

Engineering Seminar # 7: Air Quality

Speaker: Mr. Ken Edgell, Administrative Coordinator for the Hamilton County Environmental Services in Cincinnati, Ohio

Date: July 24, 2009

Time: 1:30 to 3:30 p.m. (2 hours)

Prepared by:

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This seminar was given by Mr. Ken Edgell, Administrative Coordinator for the Hamilton County Environmental Services in Cincinnati, Ohio on July 24, 2009 in 641 Baldwin Hall from 1:30 to 3:30 p.m. Mr. Ken Edgell received his BS in Biology and MS from Environmental Engineering, both from the University of Cincinnati. He currently serves as the Administrative Coordinator for the Hamilton County Environmental Services in Cincinnati, Ohio. He has won grants from the US EPA and the Duke Energy Foundation to retrofit school buses with diesel oxidation catalysts to reduce harmful emissions. More than 100 buses have been retrofitted so far.

Mr. Ken Edgell began the session on Air Quality by asking the group what they thought about the quality of air in Hamilton County. Lively discussion ensued. Mr. Edgell said that most people just go by what they hear on the news or read about in the newspaper. He then went over the history of the Cincinnati area and how his organization came to be. Cincinnati was an industrial center during the Industrial Revolution due to its location along the Ohio River. Large amounts of coal were burned beginning in the early 1800's. Complaints about the air quality began to come in. Due to the lack of ordinances at the time, there were no regulations on industry or private homes. The first "Smoke Abatement" ordinance was issued in 1881 and acted upon in 1886. In 1907, the Office of the Smoke Inspector was established. Their authority was granted from the United States Environmental Protection Agency handed down to the state level. The state in turn handed regulation down to the county level. There were four employees in the Hamilton County office.

Today, the Hamilton County EPA has two divisions: the Air Quality Division and the Solid Waste Division. The Air Quality Division has a section that issues permits and handles enforcement, and another section that oversees monitoring and analyzing air quality. There are sixteen continuous gaseous instruments and twenty intermittent particulate instruments. The EPA also oversees stack tests, around 80-100 each year. They also report the Air Quality Index and Pollen and Mold counts to the media.

Air quality has steadily improved and Hamilton County has exceedances only in a few areas. Over time, the standards have been enhanced and Hamilton County has attempted to stay ahead of the curve. Some compounds stay around long after their use has been discontinued, which includes:

- Refrigerants (Freon)
- Mobile source compounds
- Industrial solvents
- Lead (Regulated out of fuel in 1970, took till 80's to go down in tests)

The EPA is also working with the University of Cincinnati in a Childhood Allergy & Air Pollution Study. The study is in its 8th year and 800 newborns living near highways are in the study. Less than 100 meters and greater 400 meters are the two groups being compared. Some preliminary findings, include:

- Increased infant wheezing associated with proximity to highway
- Start and stop traffic patterns appear significant
- Truck/bus traffic appears significant

- High traffic flow not as critical

Mr. Edgell was very knowledgeable and friendly. He actively engaged the group in discussions and questions and answers. One of the teachers has a grandchild who lives near an area currently being studied and a lively discussion ensued. The thing that impressed the teachers the most was how long these particles stay around (the half-life). When he spoke of smoke coming from an exhaust pipe on a car or truck: just because the smoke is gone, the particles aren't. Many teachers hadn't ever thought about that. They also discussed the hole in the ozone, and hoped aloud that perhaps someday one of their students could find a way to "vacuum" the atmosphere.

At the end of the session, Mr. Edgell showed the teachers several websites that had lesson plans for teachers regarding air quality and what each of them can do to improve the air we breathe. The website included were:

- www.hcdoes.org (Hamilton county dept of environmental services)
- www.epa.gov/oar (office of air and radiation)
- www.epa.gov/epawaste/education/index.htm (wastes and education materials)
- Website with data tables appropriate for statistics:
www.epa.gov/ttn/atw/nata2002/tables.html

The photograph below was taken during the seminar.



Mr. Edgell Speaking to the 2009 RET Participants