

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 study contains the BAT for swimming pools.

Swimming pools use a lot of water and disinfection agents to guarantee a good water quality. The disinfection / oxidation agents are based on chlorine. The latter forms adsorbable organic halogens (AOX) in reaction with organic material. AOX can have a negative effect on the environment. Besides this, swimming pools consume a lot of energy for the heating of the water and the swimming complex.

The objective of the study was to give an answer to the high water and energy consumption and to look for solutions to reduce the emissions of AOX to the waste water.

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 organized by means of an advisory committee. The composition of the advisory committee can be found in annex 1. The methodology used for the BAT-selection is described by Dijkmans (2000).

Different alternatives for chlorine based disinfection were selected for BBT evaluation, as well as technologies (process integrated and end-of-pipe) to reduce or eliminate disinfection by-products. None of them lead to a generally accepted solution for the AOX problem. Several measures and techniques to reduce the consumption of water (5) and energy (12) were in fact selected as BBT. Additionally, a description of good housekeeping in swimming pools was made.

Next to the 'classic' swimming pools, natural ponds and natural swimming pools were studied. These pools are maintained without chemicals, therefore the environmental impact of these pools is negligible. These pools also have a lower overall water and energy consumption compared to the standard indoor and outdoor pools.

Since emission data were rather limited, it was impossible to determine BAT associated emission levels for the swimming pools, including the natural ponds and swimming pools. The study does contain different suggestions for technical measures based on the BAT-conclusions.

Finally, this study presents a roadmap for the implementation of BATs (and techniques which go further than BAT) in existing and new swimming pools. The goal of this step by step implementation of techniques is to start with preventive measures, which avoid environmental problems (o.a. high water and energy consumption, the formation of AOX). When environmental issues do occur, a second step is using process integrated techniques, aimed at limiting the environmental problems as much as possible. The last step is to reduce the environmental problems by end-of-pipe techniques. This step by step approach leads to both an environmental and a financial benefit, since the need for costly end-of-pipe techniques is reduced to a minimum (e.g. smaller dimensioning leads to lower costs).