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ABSTRACT

DETERMINATION OF VOLATILE ORGANIC ACIDS IN ODOROUS AIR SAMPLES USING TD-GC-MS

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It can be important to know which odorous compound or group of compounds makes up an odour. This way the most suitable treatment technique can be identified or conditions concerning health and safety can be evaluated. A group of compounds whom cause an unpleasant odour, even at very low concentrations, are the organic acids. In addition, they have a low odour threshold value therefore they are perceived at a low concentration.
To detect and semi-quantify the organic acids present in an air sample, with a low detection limit of a few µg/m^3, a method on a gas chromatogram with a mass spectrometer coupled with a thermal desorption unit (TD-GC-MS) was developed. In order to detect organic acids a specific column was installed in the GC. To adapt the thermal desorption method on the organic acid the influence of the temperature and time of the tube and trap desorption were evaluated on reproducibility. The hydrophobic Tenax TA tubes are used to retain the organic acid.
The breakthrough volume of acetic, propanoic, butanoic, pentanoic and hexanoic acid was evaluated to conclude that the safe sampling volume is 1000 mL. Calibration of the instrument was tested with a liquid analytical standard prepared in methanol ranging over 10 – 1000 µg/mL. Furthermore different sampling methods were examined in the OLFASCAN laboratory and in the field to analyse the shelf life of the organic acids in these receptacles and to determine the interference of organic acid with other compounds present.

Indicate preference of kind of presentation

- ¤ Oral Communication
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Indicate topic of your work for the conference:

- ☐ Policy and associated regulations for odour and air quality.
- ¤ Odour/VOC measurement, monitoring&sensor technologies.
- ☐ Odour/VOC perception, impact, formation and dispersion.
- ☐ GHG emissions particulate matter and industrial emissions.
- ☐ Source characterization and odour/VOC mapping.
- ☐ Odour/VOC abatement, mitigation and neutralization.
- ☐ Odour/VOC from waste water, sewer systems and livestock.
- ☐ Air emissions and sustainable solutions for waste handling
- ☐ Community engagement, social media and citizen action.
- ☐ Other (suggest a new topic):

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