

**STUDIES ON DETERMINATION OF ARSENIC, ANTIMONY, BISMUTH,
SELENIUM AND TELLURIUM IN STREAM SEDIMENT AND SOIL SAMPLES
BY ATOMIC ABSORPTION SPECTROPHOTOMETER COUPLED WITH VGA**

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ABSTRACT

Detailed studies on the estimation of arsenic, antimony, bismuth, selenium and tellurium in stream sediment and soil samples using atomic absorption spectrophotometer coupled with VGA (vapour generation accessory or hydride generation accessory) have been carried out. The existing methods described by different workers are studied and a simple, systematic and consolidated method has been standardised. The samples are digested in nitric acid, hydrofluoric acid, perchloric acid and finally taken in hydrochloric acid solution. The above elements form hydrides with sodium borohydride. Prior to hydride formation the elements are reduced to the lower oxidation states by pre-treatments like heating with conc. HCl and treatment with KI. The sample solution and sodium borohydride solution are allowed to react in the reaction coil of VGA where hydride formation takes place. The hydride vapour so formed is transported into the heated quartz absorption cell placed in the optical path of the instrument. Argon is used as carrier gas; it also helps in stripping of the hydrides from solution. The absorption is measured and concentration is determined against the calibration curve derived similarly by passing the freshly prepared standard solutions before passing the sample solution. The method is applicable for the quantities in ppb to sub-ppm range of elemental concentration. The standardised procedure has been applied for estimation of above elements in various Standard Reference Materials (SRM) and actual samples. The analytical results obtained for the SRM are in close agreement with the certified values of the elemental concentration.