EI Conference Paper for Chicora Elementary Air Toxics Monitoring Project
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Chicora Elementary School located in North Charleston, South Carolina was one of 63 schools chosen as part of EPA's Assessing Outdoor Air Near Schools air toxics project. This unique project involved EPA partnering with states to monitor for toxic air pollutants at schools that had a high potential to be impacted by industrial facilities' air emissions. The South Carolina Department of Health and Environmental Control (SCDHEC) worked with EPA's Region 4 Office to have Chicora Elementary included in the project. At least part of the reason for EPA including Chicora Elementary in the project was the significant amount of efforts that SCDHEC had committed in the North Charleston area to evaluate the impacts at the school and in the communities from the industrial facilities and nearby major interstate roads.

In late 2008, USA Today ran a story on the impacts of toxic air pollutants on schools titled the *Smoke Stack Effect*. A number of schools in North Charleston were identified in the story as being significantly impacted (first percentile) by toxic air emission. SCDHEC had been reviewing the need to better understand the impacts of toxic air pollutants in industrialized areas in the state by expanding our monitoring program to include air toxics. We had several sites across the State where we collect PM10 samples and perform analysis for metals, and we had one site in the state that is part of EPA's National Air Toxics Trends Station (NATTS) monitoring network. One of the PM10 sampling sites is in North Charleston. We were also already involved with a project in North Charleston to evaluate particulate emissions and the potential for increased impacts from the construction of a new port terminal in the area. With this focus on the North Charleston area we felt this was the time to evaluate air toxics in the area. We developed a plan to assess the impacts on the schools in the area through evaluating toxic air emission inventories for the major industrial facilities and using these inventories to model the impacts. Because South Carolina has regulations requiring Title V facilities to submit air toxics emissions, we had emissions data readily available to begin the assessment. This availability of data was one of the factors that allowed us to quickly move forward with our evaluations. This data was used to perform combined modeling of actual emissions from these facilities. The modeling results from our evaluations were used to determine the best locations for both the EPA samplers located at the school and additional SCDHEC air toxics samplers in the area. By expanding the monitoring to several locations in the community, we were able to develop an understanding not only of the impacts at the school, but also across the community. The results from the air samplers along with the modeling are being used to assess the impacts of air toxics in the communities.

We approached EPA's Region 4 office in early 2009 to discuss the possibility of a partnership to perform monitoring for air toxics in the area. Soon after this EPA announced that they would be partnering with some of the states to monitor around schools. Chicora Elementary was not included in EPA's original list of schools, however due to the interest that we had expressed and the significant amount of effort that we had already put into understanding impacts in the area, the school was added as one of the 63

to be monitored. As part of this project, SCDHEC also sampled for the same air toxics at an existing monitoring site (Jenkins Avenue Fir Station) approximately 2 miles north of the school and sampled for PM metals at a site in the Howard Heights Community approximately 1 mile south of the school.

The pollutants of concern were 1,3 butadiene, aceteldehyde, benzene, hexavalent chromium, manganese, and nickel. To sample for these, we monitored PM10 for metals, carbonels, hexavalent chromium and VOCs. The sampling, which began in July 2009, was originally planned to be completed in 60 days. Ten (10) regularly scheduled samples and up to 3 randomly scheduled samples would be collected. However, due to problems with the sampling equipment, the sampling was not completed until February 2010. Although elevated levels of several pollutants were found during the sampling, none of the concentrations were above short term screening values developed by EPA for this project. The results from the sampling are posted on both EPA's school air toxics website www.epa.gov/schoolair and on the SCDHEC website at www.scdhec.gov/environment/baq/NorthCharleston/

Our relationship with the community and a partnership that was formed with industries in the area and the community were also important in making this project a success. SCDHEC has a long history of involvement and ongoing relationships with several community groups in the area. These relationships have been built over a number of years and involved several projects including an expansion of Port of Charleston and the cleanup of a Superfund Site in the community. These existing relationships enabled us to quickly engage the community in our plans and gain their trust. As part of our evaluation of the area, we formed a partnership with major industries in the community, the local school district and community leaders early in the project. This partnership allowed sharing of information about the monitoring and our assessments. It also helped us make contact with the Principal at Chicora Elementary, and facilitated a close working relationship with the school. To share information on the project, we participated in several events at the school and used the project to teach the children about the environment and about air monitoring. Our relationship with the school has helped to get information on the project to the student's parents and others in the community. EPA headquarters had also had a significance interest in the monitoring at Chicora Elementary. In February of this year EPA Deputy Administrator Gina McCarthy visited the school to discuss the project with school and SCDHEC officials and in April of this year, EPA Administrator Lisa Jackson visited the school as part of an Environmental Justice tour of South Carolina.