

## **SOURCE IDENTIFICATION STUDIES OF PGE AND OTHER HEAVY METALS RELEASED INTO THE URBAN ENVIRONMENTS AND DEVELOPMENT OF METHODS FOR THEIR ANALYSIS**

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### **Abstract**

There has been a rapid increase in the use of Pt and Pd in automobile catalysts in the last 20 years. The artificial addition of these precious metals into the environment by emission onto roads is producing platinum group element (PGE) values in particular Pt, Pd and Rh which have environmental significance in urban dust that are well above natural background values. Accumulations of Pt and Pd, that are the result of artificial introduction into the environment, may have their own consequences; for example they could be of value for recycling or a risk to health. In the present paper, an attempt is made to assess the possible source of PGE pollution in and around Patancheru, Hyderabad which has already been reported by many authors as risk prone zone. The site receives pollution both from automobile as well as industrial discharges. In the present article a method for determination of PGE is described using microwave assisted digestion and separation of PGE from by cation exchange chromatography and analysis by inductively coupled plasma mass spectrometry (ICP-MS). Experiments using synthetic multi-element solutions have been used to establish: conditions for cleaning and conditioning AG 50W-X8 cation-exchange resin; solution requirements for loading samples onto the resin; optimum column size and elution parameters. Matrix elements were removed from sample solutions by cation-exchange chromatography on Dowex AG50WX8, prior to analysis by ICP-MS. The method thus developed with synthetic solutions could successfully be applied to real-life soil, road dust and water samples collected from the proposed site.

*Keywords:* PGE, Emission source, Health risk, Cation exchange column, ICP-MS.

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