

The food processing waste, sunflower seed shells (SS), were chemically modified and tested as adsorbents for nitrate removal from water and wastewater. Efficiency and mechanisms of nitrate removal from water by modified sunflower seed shells (MSS) were examined using model nitrate solution (MS) and samples of real wastewater (RW) in batch adsorption experiments while the regeneration capacity was tested by fixed bed adsorption column and regeneration experiments. The MSS had the highest nitrate adsorption capacity of 12.98 mg g⁻¹ for model nitrate solution, 12.16 mg g⁻¹ for model wastewater, 13.70 mg g⁻¹ for the wastewater generated by the confectionery industry (CI), and 12.52 mg g⁻¹ for the wastewater generated from the meat industry (MI).