

## A sample Abstract

### *Metals Disinfection of E. coli in Synthetic Groundwater*

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#### **ABSTRACT**

Sustainable access to clean and safe drinking water remains a global challenge as large numbers of people still consume water that is not safe. Diarrhea; a preventable waterborne disease remains the major cause of death among children under the age of 5 in most developing countries of the world. Several technologies have been invented to provide point-of-use water treatment. The cost of these technologies often limits their application. This study seeks to evaluate the use of several metals at concentrations below the World Health Organization recommended guideline values in drinking water as disinfectants for point-of-use water treatment. The bactericidal activity of Ag, Cu, Co, Ni and Zn against a non-pathogenic strain of *E. coli* in synthetic ground water was evaluated. Different concentration of silver varying from 20-80 µg/L were tested for disinfection efficacy. Samples were taken at 0, 2, 4, 6, 8, 18 and 24-hour time points. Similarly, copper concentrations were varied in the range of 200-800 µg/l. Samples were withdrawn at 0, 4,6,8,12,18 and 24 hours to count viable bacteria using the IDEXX technique. Results showed that 80 µg/L of Ag gives 4log-8.5log reduction of *E. coli* between 2 to 24 hours. While, 800 µg/L of Cu showed 1log-7log reduction of *E. coli* in the range of 4 to 24 hours. A very high concentration (2800 µg/L) of Zn showed 1log-5.2log reduction of *E. coli* between 24-72 hours. Whereas, Co and Ni did not show any significant disinfection of *E. coli* even after 72 hours.

**Keywords:** Disinfection, *E. coli*, metals, synthetic groundwater.