

**DESIGN OF A BNR PROCESS: DETERMINATION OF SPECIFIC NITRIFIER
GROWTH AND DECAY RATES IN MUNICIPAL WASTEWATERS**

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ABSTRACT

The design of a biological nitrogen removal (BNR) process depends on the kinetic rates of nitrification of ammonia to nitrate and denitrification of nitrate to molecular nitrogen. Nitrification rate is a function of the maximum specific nitrifier growth rate and the environmental conditions of temperature, dissolved oxygen and pH under which a treatment plant operates. The emphasis of this research effort was to measure the maximum specific nitrifier growth rate for several municipal wastewater treatment plants. The methodologies of measurement are presented along with values of the growth rate at the different plants. These rates are then used as the basis of calculating the volume of the oxic zones in a BNT treatment plant.