Time & Location: March 25, 2013 at 3:00 PM in Engineering 1 288
Title: Near-road Dispersion Modeling of Mobile Source Air Toxics (MSATs) in Florida

There is a growing public concern that emissions of mobile source air toxics (MSATs) from motor vehicles may pose a threat to human health. At present, no state or federal agencies require dispersion modeling of these compounds, but many agencies are concerned about potential future requirements. Current air pollution professionals are familiar with Federal Highway Administration (FHWA) and U.S. Environmental Protection Agency (EPA) requirements for dispersion modeling to produce predicted concentrations for comparison with appropriate standards. This research proposed a method in which the potential near-road concentrations of MSATs are calculated. It was believed that by assessing MSATs in much the same way that are used for other pollutants, the model and methods developed in this research could become a standard for those quantifying MSATs near roadways due to inhalation.

Therefore, this modeling study investigated the potential short-term (1-hr) and long-term (annual average) concentrations of selected MSATs around seven intersections and seven freeway segments in the state of Florida. To accomplish the modeling, the CAL3QHC model was modified to handle individual MSAT emissions input data and to predict the concentrations of several MSATs around these roadway facilities. Based on a literature search, maximum acceptable concentrations (MACs) were proposed for comparison with the modeled results, for both a short-term (1-hour) averaging time and a long-term (1-year) averaging time. Results from this modeling study indicate that for all of the intersections and freeway segments, the worst-case 1-hour modeled concentrations of the MSATs were several orders of magnitude below the proposed short-term MACs. The worst-case 1-year modeled concentrations were of the same order of magnitude as the proposed long-term MACs. Additional conclusions and recommendations were also made after comparing the modified MSAT model to more refined EPA dispersion models.

Major: Environmental Engineering

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Bachelor's of Environmental Engineering, BS, 2009, University of Central Florida
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Approved for distribution by Dr. C. David Cooper, Committee Chair, on March 6, 2013.

The public is welcome to attend.