

## 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. In this report, BAT for the asphalt mixing plants are discussed and evaluated.

This BAT-study is a revision of the BAT-study for the asphalt mixing plants published in 2001 (Jacobs et al., 2001). The data from the BAT-study of 2001 are updated and additional relevant information is added. The technologies which were originally evaluated as BAT are now re-evaluated and new available technologies are added to the BAT-analysis. This updated BAT-analysis is performed in the light of the actual economic situation of the asphalt mixing plants in Flanders.

The asphalt mixing industry comprises all the companies producing and selling asphalt. Asphalt is a mixture of mineral components (stone, sand and filler) and a bituminous binder, which is mainly used in the construction industry. The BAT-study covers the environmental impact of asphalt mixing plants from the delivery and handling of raw materials, internal transport and mixing until the supply of warm asphalt mixtures with trucks. Although the number of asphalt mixing plants is limited (19), the industry provides the entire Flemish region with asphalt.

In the last decade, a lot of effort has been made in the asphalt industry in order to increase the share of recycled materials in newly produced asphalt. In this context, techniques have been developed to increase the use of asphalt granulate until up to 100 % for specific asphalt mixtures. Meanwhile, due to the long timeframes to prove the quality and convince the customers to implement these new asphalt mixtures and techniques, the allowed percentage of asphalt granulates is limited. Due to the use of combustion installations to dry raw materials and the elevated temperature of the bitumen, the environmental impact of the asphalt mixing plants is mainly related to emissions to the air. These include emissions of dust, combustion gasses and bitumen fumes which can lead to odour nuisance in the near environment. In recent years, the focus of the asphalt mixing plants is going out to techniques to reduce the high energy consumption of the heating process.

In order to reduce the environmental impact, 62 environmentally-friendly techniques have been analysed in this BAT-study. In total, 39 techniques are evaluated as BAT, and 16 as BAT under specific conditions. 7 techniques have not been selected as BAT.

Based on this BAT-analysis, several recommendations are formulated, related to the environmental regulations, ecological investment support and to further research and development. Recommendations for environmental regulations are mainly specified to the reduction of air emissions like dust-, VOC- and odour emissions.

The analysis of the environmental technologies also made it possible to adjust the LTL of the 'ecologiepremie' and to propose 2 new technologies to be added to this LTL: Tandem drum dryer with full separation of combustion gasses and granulates; and the installation for the production of warm mix asphalt.

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.