MEASURING OF TOTAL METHANE EMISSION AND SOURCE TRACKING AT LANDFILLS

The Danish EPA recommends the use of "The dynamic source tracer dispersion method" when the total emissions from a landfill is to be measured.

The measuring of total emissions is used, for example, for the periodic monitoring of emissions and the documentation of achieved effect from establishing BioCovers and gas extraction systems.

From August 2015, Probing.dk will be ready to perform source tracking and measurements of total methane emission according to the Danish EPA's recommended dynamic source tracer dispersion method. The equipment is mounted in an all-terrain vehicle, so that measurements can be performed almost anywhere.

During the last three years, the method has been developed and proven by DTU, and it is approved by the Danish EPA. Probing.dk has a close cooperation with DTU about the measurements, and DTU has, based on the three years of work, been highly involved in the implementation of the method at Probing.dk.

The center of the measurements is a laser instrument which through the registration of substance specific frequency measurements, makes it possible to measure ambient levels of substances such as methane and acetylene which for emission measurements is used as a tracer.

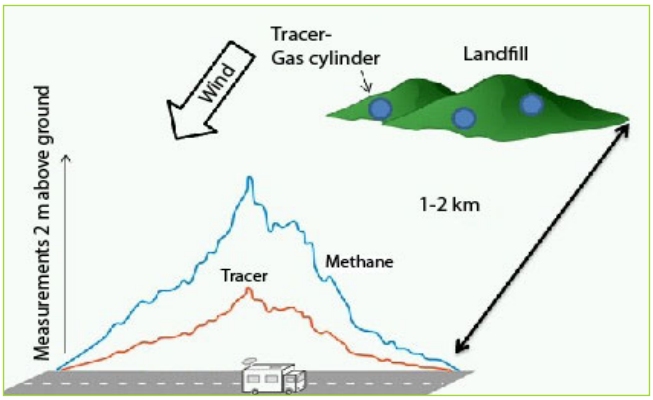
The measuring principle:

- Source areas are initially identified by driving around on the landfill or at the edge of the landfill, measuring the ambient levels of methane.

- When areas with methane emission are identified, tracers consisting of acetylene gas bottles are placed in the areas. A known flow of acetylene is emitted from the bottles.

- In a trench across the downstream wind direction from the landfill, the ambient concentrations of methane and acetylene are measured. The trench is typically placed 1-2 km away from the landfill.

- The total emission is being calculated on the basis of the ratio of methane and acetylene content in the air.

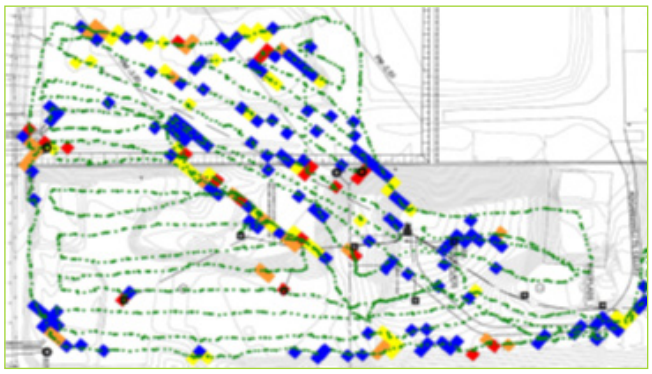


The total emission of methane is calculated based on the ratio of methane and tracers measured in a trench downstream from the landfill.

If high levels of methane from a plant are detected, the Danish EPA recommends detecting significant point sources and hot spot areas initially with hand-held measuring equipment such as a FID detector highly sensitive to low concentrations.

The FID is used in alignments along the surface of the soil, and simple chamber measurements may be performed in areas where there is a registration, and for every 10 m.

In addition, measuring is also possible at all potential sources, such as cracks in the cover and installations passed through the soil cover, including leachate borings and parts from gas extraction system. The Danish EPA recommends that covered areas are screened systematically in a network of measuring trenches with a distance of 10-25 m, depending on the landfill size.



Based on a screening with a handheld FID detector, a site plan is developed with color codes showing where and relatively how much methane is emitted.

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