

## **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 integrate this information into its environmental policy. The BAT-concept is the key factor in this process. BAT correspond to those techniques with the best environmental performance that can be implemented at a reasonable cost.

The aim of this BAT report is to identify the BAT for hospitals (general, categorial, university, psychiatric and day hospitals) and rest homes. In Flanders, more than 900 medical institutes employ almost 120.000 people. The financing mechanism of these activities is very complex and the financial resources available for environmental investments are limited.

In general, a hospital consists of a number of departments carrying out activities related to medical diagnosis and treatment, and supporting activities. The main environmental issues are related to the use of water and the creation of waste and wastewater. A typical hospital requires about 400 liters of fresh water per day per patient. A number of measures can be taken to reduce the use of water, such as alternative cleaning techniques and taps with water flow control.

The use of medication, diagnostics, cleaning agents and disinfectants creates pollution of the wastewater with pharmaceuticals, AOX, metals and others. This pollution can be avoided by implementing BAT such as integrated dose systems in laboratories, separate collection of concentrated solutions, disposal of contrasts as waste, optimization of the number of disinfectants, etc. Separate collection of urine and feces of patients treated with cytostatica or contrasts is a promising measure to avoid pollution of the wastewater with dangerous substances, but is not selected as BAT, because the practical feasibility is not proven yet.

A biological treatment, followed by combustion of the sludge, has been selected as BAT for end-of-pipe treatment of wastewater of hospitals. This treatment can be carried out either by the hospital itself or by a public sewage water treatment system.

The total amount of medical waste in Flanders is about 17.500 tons of non-hazardous and 3.285 tons of hazardous waste. The BAT report describes a large number of BAT to avoid waste, such as suitable stock management of pharmaceuticals, avoiding routine tests, etc. However, the amount of waste will increase as a number of specific wastewaters have to be collected separately and disposed off as waste. In addition, some alternative (pre)treatment techniques as chemical disinfection and thermal treatment methods have been described.

Finally, with regard to air emissions, the main recommendation is to collect emissions of ethylenoxide from sterilization gases, followed by treatment by catalytic afterburning, or scrubbing.