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MONITORING AND ALERT SYSTEM FOR VOLATILE ORGANIC COMPOUNDS EMITTED BY GAS COOKING

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Abstract

Indoor air pollution represents a major public health concern and has attracted increasing attention due to the significant amount of time people spend in enclosed environments. Population exposure to indoor pollutants can be substantial, particularly for vulnerable groups such as children, the elderly, and individuals suffering from chronic diseases. Indoor air quality is influenced by both indoor and outdoor pollution sources, as well as by ventilation and air renewal conditions within confined spaces.

Volatile organic compounds (VOC) are among the main indoor air pollutants. Their emission sources typically include commonly used products such as household cleaners, cleaning agents, adhesives, and personal care products. VOC are also generated by daily activities, notably cooking. This study focuses on gas cooking activities to assess their impact on indoor VOC pollution using an Ethera-Nemo analyzer equipped with micro-sensors. The device was deployed to monitor indoor VOC levels in a typical residential dwelling in the city of Oran, Algeria. The collected data were processed using machine learning techniques to predict VOC concentrations based on carbon dioxide levels, temperature, and relative humidity. The proposed methodology is low-cost and can be applied to other living environments where gas cooking is prevalent, providing an effective tool for assessing indoor VOC pollution levels.

Key words: indoor air pollution, machine learning, micro-sensor, volatile organic compounds

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