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**Thomas J Emerson\*** ([thomas.emerson@sun.com](mailto:thomas.emerson@sun.com)). *Population Dynamics of Developmental Disorders Due to an Environmental Neurotoxicant.*

Research in mathematical epidemiology has been predominantly focused on modeling the dynamics of infectious diseases; i.e., those in which the disease is transmitted through person-to-person contact. Increasingly medical and epidemiological work is being devoted to diseases caused by environmental toxicants, an area which has received little attention from mathematics researchers. In this talk we consider the population dynamics of a class of such disorders: the cognitive deficits caused by exposure to environmental sources of a developmental neurotoxicant such as methylmercury. We quantify the population-level effects of such disorders by defining a population-average development index and then use the McKendrick-von Foerster equation for an age-structured population model to extrapolate from the dynamics of individual development to the epidemiological effects at the population level. (Received March 06, 2006)