

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 objective of this study is to determine the BAT for the dry cleaning industry. The study is a review of the study 'Beste Beschikbare Technieken voor de Droogkuis' that was published in 2009. During the review process attention was given to techniques that can contribute to a further reduction of emissions, the use of other solvents and the treatment of separator wastewater.

Dry cleaners clean textiles using solvents. Tetrachloroethylene (PERC) is still the most commonly used solvent, but nowadays more and more dry cleaners switch to other environmental friendly solvents. Despite a strong improvement in the cleaning capacity of these other solvents, the cleaning capacity is insufficient for all types of textiles and all types of contamination. Because of this, it is not possible that these solvents completely replace cleaning with PER. In addition, the long-term consequences of the other solvents are still insufficiently known. For this reason it is also proposed to formulate the same requirements for other solvents as for tetrachloroethylene.

For the reduction of the emissions, most modern dry-cleaning machines already have the necessary technical requirements to limit emissions to a minimum. However, use of automatic options for some processes can reduce the accidental emissions. For example, an automatic filling system with overflow protection on the distillation unit, whereby the risk of solvent spillage (and associated emissions) is reduced. Just as important is the correct use and maintenance of the machines to guarantee sufficiently low emissions. These measures have therefore been selected as BAT.

An important issue for limiting emissions is the end of the drying phase. The drying time must be long enough to remove the solvent from the textile before unlocking the loading door. The use of a drying sensor prevents that the drying time is too short, independent of the type or the amount of textile that is cleaned. The use of a drying sensor is therefore selected as BAT. The use of a measuring system to determine the concentration of solvent in the drum during the drying phase, is a fully-fledged, but more expensive, alternative to the drying sensor. Though, the additional environmental benefit compared to the dry sensor is unknown. Based on the BAT analysis, it is proposed to delete the current requirement in VLAREM (the Flemish Environmental Permit Regulation) with regard to the concentration of tetrachloroethylene just above the unloaded textile ($240 \text{ mg} / \text{m}^3$), and to replace it with some other requirements, including the use of a drying sensor.

The discharge of insufficiently purified separator wastewater is one of the most important historical sources of soil contamination at dry cleaners. Dry cleaners often have insufficient knowledge to qualitatively purify the separator wastewater itself. Collecting this wastewater together with the other solvent-rich waste streams prevents the discharge of insufficiently purified separator wastewater and was therefore selected as BAT.

The BAT selection in this study was based on plant visits, a literature survey, a technical and socio-economic study, cost calculations, a comparison with documents from neighboring countries and discussions with representatives of the federation, industry experts and authorities. The formal consultation was organised by means of an advisory committee.