

Odour sampling system with remote triggering: feedback from a Belgian experience

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ABSTRACT

An automatic odour sampling system can be activated remotely to collect samples when an odour event is perceived. Activation of sampling can be done by a neighbour when he smells an odour but also by an environmental agency, a laboratory or local authorities. Another approach is instrumental triggering for instance by a chemical analyser, an instrumental odour monitoring system (e-nose) or even simply by a wind vane.

Remote odour sampling is particularly useful in ambient air at the receptor site and at the fenceline when emissions and perceptions are not continuous. It is ideal for cases of short exposition time and low frequency. Indeed, in most cases, the service in charge of the odour sampling is not close enough to arrive during the odour event and collect/measure the odour during a complaint in order to “objective” it [1].

If there is a temperature system conditioning, it allows for sampling at any time of the day and the night while maintaining a good preservation of the odour in the bags (among others preventing condensation). Complementary sampling/measurement materials like adsorbent tubes and low cost gas sensors can be activated at the same time as the odour bag sampling. Odour correlation with chemicals is then possible.

The study in Belgium was performed with the collaboration of the local authorities: they were in charge of activating the sampling devices located in the close proximity of industrial areas.

Two samplers (Odorprep®) were installed in a Wallonia industrial valley, where odour complaints were usual. The campaign had lasted from November 2018 to September 2019. Two trailers, from ISSeP, equipped with air quality analyzers, measured half-hourly NH₃, H₂S, BTEX, limonene and pinene. A meteorological weather station measured wind direction and speed, T, RH and pressure. Olfactometric analyses were performed by ULiège SAM laboratory with a TO Evolution 6FC according to EN 13725. One aim was to use the odour concentrations measured at the receptor level in order to estimate an odour emission rate [2]. Odour dispersion modelling is performed with ADMS 5 software (CERC). A second goal was to study potential correlation of the odour event and some chemical compounds.

The results (odour concentration, chemicals concentration, dispersion model results, weather conditions) will be presented as well as the assessment of strengths and weaknesses of the automatic sampling system.

Index terms—odour concentrations, odour sampling, chemicals compounds, odour dispersion

REFERENCES

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