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Review

# Identifying the location of odour nuisance emitters using spatial GIS analyses

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## Highlights

- An innovative element of the developed analysis is the application of the inversed method of fragrance streak propagation.
- The analyzed method of taking into account the direction and speed of the wind
- Odour concentration tests using field olfactometry with NasalRanger olfactometer were taken.

## Abstract

The primary objective of the article was to establish the location of odour emitters with the use of spatial GIS analyses. The odour emitter location analysis based on measurements was carried out using QGIS software tools. The algorithm of the procedure was developed by analysing vector elements, including simulated odour streaks (in the form of wedge buffer



fragrance streak propagation. Identifying a streak from the measuring point towards the blowing wind is very likely to determine the approximate location of the odour emitter measured. The described method should provide better results at the location of emitters than the above mentioned methods using interpolation, because of taking into account wind direction and speed. In addition, it is a method that can be applied over a large open area where methods based on simulation and particle propagation would not be efficient or highly impossible to apply due to extensive and complex analysis.

It was necessary to conduct field studies in order to meet the main goal, which resulted in sensory evaluation of the intensity of odour nuisance in an urbanised area. Odour concentration tests using field olfactometry with NasalRanger olfactometer were taken.

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## Keywords

GIS analyses; Odour nuisance; Olfactometer; Industry; Measurement; Innovation

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