

SOME ASPECTS OF THE INTEGRATED APPROACH TO AIR QUALITY
MANAGEMENT BASED ON OPTIMIZATION TECHNIQUES

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Abstract: The quantitative evaluation of environmental impact of emission sources is an important step of integrated modeling and the air quality decision support. The problem is especially difficult in the case of a complex, multi-source emission field. The approach discussed in the paper is based on the forecasts of the Eulerian type models of air pollution transport. The aim is to get a quantitative assessment of the contribution of the selected sources, according to the specified, environmental objective function. The approach utilizes the optimal control technique for distributed parameter systems. The adjoint equation, related to the main transport equation of the forecasting model, is applied to calculate the sensitivity of the cost function to the emission intensity of the specified sources. An example implementation of a regional scale, multi-layer dynamic model of SO₂ transport is discussed as the main forecasting tool. The test computations have been performed for a set of the major power plants in a selected industrial region of Poland.