

Sinchai Maneekat 2009: Ammonia Nitrogen Removal from Mixed Swine and Chicken Farm Wastewater Using Manganese Zeolite in the Oxidation Ditch Model. Master of Science (Environmental Science), Major Field: Environmental Science, College of Environment. Thesis Advisor: Associate Professor Sukhoom Rowchai, D.Agri. 98 pages.

The study on ammonia nitrogen removal from mixed swine and chicken farm wastewater using manganese zeolite in the oxidation ditch model of 33,633 cubic centimeters was done as successive experiments to find out capacity and factors effecting on efficiency of ammonia nitrogen removal which were flow rates, touching times, size and quantities of manganese zeolite. The results shown that manganese zeolite could remove ammonia nitrogen by ion exchange and adsorption in the oxidation ditch model at efficiency rate of about 59 percents by manganese zeolite mixed size of 1.5 - 5.0 millimeters, at quantity of 25,225 cubic centimeters per 12 liters of mixed swine and chicken farm wastewater and at flow rate of 20 liters in 120 minutes touching time. The pH of experimented wastewater was 7.9 at room temperature. Manganese zeolite also could remove ammonia nitrogen at efficiency rate of about 78 percents by fixed size manganese zeolite of 1.5 millimeters, at quantity of 25,225 cubic centimeters per 12 liters of mixed swine and chicken farm wastewater and at flow rate of 20 liters in 120 minutes touching time. The pH of experimented wastewater was 8.6 at room temperature. The exhausted manganese zeolite that was regenerated with 25 grams NaCl per liter solution could be used again at 2 times. The first regenerated manganese zeolite could remove ammonia nitrogen at a better capacity than the second regenerated manganese zeolite. The isotherm tests indicated that adsorption of manganese zeolite of this study agreed with the Freundlich Isotherm.

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Thesis Advisor's signature

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