Analysis 0f Heavy Metals In Water

Shobharani Panchagnula

Department of chemistry, G.Narayanamma Institute of Technology and Science (Autonomous), Telangana, India.

***ABSTRACT*:**

The presence of heavy metals in water is a cause of health concern .In the present study analysis of various water samples was done for the presence of heavy metals by electroanalytical methods. Suitable analytical methods can be employed to investigate the heavy metals in water samples .In the present study colorimetric methods were employed and various water samples were analysed and the results obtained were reproducible and less time consuming. There were no interferences from other cations and anions. Colorimetric methods were employed for each of the heavy metal and the determination to as little as 0.05ppm was done. Allowance was also done for the presence of organic matter.

***Key Words*: Electroanalytical methods, colorimetry.**

1. INTRODUCTION:

.The common heavy metals in water are arsenic, copper, lead, mercury, cadmium etc. Metallic wastes are discharged into water through various industries and posing a serious health concern. Heavy metals can enter a water supply by industrial waste or acid rain releasing the heavy metals into streams, lakes and ground water. Heavy metals are toxic and their accumulation in the body can cause serious health problems.

Heavy metal exposure of the population may cause neuro behavioural disorders such as fatigue, insomnia, decreased concentration, depression, irritability, sensory and motor symptoms. Exposure to heavy metals has been linked to various types of cancer, kidney damage autoimmunity and even death in some instances. Fish is more susceptible to heavy metal contamination in waters than any other aquatic fauna. Fish are good indicators of chemical pollution and can be used to monitor water pollution. Fish bio accumulate harmful substances such as heavy metals through food chain and as a result human health can be at a risk.

2. METHODOLOGY:

Various water samples were evaporated and digested with acid to destroy organic matter. Digestion was done with a mixture of nitric and sulphuric acids(1) .But when organic matter was difficult to oxidise perchloric acid was substituted for sulphuric acid. Perchoric acid was used during analysis of lead. Evaporating dishes, filtering glass and sintered glass crucibles were used for evaporating procedures (2,3).

A chromogenic agent, dichloro-p-methyl – methylsulfonazo, was used for the determination has an absorption peak at 550nm. Beer Lambert's law was obeyed under optimal conditions over the range of 0-.5µg ml^{-1}. All foreign ions studied do not interfere with the determination and some ions like Ca (11) and Ba (11) which cause interference are eliminated by prior extraction with methyl isobutyl ketone.

In colorimetry, the light absorptive capacity of a system (coloured solution) is measured and this measurement is related to the concentration of the coloured substance in the solution. When monochromatic light passes through a transparent medium (coloured solution) the rate of decrease in intensity with the concentration and thickness of the medium is directly proportional to the intensity of the light (4,5). Series of experiments were done varying the reagent concentrations and hydrolysis time.

The colorimetric method is based on the reaction of the sample with certain reagents and the measurement of the optical density of the coloured compound which absorbs maximally at 550m. All measurements were made at 550 nm. Absorbance of the chromophore is directly proportional to the amount of heavy metals present (6).

3. RESULTS AND DISCUSSION:

A chromogenic agent, dichloro-p-methyl – methylsulfonazo, was used for the determination has an absorption peak at 550nm. Beer Lambert's law was obeyed under optimal conditions over the range of 0-.5µg ml^{-1} (7,8).The reaction is instantaneous and absorbance remains stable for 24hrs.The method has high precision and accuracy.

4.CONCLUSION:

The above method was successful in the determination of lead in various samples of water (9). The method has high precision and accuracy.

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