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ENVIRONMENTAL ODOR PROBLEM IN HUNGARY, LEGISLATION, MEASUREMENT POSSIBILITIES

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Abstract: Legislation and regulations concerning the state of ambient air in the European Union have been harmonized by the member states. Exceptions to this are environmental odours, the legal regulation of which has been transferred to national competence by the European Union. Each Member State regulates odor-related activities differently. Some Member States allow a certain percentage of annual hours to be emitted into the ambient air with an odor that disturbs the population. In Hungary, design guidelines have been set for which higher odor concentrations are not permitted in ambient air. Limit values are expressed in odor units to which odor concentrations determined by standard olfactometric measurements can be compared. In recent years, significant measurement experience has been gained in connection with certain odor-emitting technologies, which have been published in Hungarian-language publications.

Keywords: air pollution, environmental odour, legislation, olfactometric measurements

Among the effects of human activity on the environmental elements, the pollution of ambient air with odors has a special place. The peculiarity of the odor pollution is due to the fact that its nature and extent are directly perceived by the population, so it is common to investigate the validity of measurement task. [1]

Legislation and regulations concerning the state of ambient air in the European Union have been harmonized by the member states. Exceptions to this are environmental odors, the legal regulation of which has been transferred to national competence by the European Union. Each Member State regulates odor-related activities differently. Some Member States allow a certain percentage of annual hours to be emitted into the ambient air with an odor that disturbs the population. [2]

Hungarian regulations are based on technology-specific limit values for the limitation and control of odor emissions and the concentration of odors in ambient air. [3,4]

The legislation defines the most important concepts related to odor, including the concept of odor itself, the unit of odor (odor unit, OU), and the concept of concentration:

"Odor: an air pollutant substance or mixture of substances with an odorous effect which is not clearly characterized by its constituents, is strange to the local environment and interferes with the intended use of the area concerned;"

"Odor unit: the quantity of odor containing in 1 m³ gas in the standard state which already gives rise to an odor sensation in 50% of the detectors; "

"Odor concentration: the number of odor units in 1 m³ gas in the standard state; unit of it is the odor unit / cubic meter (OU / m³)" [3]

The regulation also allows the authority to require the installation of equipment to reduce odor emission. Among the passive and active methods of reducing the odor effect, in the case of livestock farms, the passive methods are dominated by the very frequent use of a protective forest strip or various cover films. Other activities related to animal husbandry, such as the processing of slaughterhouse by-products or animal carcasses, use active odor reduction methods, in most cases biofilters. [5]

The primary purpose of the regulation is to prevent the population from being disturbed by odors, and therefore it prohibits the exposure of the population to ambient air. The degree of disturbance to the population is clarified by legal regulations with technology-specific limit values for ambient air, so-called design guidelines. [6]

Given that no legal or technical regulation improves the condition of the environment, if its observance or fulfillment cannot be objectively controlled, it is necessary that the odor emission (emission) and the odor effect (immission) appearing in the environment can be quantified and measured.

In addition, the proper operation and reduction efficiency of equipment must be regularly determined [7], which requirements are also set out in the permit of the licensing authority.

Using the emission data measured at the odor source, it is possible to perform a model calculation to determine the impact area of the source. The result of the model calculation and the size of the impact area determined by the calculation are influenced by the type of the applied model, the input data of the model (mainly atmospheric data and the emission data of the source) and the value of the permissible concentration in the ambient air. [8]

Both the legislation and the technical standards contain restrictions on the models used and the input data, so if they are used (high-atmosphere meteorological data, annual hourly wind data, etc.), the model calculations can give comparable results. In the case of propagation modeling of odor emissions from odor sources, it is of paramount importance that the odor emission data used in the model calculation be real, measured data, as even small differences in technology can significantly change the amount of odor emission. [5]

CALCULATION

In the model calculation, the boundary of the impact area is given by the envelope along which the concentration of the tested air pollutant decreases to the expected value (fixed by law).

REFERENCES

- [1] Ágoston, Cs.: Lakossági bűzpanaszok kivizsgálásának műszaki lehetőségei. In: Zöldipar Magazin, Ökoindustria Különszám, 2015
- [2] Ritvay, D. – Kovács, D.: A bűzkibocsátás szabályozásának nemzetközi és hazai gyakorlata. In: Országos Környezetvédelmi Konferencia, Siófok 2006.
- [3] 306/2010. (XII. 23.) Korm. rendelet a levegő védelméről
- [4] 4/2011. (I. 14.) VM rendelet a levegőtérheltségi szint határértékeiről és a helyhez kötött légszennyező pontforrások kibocsátási határértékeiről
- [5] Ágoston, Cs.: Műszaki és jogszabályi lehetőségek bűzforrások kibocsátásának mérésére engedélyezési eljárásokban, hatósági ellenőrzések során és monitoring kötelezettségek