

THE EFFECT OF COAL COMBUSTION IN DOMESTIC HEATING UNITS ON MERCURY CONCENTRATION IN THE AIR OF RURAL AREAS

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Low capacity domestic heating units (DHU) are common heating sources especially in the Central and Eastern European countries. Very often low-grade coal is used in the sources. In Poland Hg emission from DHU was 1150 kg in 2001. We found in an experiment carried out in an apparatus similar to a house furnace that on average 52% of Hg contained in coal before combustion was emitted to the air in gaseous form. We investigated the impact of coal combustion in DHU on air quality in a typical rural area in Southern Poland. A field experiment was carried out in the area where 85% of houses used DHU fueled with hard coal. Concentrations of Total Gaseous Mercury (TGM) and Total Particulate Mercury (TPM) in ambient air were measured during summer and winter campaigns to find how coal combustion effects Hg concentration in the air. During summer campaign TGM mean concentration was 1.63 ng m⁻³ with low variability of the value. During winter campaign the TGM mean concentration was 2.5 times higher. TPM mean concentration during summer campaign was 0.11 ng m⁻³ while in winter campaign the concentration was 10 times higher. Also Hg contents in dry deposition during winter campaign was 3 times higher than in the summer. The increase of both TGM and TPM was observed when air temperature decreased what was the result of higher coal consumption.