

Research Assessment #7

Date: November 20, 2020

Subject: Lead Removal from Industry Wastewaters

MLA Citation:

Bahadir, Tolga, et al. "The Investigation of Lead Removal by Biosorption: An Application at Storage Battery Industry Wastewaters." *Enzyme and Microbial Technology*, vol. 41, no. 1-2, 2007, pp. 98–102., doi:10.1016/j.enzmictec.2006.12.007

Assessment:

Many people, especially people who may have just moved to Frisco, may not know about this, but in Frisco, TX there used to be a battery plant. Although the plant has now been shut down and removed it has left many lead deposits in the area which is very toxic. This has caused many infrastructures not to be built around that area. Lead can be extremely dangerous, but what can we do now that the damage is done. Currently, they are trying to clean up that area, but not everything can be completely removed. This is why I have read the article "The investigation of lead removal by biosorption: An application at storage battery industry wastewaters", this article gave a method where they may be able to reduce the amount of Lead in the water.

In this article, I found out more information about the different methods that are used to reduce lead in the wastewater of these battery industries. The two methods that were stated were the biosorption process and using a fungus called *Rhizopus arrhizus*. Using the biosorption process allows the removal of metalloids and metal out of biological materials. This method is said to be reasonable since it is at a low operating cost and runs at a high efficiency especially in removing toxic metals out of industrial wastewater. With the fungus, it is able to use biomass to effectively remove those harsh metals from the compounds. It is made up of many different types

of acid and other components as well. After reading the whole article I was able to see that to become the most effective removing the lead the scientists used both of the methods combined to remove most of the toxic metals from the substances. At the end of this study, they were able to conclude that treating low lead concentrations with biosorption using *R. arrhizus* would be the most effective.

This study has brought up many questions to my mind. Although this has been shown to be an effective method, it was only said to be able to help treat water that has low concentrations of lead. Does that mean that it will not be able to remove it as effectively with high concentrations of these metals? Another conflict that I had with this study was would they be able to make it so that it would be able to use for water that may be contaminated. For example in Flint, MI there was and still is a problem with the water containing high levels of lead. Would we be able to use this method and apply it to a larger scale? This method is targeted towards industrial wastewater, but does that mean that the levels that it separates would not be acceptable in other situations.

Overall, I thought this was an extremely informative paper about an effective and “affordable” method of removal. Maybe if we started using it in Frisco or in other areas that may have a high concentration of pollutants or toxic metals it the water will become usable, but we would have to first have many tests to see if this method would be acceptable for communities to use safely.