



Department of Atomic Energy

Portable Kit to Check Water Contamination

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National Centre for Compositional Characterisation of Materials (NCCCM), Chemistry Group, BARC, located at Hyderabad has developed a portable visual detection kit for detection of hexavalent chromium [Cr(VI)] between 5 to 500 ng/ml (ppb) range in water within 5 minutes.

Chromium exists in the environment primarily in two valence states, trivalent chromium (Cr III) and hexavalent chromium (Cr VI). Cr (III) is biologically important element and needed for glucose and lipid metabolism. Cr (VI), however, is considered toxic and IARC (International Agency for Research in Cancer, WHO) has classified it as a group 1 agent, defined as carcinogenic to humans.

According to the method developed, three reagents kept inside different bottles are to be added to the clear water sample. Reagent 1 and Reagent 2 are added and mixed for two minutes. The third reagent is then added and mixed thoroughly (shaken for 1-2 minutes). Within 5 minutes, a pink color develops in the top layer and the intensity of this is compared by visual inspection to obtain the Cr(VI) range in water.

By this method Cr(VI) can be detected in drinking water sources such as ground water, lake water, river water, etc. According to Indian standard IS10500, maximum permissible limit for Cr(VI) in drinking water is 50 ng/mL and as per United States Environmental Protection Agency (USEPA) it is 10 ng/mL and the kit meets the requirements of both the standards. The technology of this kit has been transferred to M/S L Tek Systems, Nagpur for commercialization of the product for societal benefit.

This information was provided by the Union Minister of State (Independent Charge) Development of North-Eastern Region (DoNER), MoS PMO, Personnel, Public Grievances & Pensions, Atomic Energy and Space, Dr. Jitendra Singh in written reply to a question in Lok Sabha today.

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