

Table 5: Lead removal efficiencies of zeolite LTA of mass 0.2 g

Samples	Lead concentrations (mg/L)			Iron concentration (mg/L)		
	C _i (mg/L)	C _f (mg/L)	Removal %	C _i (mg/L)	C _f (mg/L)	Removal %
Stream 1	0.047	0.035	25.5	1.708	0.012	99.3
Well	0.096	0.005	94.8	0.686	0.119	82.7
Stream 2	0.192	0.025	85.9	2.797	0.226	91.9

4. Conclusion

The removal of lead (Pb²⁺) and iron (Fe²⁺) ions in drinking water samples from Ghana was successful with a selective ion exchange process. The removal efficiency of lead in both treated raw and treated filtrate of stream 2 had the highest value of 97.4% by 0.2 g zeolite X and that of the 0.5g zeolite X. Treatment of the raw of the same stream 2 recorded a lower removal efficiency of 57.8% for lead. This shows that an increase in the mass of zeolite does not necessarily increase the removal efficiency. The removal efficiency of lead by zeolite LTA, however recorded the least value of 25.5% in stream 1. This can be due to a competition between co-existed ions, which favoured another metal ion than lead. In general, zeolite X was better in removing and reducing lead concentrations as compared with zeolite LTA. The iron (Fe) removal efficiency of zeolite LTA in stream 1 had the highest value of 99.3% and that of 0.5g zeolite X treated filtrate of well-water had the least value of 62.7%.

In general, zeolite LTA performed better in removing iron as compared with zeolite LTX. It can also be noted that filtration process to remove suspended solids from the water samples before treatment with zeolite was highly effective.

This work has also confirmed that, one zeolite cannot effectively remove all cations from drinking water samples hence, treating water samples with alternate zeolites and a combination with other water treatment methods might enhance the quality of water. This research has also shown that, zeolite have the capacity to reduce colour values in contaminated drinking water samples to appreciable values. Alternatively, the water samples can be filtered and added to a 'fresh' zeolite and the process repeated until all heavy metal ions are removed.

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