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**USE OF LOW COST MATERIALS FOR THE REMOVAL OF IRON
FROM GROUND WATER**

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DESIGNING A LOW COST ON SITE IRON DETECTION KIT

A PROJECT REPORT PRESENTED BY

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Abstract

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FROM GROUND WATER**

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DESIGNING A LOW COST ON SITE IRON DETECTION KIT

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The effectiveness of using low cost materials for the removal of iron from ground water was studied. The studied materials were bricks, laterite, floor tiles, cement, and glass. The materials were tested for the removal of iron with standard 5 ppm ferrous and ferric solutions separately. Each of the standard iron solutions was passed through columns containing each material respectively and the ferric/ ferrous concentrations of the elute was determined using spectrophotometric method. Bricks exhibited the highest iron removal efficiency among others. The iron removal feasibility of laterite and floor tiles was very much similar to each other but significantly lower compared to bricks.

The effect from the interferences caused by the hardness of water and various possible water born metal ions present in water were also investigated and minimum interfering level was determined. The interfering metal ions studied were Zn^{2+} , Ni^{2+} , Co^{2+} , Cu^{2+} , Pb^{2+} , Cr^{3+} , Mn^{2+} . The kit performed well except in the cases where the hardness is 1000 ppm and Ni^{2+} concentration is 0.5 ppm or above. However, nickel concentration and the hardness in ground water in most of the areas in Sri Lanka is well below those figures. A low cost iron detection kit was developed for the benefit of on site iron detection for general public. The kit consists of 10% Hydroxyl ammine hydrochloride to convert ferric into ferrous and 0.25% 1,10-phenanthroline to develop colour with iron in ground water. The developed colour is compared with the colour scale index provided with the kit.