

## 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, the BAT for limiting noise and vibration nuisance from construction and demolition activities are identified.

The BAT selection in this study was based on a literature survey, a technical and socio-economic study of the construction and demolition activities, cost calculations, a comparison with foreign BAT documents and discussions with industry representatives and authorities. The formal consultation was organised by means of an advisory committee, in which the government and the sector were represented.

Construction and demolition activities inevitably generate noise and vibrations, which may cause nuisance to people in the vicinity of the noise or vibration source. In addition to the subjective experience, in which noise and vibrations can be perceived as disturbing, the resulting annoyance can also cause health risks.

As the title of the study suggests, a distinction is made between noise and vibration nuisance, and this nuisance can be the result of both construction and demolition activities. Noise nuisance depends on acoustic factors such as the noise level or exposure time and on non-acoustic factors such as the type of work being carried out or the time at which the work is undertaken. The vibration nuisance referred to in this study is the nuisance to people as a result of building vibrations caused by vibration sources linked to construction and demolition activities. Any damage caused by these vibrations is outside the scope of this study, as it concerns a liability issue.

This study describes 34 candidate BAT measures that limit noise and vibration nuisance, and which were classified into generic measures, specific measures for foundation works and specific measures for demolition works. 31 measures can be considered BAT after consultation with the advisory committee and a BAT assessment in Chapter 5. However, many measures or techniques can only be considered BAT on a case-by-case basis, because their suitability depends on technical/economic limitations and local circumstances. Also, they are not cost-effective in all situations and almost all measures lead to an increase in costs. Whether this cost price outweighs the limitation of the nuisance depends not only on the cost price itself, but also on the specific nuisance situation. However, the prediction of nuisance is a complex issue, given the situation-specific interdependence of the various nuisance-determining factors.

In order to include the specific nuisance situation (noise level and vibration frequency, time of day activity, nuisance-sensitive receptors, duration of the works, distance of the construction or demolition activity to the nearest nuisance-sensitive receptor) in the BAT selection, a categorisation of 3 levels (BAT vgtg - A, BAT vgtg - B and BAT vgtg - C) is elaborated in a guiding model. This model classifies the available techniques that are BAT on a case-by-case basis. The classification of the measures into these categories was done in consultation with the advisory committee of this study and took into account the impact on the works (e.g. duration or way of working), cross-media effects and cost price (e.g. investment costs or operational costs).

Based on this categorisation, it is possible to assess which measures can be considered in a specific nuisance situation. Measures selected as BAT have such a high environmental benefit or low cost that they are considered reasonable in all circumstances where nuisance is identified or expected, regardless of the specific nuisance situation.

Chapter 6 subsequently formulates a number of recommendations for environmental policy, explaining some existing policy instruments to which the BAT described in this study can be linked. Finally, a number of emerging techniques are discussed which were identified during the preparation of the BAT study.