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Mathematical modeling of the impact of compressor stations' operation on air pollution

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The operation of compressor stations pollutes the air and the environment. The emissions from compressor stations are divided into two categories:

- *products coming from the production of energy by the burning of gas*
- *gas /methane/ going to the atmosphere during the pressure relief of the compressor station.*

As to the combustion products of the gas a continuous emission is involved. During the pressure relief of the compressor station the emissions are irregular and represent a shorttime escape of large amounts of gas into the atmosphere. This paper deals with the modeling of air pollution by the products of the combustion of gas, namely by nitrogen oxides.

For the mathematical model of air pollution from selected compressor stations we have used the national method for the calculation of air pollution from stationary sources, both the long-term version and the short-term version of it. We shall calculate the distribution of the average concentration of harmful substances per year, the distribution of the short-term concentration of harmful substances /averaged for a 30 minutes time interval/, the concentration of harmful substances in unfavorable climate conditions and the distribution of the maximum concentration values of the harmful substances. A separate evaluation of the influence of leeward effects on the concentration of harmful substances will be made. For compressor stations located in an orographically varying environment, as, for example, Jablonov nad Turnou, the operational version of the trajectory nonstationary model of air pollution was used, to show the influence of the terrain on the dispersion of the harmful substances.