

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 1998. During the review process, the implementation of the techniques that were selected as BAT in 1998 was investigated. Also, attention was given to new techniques that have become available since and that can possibly be considered as BAT.

Dry cleaning companies clean clothing, furnishing textiles and leather, using solvents. Tetrachloroethylene (PERC) is still the most commonly used solvent. The use of PERC in dry cleaning may lead to emissions into the air, water and soil. In the study of 1998, a number of measures preventing PERC emissions were selected as BAT. These measures include a closed PERC cleaning machine, equipped with a deep cooling system, possibly an activated carbon filter, a double water trap in series, an automatic locking system for the loading door, a double control against boiling over, and a regenerating filter for the solvent cleaning. These technical provisions are now included in Art. 5.41.2.1 of VLAREM II (the Flemish environmental permit regulation) and are obligatory since October 31, 2007. Exception is being made for the activated carbon filter, which only becomes obligatory on January 1, 2010 for machines that were in use on January 1, 2004. At the end of 2007, approximately 66 to 75 % of the machines in Flanders were completely in accordance with VLAREM, i.e. equipped with a deep cooling system and an activated carbon filter. 1 to 2 % of the machines were still of the (old) water cooled type, and the remaining 23 to 32 % was equipped with a deep cooling system, but not with an activated carbon filter. The implementation of these measures has resulted in a significant reduction of PERC emissions from dry cleaning.

In the present study, attention has also been given to environmentally friendly cleaning systems not using PERC:

- cleaning with hydrocarbons;
- cleaning with solvents based on propylene glycol ethers (e.g. Rynex or Impress);
- cleaning with solvents based on decamethylcyclopentasiloxane (Green Earth);
- cleaning with LCO₂;
- wet cleaning.

Among these 5 cleaning systems, wet cleaning and cleaning with LCO₂ are considered as the most environmentally friendly techniques. Wet cleaning is already considered as BAT. Cleaning with LCO₂ is not yet BAT, but can develop into BAT in the (near) future, on condition that the commercial availability in Flanders improves. Because of quality reasons, wet cleaning and cleaning with LCO₂ can only partially replace solvent cleaning. Therefore, solvent cleaning remains necessary.

Among the solvent cleaning techniques, cleaning with hydrocarbons and cleaning with solvents based on decamethylcyclopentasiloxane (Green Earth) are considered as BAT. These techniques

are more environmentally friendly than cleaning with PERC, but less environmentally friendly than wet cleaning and cleaning with LCO₂. Because of quality reasons, cleaning with hydrocarbons and cleaning with solvents based on decamethylcyclopentasiloxane (Green Earth) can only partially replace PERC cleaning. Therefore, PERC cleaning remains necessary.

Cleaning with solvents based on propylene glycol ethers (e.g. Rynex or Impress) is not considered as BAT because the limited number of applications (mainly in North America), and the negative experiences during feasibility tests in the Netherlands.

Based on the BAT conclusions, recommendations have been made for the existing legislation of VLAREM II for this sector and suggestions have been made on the granting of investment subsidies to specific environment friendly techniques.

The BAT selection and recommendations in this study were based on plant visits, a literature survey, a technical and socio-economic study, cost calculations, and discussions with industry experts, authorities, suppliers, consultants, The formal consultation was organised by means of an advisory committee.

BAT-study for the Dry cleaning companies (2009)

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