



**D-NOSES**

Distributed Network for Odour Sensing,  
Empowerment and Sustainability



## **GOOD PRACTICES IN ODOUR POLLUTION**

Odour reduction from the wastewater treatment facility of a food industry by modification of the sludge treatment process



*#dnosesEU*  
*#odourObservatory*

# Abstract

## Brief introduction to the problem - summary

This example is about the actions that have brought to the reduction of the odour emissions and the related odour complaints from the wastewater treatment plant of a food industry. After assessing the existence of a problem related to a specific section of the plant, it was redesigned in order to reduce odour emissions.

## Problem description

The plant involved in this example is the wastewater treatment facility of a food industry.

This plant, in its original configuration, comprised a section for the treatment of the wastewaters produced by the food processing, and the sludges deriving from the wastewater treatment were stored in open-air tanks.

People living in the surrounding municipalities have been complaining about odours for years. However, the origin of the odour was not clear, since different industries and potential odour emitting activities are present in the area. Indeed, the food industry was not the only cause of the odour complaints on the territory.

## Reporting phase

The problem was raised through the repeated complaints of the population to the local authorities.

## Monitoring phase

The food industry decided to carry out a study to assess its odour impact. The study involved olfactometric analyses and dispersion modelling.

The dispersion modelling considered all the sources of the wastewater treatment facility and, by comparing the relative contribution of each source to the overall odour impact, it was possible to identify the most critical odour source.

The study allowed to highlight that the main cause of the odour impact were the tanks for the sludge storage, whereas the odour emissions related to the wastewater treatment were negligible.

## Evaluation phase

Based on the outcomes of the odour impact assessment study it became clear that the main problem for odour emissions were the open tanks for the storage of the sludges formed during the wastewater treatment process.

This evidence allowed for a new design of the plant, which involved a different management of the sludges, aiming to reduce the amount of sludges exposed to the open-air, thus reducing the associated odour emissions.



*Picture NOT from case study.*

## Resolution phase

The new design of the plant comprised an anaerobic digester for the treatment of the sludges produced by the wastewater treatment process.

The process of anaerobic digestion not only allows to reduce the volume of the sludges, but also it reduces their organic content, thus reducing their odour generation potential.

Moreover, another benefit of the new design of the plant is that biogas is produced by the anaerobic digestion process, which is a source of renewable energy.

By means of this significant structural intervention on the wastewater treatment facility, the amount of sludges exposed to open air was greatly reduced. The tanks, which previously served for the sludge storage, were dismissed, and only remained for emergency reasons.

Only a small tank is used for the storage of the sludges (digestate) produced by the anaerobic digestion process. Such digestate, having its organic content reduced by the digestion process, should be less odorous than the sludges entering the anaerobic digestion process.

## Verification phase

The success is that, through this intervention, the impact of the plant was significantly reduced.

The effectiveness of the solution was monitored by performing another study of olfactometric analyses and dispersion modelling in the new configuration. This allowed to verify that the impact of the plant was significantly reduced.

Apparently, the complaints were also reduced. However, the effect of the other odour emitting activities co-existing on the territory should also be taken into account.

## Communication phase

The execution of the works on the plant were communicated through the website of the Municipality.