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A new personal badge monitor for organic vapors

[W J Lautenberger](#), [E V Kring](#), [J A Morello](#)

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Abstract

A new passive monitor for organic vapors has been developed for the determination of the time-weighted average (TWA) concentration of contaminants in air. This personal dosimeter type badge monitor collects the organic vapors through the mechanism of molecular diffusion and adsorption onto an activated carbon collection element. After exposure, the activated carbon is removed from the device and analyzed using gas chromatographic techniques outlined in NIOSH Physical and Chemical Analysis Method (P&CAM) 127. Current NIOSH standards for measuring the concentration of organic vapors in the atmosphere involve the use of charcoal tubes and sampling pumps for collection, desorption by carbon disulfide and subsequent analysis using gas chromatographic techniques. In comparative testing, the new passive monitor has demonstrated that its overall accuracy is at least equivalent to the charcoal tube method in determining ambient contaminant concentration. Several organic compounds were sampled over the range of 0.5 ppm - 1100 ppm exposure levels. Both field and laboratory tests were conducted and the results were compared. Environmental parameters such as temperature, relative humidity, and air movement were among the factors examined. Other factors considered were desorption efficiencies, sampling rates, sampling range, bias, and precision.

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