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THREATS TO HUMAN HEALTH AND LIFE FROM THE USE OF SELECTED FUELS IN INDIVIDUAL HEATING SYSTEMS

Summary

Combustion processes, involving different types of fuels, and related emissions of various pollutants have significant impact on the quality of environment. Due to the multitude of physicochemical phenomena, they may unfavorably affect health of the man both directly and indirectly. Because of the lack of high efficiency air protection equipment and adequate environmental standards (both widely applied in commercial power plants), the releases of toxic substances from small furnaces in domestic use are nearly entirely introduced to the atmosphere. In this paper the annual emissions of selected pollutants (TSP, CO₂, CO, NO_x and SO₂) from individual heating systems fueled with different fuels are compared and discussed. Moreover, mechanisms of creation of main pollutants, their effects on human health and major household air pollution reduction technologies are analysed as well. As evidenced by introduced assessments, non-industrial stationary combustions in Poland are responsible for about 34% of SO₂ emission, 12% of NO_x, 64% of CO, 40% of total particulate matter, 66% of dioxins and furans, 87% of polycyclic aromatic hydrocarbons, 19% of non-methane volatile organic compounds and even 55% of different heavy metals (including 47% of chromium, 55% of nickel and 42% of zinc). For this reason, combustion processes in individual heating systems and local power units became a major source of several toxic substances in this country.