

ABSTRACT

METHOD DEVELOPMENT FOR QUINONE ANALYSIS IN TOXIC ATMOSPHERIC PARTICLES

Quinones, which are known to be in particulate matter found in the atmosphere, are believed to be a source of reactive oxygen species in the lung when inhaled. Studies have shown reactive oxygen species to be damaging to the lung causing adverse health effects. In this study a set of complementary methods has been developed to detect quinones down to 10^{-3} ng m⁻³ in atmospheric particles. These methods will be used in future studies to investigate the role of quinones and reactive oxygen species in the toxicity of atmospheric particles. Using these methods, anthraquinone and 5,12-Naphthacenequinone were identified in ambient air samples. Concentrations of quinones ranged from below the detection limit to 33 ng m⁻³. Analysis showed that quinones were at a higher concentration when the sample air had passed over the San Francisco Bay area, and when ambient temperatures were lower.

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