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### Bioremediation of Iron-spiked water by earthworm *Eisenia fetida*

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**Abstract:** Iron contamination of water can either be geogenic or, via industrial effluents and domestic waste. It is mostly present as ferrous ( $Fe^{2+}$ ) in groundwater but is oxidised to ferric ( $Fe^{3+}$ ) on exposure to air. In the present study, the efficiency of earthworm *Eisenia fetida* in bioremediation of iron contaminated water has been investigated. The samples were tested after an interval of 24 hours. The analysis of Fe concentration in Atomic Absorption Spectrophotometer showed that there was significant decrease in the concentration of Iron in both the conventional method (without worms) and through vermibed with earthworm *Eisenia fetida*.

The test for bioaccumulation showed that the tissues of worms accumulated iron in higher concentration, which was significant at  $p < 0.05$ . The result indicated that the earthworms can accumulate Fe in their body tissues and bioremediate the iron-spiked water.

**Keywords:** Iron, Bioremediation, Earthworms, *Eisenia fetida*.

#### Introduction:

Water is the most vital resource for all kinds of life, as it forms a medium in which physical and chemical transformations, especially those of biological significance, take place. Water pollution has become a global problem due to geogenic, or via industrial effluents, city sewage, chemical fertilizers of agriculture and various religious activities (Bajpai et al., 2002; Gadhia et al., 2014).

Heavy metals are the main pollutants in the environment and pose a big problem due to their toxicity and accumulation in the environment. About 80% of the diseases of the world population and more than one-third of the deaths in the developing countries are due to contamination of water (Achary, 2014). Man can control some undesirable chemical constituents in water before they enter the ground. But once the water enters the ground, man's control over the chemical quality of percolating water is very limited (Johnson et al., 1979).

The geochemical nature of Fe contamination of the aquifers of the Bihar region is of serious concern

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