



বিএসটিআই'র গবেষণা প্রস্তাব

Sl. No. & Title	Description
1. Title of the Research	Development of analytical method in BSTI for analysis of migration of Antimony, Lead, Cadmium, Chromium, Nickel and Mercury from Containers for Packaging into Mineral Water and Drinking Water by Atomic Absorption Spectrophotometer(AAS)
2. Research Problem	Plastics bottles made from polyethylene terephthalate (PET) are increasingly used for mineral and drinking water. Antimony, Lead, Cadmium, Chromium, Nickel and Mercury are toxic heavy metals. These metals can be migrated into drinking water from plastics. In recent years, the use of PET bottle increasing day by day in Bangladesh. There is a chance to migrate these heavy metals into packaged drinking water. There are few research work done in this topic. Therefore, it is necessary to develop a method to determine Antimony, Lead, Cadmium, Chromium, Nickel and Mercury in Mineral Water and Drinking Water which migrated from Containers.
3. Justification	Pollution by heavy metal is getting worse day by day, predominantly by Lead, Cadmium, Mercury and Arsenic. They exhibit detrimental effect following exposure (acute or chronic). Even at low dose, they affect brain, kidney and heart. Oxidative stress has been termed as cause and effect in heavy metal-induced kidney toxicity. So it is very important to analyze Antimony, Lead, Cadmium, Chromium, Nickel and Mercury accurately in Mineral Water and Drinking Water migrated from Containers for Packaging.
4. Gap of Previous Research	Presently in BSTI analysis of Antimony, Lead, Cadmium, Chromium, Nickel and Mercury in Mineral Water and Drinking Water migrated from Containers for Packaging is not performing.
5. Audience	The Scientist, Laboratory analyst throughout the world will be the audience.
6. Questions	How BSTI can develop an effective, easier, rapid and fit for purpose method for analysis of Antimony, Lead, Cadmium, Chromium, Nickel and Mercury in Mineral Water and Drinking Water migrated from Containers for Packaging ?
7. Purpose	To develop an efficient method in BSTI for analysis of Antimony, Lead, Cadmium, Chromium, Nickel and Mercury in Mineral Water and Drinking Water migrated from Containers for Packaging by Atomic Absorption Spectrophotometer(AAS)
8. Title	Development of analytical method in BSTI for analysis of migration of Antimony, Lead, Cadmium, Chromium, Nickel and Mercury from Containers for Packaging into Mineral Water and Drinking Water by Atomic Absorption Spectrophotometer(AAS)
9. Methodology	Atomic absorption spectroscopy (AAS) is a spectro-analytical procedure for the quantitative determination of chemical elements using the absorption of optical radiation (light) by free atoms

	<p>in the gaseous state. Atomic absorption spectroscopy is based on absorption of light by free metallic ions. The technique makes use of the atomic absorption spectrum of a sample in order to assess the concentration of specific analytes within it. It requires standards with known analyte content to establish the relation between the measured absorbance and the analyte concentration and relies therefore on the Beer-Lambert law. This validation is to prove that the method developed for the determination of Antimony, Lead, Cadmium, Chromium, Nickel and Mercury in Mineral Water and Drinking Water migrated from Containers for Packaging is suitable for its intended use “<i>fit for purpose</i>”. Method Validation will be performed using plastic container as a representative matrix.</p>
10. Time Frame and Tentative Budget	<p>The project needs 01 (One) year time depending on financial and logistic support. It requires approximately Taka 1,70,000/- (One lac and seventy thousand) for sample collection, procurement of following reagent, chemicals, Certified Reference Materials, Spares of AAS, sample preparation accessories etc.</p> <ul style="list-style-type: none"> a) Certified Reference Material of Heavy metals- 60,000 (Sixty Thousand only). b) Reagent and Chemical- 40,000 (Forty Thousand only). c) Consumables of AAS- 40,000 (Forty Thousand only). d) Contingency, Travel, Training, Stationary, etc. and others for research work tk. 30,000 (Thirty Thousand only). <p>This is a tentative budget. Expenditure for each category may increase or decrease at purchase time (with constant total budget).</p>
11. Bibliography	Bibliography will be given at the end of research paper.

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