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Migration testing of Metals and Phthalates from Plastic Bottles in different samples

Final Report

CSIR-INDIAN INSTITUTE OF TOXICOLOGY RESEARCH
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Name and address of the client	**Shri Gautam Bardhan** **Him Jagariti** **Uttaranchal Welfare Society** **60 Shakti Vihar, Rajpur Road** **Sahastradhara Crossing** **Dehradun**
Reference number	**Work Order No. nil dated 4.6.2014**
Description and identification of the test sample	**Migration testing of metals and phthalates from plastic bottles in different samples**
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Date of start of the study	**12th June 2014**

Signature
Head, Research, Planning & Business Development
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1. INTRODUCTION

The aim of this work was to investigate the migration potential of selected metals and phthalates from the plastic containers to the material stored in them at different temperatures. The samples were (i) Aerated drink (ii) Cough syrup (iii) Hair oil (iv) Liquor. The temperature selected for these studies were 40°C and 60°C for a storage period of ten days.

2. Sample details

The samples were procured from the local market by the client and the labels were removed to hide their identity. They were then submitted to RPBD section where they were allotted code numbers. The analysts were blind to the sample details (Brand, batch number etc) except their matrix identity which was made available to them for the proper selection of the extraction procedure.

3. METHODOLOGY

3.1 Migration testing of metals and phthalates from bottles

Two bottles of each category of sample were selected randomly for migration testing at each temperature. On set of bottles was kept at room temperature (Control) while the other two sets (two bottles each) were placed at a temperature 40±2° and 60±2°C for a period of ten days. Each of the sample bottles was opened and shaken four times a day to release the gas or vapours generated in the container. After the prescribed time, they were taken out from the incubator and stored at room temperature till they were processed and analysed.

3.2 Analysis of metals

The samples of aerated drink and the liquor were analysed for metals without processing while the samples of cough syrup and hair oil were dried and ashed in a muffle furnace at 500°C for six hours. The ash was dissolved in 1N HNO_3 and then analysed for metals. All the analysis was performed on AAS-GTA (Zeenit 700 from Analytik Jena, Germany) equipped with a Zeeman correction system. All the metals standards used were from Accustandard. Parameters viz. LOQ (limit of quantitation) and LOD (limit of detection) were determined for each analyte and the values below LOQ were designated as BDL.