

**Development of a Water Treatment Plant for Heavy Metal Adsorption**

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**Keywords**

water, treatment plant, adsorption, domestic, heavy metals

**Abstract**

Advantages of adsorption method for the removal of heavy metals from drinking water are abundant in literature. However, there is little information on the practical application of this knowledge at domestic level. Middle and high income earners can afford more expensive heavy metal treatment technologies. Low income earners, however, are often exposed to heavy metal contaminated water. This study, therefore, demonstrates how a cheaply fabricated water treatment plant (WTP) can be used with discarded automotive tire (DAT) to remove metals from drinking water. Drinking water samples from borehole and river sources which were slightly acidic and contained metals such as chromium, aluminum, manganese, calcium, zinc and copper was placed in the WTP. Crushed DAT was added to the water and stirred at a rate of 110 revolutions per minute for ten minutes at room temperature. Results show that the use of DAT in the WTP improved pH by 8-9% while TDS improved by 41-27% in ground and surface water samples respectively. Also, copper, chromium, aluminum, and manganese improved by as much as 46%, 5.5%, 50% and 25% respectively in some water samples. The paper concludes by recommending that other adsorptive materials can be tested for use in the WTP.

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