers, including the derivation of the BAT-AEL for a wide range of parameters (see Tabel 17) for three categories of activities, namely (1) tanks - bulk & food, (2) tanks - chemicals, and (3) vessels. A number of gaps in the available knowledge/information were also noted when preparing the BAT study, both with regard to the environmental impact of the internal cleaning of containers and with regard to the available environmentally friendly techniques. Further research in these domains is recommended to close these gaps. Important attention should be paid to creating more transparency and information

exchange between the various actors in the chain, to the monitoring of relatively unknown parameters (such as manganese, benzene, and surfactants), and to additional data collection via ecotoxicity tests. These recommendations for further research are also described in Chapter 6.