

Monitoring Arsenic in Particulate Matter

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GNS Science has applied ion beam analysis techniques for the determination of elemental concentrations in air particulate matter for a number of years in an effort to understand and better inform regulatory authorities of the sources contributing to particulate matter pollution [1]. A surprising result from a number of studies around New Zealand was that arsenic concentrations increased significantly during the winter, likely as a result of the combustion of copper chrome arsenate-treated timber. Unfortunately, the filters typically used for particle collection produce a poor limit of detection (20–30 ng m⁻³) for arsenic, making it difficult to accurately quantify arsenic concentrations and use arsenic in receptor models for source apportionment purposes. The use of thinner filters and different filter materials results in a significant improvement in the limit of detection for arsenic. In this work we present an overview of the experimental beam-line setup and provide examples of research results from various polluted urban locations where different filters have been employed.

[1] W. J. Trompetter, A. Markwitz and P. K. Davy, *Int. J. PIXE* **15**, 249 (2005).