

STUDY OF INDOOR-OUTDOOR AIR QUALITY IN SOME REGIONS IN BULGARIA

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ABSTRACT

High temperature combustion is the main source of nitric oxide (NO) and nitrogen dioxide (NO₂) in the air. Unvented gas and kerosene cooking appliances and space heaters are found to be the major indoor emission sources. It is important to know the level of exposure to NO₂ in order to study their effects on health, to establish dose - effect relationships and to devise appropriate pollution control strategies. Recognising these problems a project was started aiming to study the exposure to NO₂ among children aged 10-12 years living in 4 settlements in Bulgaria. The investigated group consisted of children with parents both smokers and non-smokers, inhabiting homes with different types of heating and appliances. The study was based on questionnaires-diaries. Palmes tubes were used for monitoring both personal exposure to NO₂ and levels indoors (kitchen, living room) and outdoors. The data obtained from study showed that the concentrations of NO₂ were the highest in homes which had gas cooking stoves and in which the parents were smokers.

The greatest personal exposures to NO₂ measured were recorded in the centre of Sofia (116.0 µg/m³) and in the kitchen (405.75 µg/m³) at one child's home. This child's parents are smokers and their kitchen is equipped with gas cooking appliances.

The lowest overall concentrations of NO₂ were recorded in Vratsa. Here the children's personal exposure to NO₂ varied from 2.58 to 5.46 µg/m³.