

BEST AVAILABLE TECHNIQUES FOR THE DAIRY INDUSTRY

The Centre for Best Available Techniques (BAT) is founded by the Flemish Government, and is hosted by the Flemish Institute for Technological Research (VITO).

The BAT centre collects, evaluates and distributes information on techniques that minimise the impact on the environment as a whole. Moreover, it advises the Flemish authorities on how to translate this information into their environmental policy. Central in this translation is the concept "BAT". Best Available Techniques corresponds to the techniques with the best environmental performance that can be introduced at a reasonable cost.

This report discusses the BAT for the dairy industry in Flanders, in particular the production of consumption milk, condensed milk, butter, cheese, yoghurt, ice cream, whey and powdered milk, and milk desserts.

The first aim of the study was to propose new wastewater discharge limits for the dairy sector in Flanders, taking into account the BAT for minimising the amount and the pollution of wastewater. Another main objective was to recommend an emission limit value for dry dust, taking into account the BAT to reduce dust emissions into air.

Further, it was the aim to select the BAT to prevent or minimise the use of water, the use of energy and the amount of waste or by-products. An additional objective was to test the conclusions of the BAT Reference Document for Food, Drink and Milk (BREF FDM (EIPPCB, 2006a)) against the Flemish practice.

In this BAT study more than 70 techniques are selected as BAT for the dairy industry in Flanders. The BAT selection is based on a technical and socio-economic analysis of the dairy sector, plant visits, discussions with sector experts and other related studies e.g. the BREF FDM. The formal consultation was organised by means of an advisory committee of which the composition is given in annex 1.

One of the BAT is to apply a suitable wastewater treatment installation, existing of primary and/or secondary and/or tertiary wastewater treatment techniques. For total nitrogen and total phosphorus, VITO proposes wastewater discharge limit values of respectively 15 mg/l and 2,5 mg/l.

Dust emissions (dry dust) are relevant for dairy plants producing whey and powdered milk. As far as it is known all dairy plants in Flanders with this activity are IPPC plants. To reduce the emissions of dust into the air, it is BAT to apply one of the following air treatment techniques: cyclones, bag filters or tubular filters. Based on the conclusions of the BREF FDM, VITO proposes a new emission limit value for dry dust, 20 mg/Nm³ for the dairy industry.

Some examples of BAT to reduce water consumption in dairy plants are the optimisation of the frequency of cleaning of centrifugal separators and the use and optimisation of CIP systems. Preventing excessive use of energy in heating and cooling processes, and optimizing pasteurisation, evaporation and drying processes, are examples of BAT to reduce energy consumption. To prevent or minimise the amount of waste and by-products, it is for example BAT to optimise the filling

process and to separate outgoing streams to optimise use, reuse, recovery, recycling and disposal.

The consumption of water and energy and the amount of waste or by-products in the dairy industry depend on the specific plant situation. For that reason is it not recommended that the BAT-related consumption data for water and energy and the BAT-related emission data for wastewater of the BREF FDM are interpreted as a strict standard for the dairy industry in Flanders.

Full Dutch version available [here](#)

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