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ABSTRACT

H2ODOUR FOR THE STANDARDIZED SAMPLING AND CHARACTERIZATION OF ODOUR EMISSIONS FROM LIQUIDS

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Summary

Odour emissions from industrial facilities and environmental protection plants are often emitted by liquid sources, including storage tanks and wastewater treatment units. Attention is therefore needed to define effective tools to control these emissions and avoid complaints. Nowadays, the characterization of odour emission deriving from liquid sources is still challenging due to the complex identification of a standard procedure widely recognized. The different sampling devices currently used are mainly based on the isolation of a portion of the liquid surface with hoods. The results of the monitoring with these methods proved not to obtain comparable results.
The research presents and discusses the development and validation of an alternative, smart sampling device for the characterization of liquid odour sources, with the aim of providing standardized and comparable results and considerably simplifying sampling operations.
The presented device, called H2Odour, allows to generate the gaseous sample directly from a defined volume of liquid, representative of the odour source investigated.
No nitrogen cylinders and/or other complex elements are required, which are conversely needed for the currently adopted devices. The gaseous samples to be analyzed can be generated in the field or in the laboratory with significant advantages for safety and considerable savings of time and costs.
Extensive validation and experimental activities of the proposed device have been carried out at different liquid sources of WWTPs.
The proposed solution allows to implement a proactive approach which can prevent the occurrence of potential significant odours events. The system is indeed able to implement the early detection of unfavorable conditions prior odour events by maximizing the transfer of odorants from liquid to gas phase in standard conditions. Results show the efficiency of the system to allow fast and reliable measurements, easily replicable at different conditions.

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- ☐ Source characterization and odour/VOC mapping.
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