

**DEPARTMENT OF COMMUNITY AND PREVENTIVE MEDICINE
RESEARCH PROPOSAL**

**Association between Methyl Mercury Levels and
Atopy in the General US Population
Courtney Bishop**

Atopy is a disorder of the immune system that can lead to the development of Immunoglobulin E (IgE) mediated allergic diseases (atopic dermatitis, allergic rhinitis and asthma). Prevalence of allergic diseases has increased over the last 50 years, most notably in Westernized countries. Within the United States, over 60 million people have either asthma or allergies and allergy is the sixth leading chronic disease. Many theories have been proposed to explain this significant increase in atopy, including increased awareness and improved diagnostics, genetic susceptibility, increased exposure to allergen, the “hygiene” hypothesis and increased exposure to environmental pollutants. One possible environmental exposure that has not been directly investigated is mercury. Heavy metals have been shown to alter the immune system of both experimental animals and humans. Most notably, mercury exposure results in elevated IgE levels in animal models. Humans are widely exposed to methyl mercury, mainly via the consumption of contaminated food sources.

Because of this potentially chronic exposure, it is proposed that methyl mercury may impact the human immune system leading to an increased risk of atopy. The 2005-2006 National Health and Nutrition Examination Survey dataset will be used to determine if there is an association between blood mercury levels and IgE levels via linear regression, while controlling for important covariates.

Results will also be stratified by age to account for potential age-associated changes in the human immune system.

Linear regression will also be used to test for the potential association between blood mercury levels and allergen-specific IgE levels.

**Committee Chair:
Edwin van Wijngaarden, PhD**

**Committee Members:
James Dolan, MD
Paige Lawrence, Phd**

**Wednesday, February 24, 2010
12:00PM – 12:30 PM
Helen Wood Hall, Room 4W301**

EVERYONE IS WELCOME