

## **Removal of Aclonifen Pesticide from Waters by Adsorption – Activated Carbon vs Zeolite Chabazite as Adsorbents**

Pesticides being one group of micropollutants, find their way into watercourses via either agricultural activities or urban wastewater discharges even after conventional wastewater treatment. Therefore, the concern is to remove them from the effluents of conventional wastewater treatment plants by means of tertiary treatment. To this purpose, several advanced treatment processes such as activated carbon adsorption, advanced oxidation processes, membrane filtration have been considered as alternative solutions. However, these systems have some advantages and disadvantages over the others in terms of several factors such as cost and mineralization efficiencies. Among these alternative methods, activated carbon adsorption is superior to the others as a relatively low-cost and flexible alternative with limited by-products. In recent years, zeolites that are crystalline aluminosilicates have attracted the attention of researchers as a lower-cost alternative to activated carbon. Indeed, the surface area of zeolites is remarkably smaller than that of activated carbon, which makes zeolites not so promising as an alternative adsorbent material. However, the zeolite Chabazite is unique, with a relatively higher surface area than the other zeolites, that is very close to the surface of activated carbon. So, it appears as a promising adsorbent alternative toward the removal of pesticides. In this thesis study, the removal of selected pesticide “Aclonifen”, from waters by adsorption onto the powdered activated carbon and onto the zeolite of Chabazite is going to be investigated comparatively.

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