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ABSTRACT

Determination of hedonic odour effect based on polarity profiles

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Odorants in ambient air are in most cases a complex mixture of substances that can be recorded and assessed with human noses using special investigation methods. The evaluation system according to the German Guideline on Odour in Ambient Air (GOAA) used to verify whether there is a significant nuisance caused by odours from facilities is based on percentage odour time. In addition to determining the intensity and hedonic tone during field inspections (guideline VDI 3940 Part 3 in conjunction with EN 16841 Part 1 or Part 2), the polarity profile method is an additional technique for the determination of hedonic odor tone and is described in guideline VDI 3940 Part 4.

The polarity profile is a method to quantify the various dimensions of quality and emotions evoked when smelling an odorant. The odorant is described with the help of 29 adjective pairs (strong - weak, cold - hot, pleasant - unpleasant, etc.). It's solely the panel members subjective impression that counts. The rating has to be abstractly, associatively, swiftly and without premeditation. The profile for the odour quality is then formed based on the evaluation of the adjective pairs. First, profiles are created for the concepts of fragrance and stench, whereby the panel member only imagines a corresponding odour. The profile for the respective facility odour is then created by perception of odour on site. By classifying the profile of the facility odour into the concepts of fragrance and stench, it is possible to evaluate the facility odour.

The similarity of the facility odour to the representative profiles of the concepts of fragrance and stench is calculated with the Pearson product-moment correlation according to guideline VDI 3940 Part 4.

In Germany, the method of polarity profiles is used to determine whether an odour emitted by a facility can be assessed as a "clearly pleasant odour". If that's the case the facility will get a bonus during the licensing procedure according to the German GOAA. An example for a practical application will be shown.

The GOAA also includes a bonus malus system based on animal-specific weighting factors for odours caused by poultry, fattening pigs, sows and dairy cows. The results of new investigations in ambient air will be shown, where weighting factors for other animals are generated based on the method of polarity profiles.

Indicate preference of kind of presentation

- Oral Communication
- Poster

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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