

## **Heavy metals removal from water by efficient adsorbents**

### **ABSTRACT**

Natural occurrence and anthropogenic practices contribute to the release of pollutants, specifically heavy metals, in water over the years. Therefore, this leads to a demand of proper water treatment to minimize the harmful effects of the toxic heavy metals in water, so that a supply of clean water can be distributed into the environment or household. This review highlights several water treatment methods that can be used in removing heavy metal from water. Among various treatment methods, the adsorption process is considered as one of the highly effective treatments of heavy metals and the functionalization of adsorbents can fully enhance the adsorption process. Therefore, four classes of adsorbent sources are highlighted: polymeric, natural mineral, industrial by-product, and carbon nanomaterial adsorbent. The major purpose of this review is to gather up-to-date information on research and development on various adsorbents in the treatment of heavy metal from water by emphasizing the adsorption capability, effect of pH, isotherm and kinetic model, removal efficiency and the contact of time of every adsorbent.