

HED Project Abstract  
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This Master's project entails an examination of the pediatric respiratory health effects of ambient air pollution. The first portion of the project is a meta-analysis of the aforementioned exposure and outcome in developing nations. Exposure is defined by the concentration of outdoor air pollutants, including particulate matter, ozone, and nitrogen oxides. Outcome is defined as acute respiratory infections and asthma (separate analyses are conducted for each). Both the fixed effects model, using the Shore method to assess heterogeneity, and the random effects model are presented. Primary studies have been found using Pubmed and bibliography searches. Many subgroup analyses are performed to determine possible biases and confounders affecting the calculated relative risk. The purpose of the meta-analysis is to determine the relationship between ambient air pollution and respiratory health outcomes in children living in developing nations.

The second portion of the project entails a comparison of two health effects studies being conducted at the US-Mexico border. The US Environmental Protection Agency is currently conducting a study to examine the respiratory effects in children of air pollution in El Paso, Texas as part of the Border XXI Project. Concurrently, its counterpart in Mexico, the Secretaría de Medio Ambiente y Recursos Naturales, is conducting a study on the health effects of air pollutants in Ciudad Juarez, directly across the border from El Paso and in the same airshed. This project would serve to examine the differences between these studies in their conduct and results. Differences in how the studies measure air pollution, determine health effects, and relate the two will be studied by investigating the methodologies used and questions asked by both studies. The results of the studies will be compared in order to examine (1) the differences in how the populations are affected by exposure to air pollution, (2) the other risk factors contributing to the health effects, and (3) the possibility of extrapolation of results from a study in a developed nation to a population in a developing nation. Background research will also be conducted on differences in the environmental policy and agendas of the two nations.