

August 2009



Vol. 48, No. 3

Lake Michigan States Section Air & Waste Management Association Newsletter[®]

2009 Air Quality Management Conference

Thursday, November 12, 2009

Doubletree Guest Suites & Conference Center

2111 Butterfield Road
Downers Grove, IL 60515

The Lake Michigan States Section of the Air & Waste Management Association is pleased to once again offer the Midwest's most comprehensive annual program on air quality management issues. The LMSS's Air Quality Management conference has become a tradition in the region - bringing together environmental professionals from industry, government, environmental services and the legal community to learn about the hottest issues and most important developments in this rapidly evolving field. This year, prominent leaders in air quality management will provide information and insights on such current topics as Climate Change policy and what it means to industry and an industrial perspective on air quality regulatory enforcement. Also to be covered will be new developments in permitting and other regulatory initiatives.

Companies that supply products and services for environmental management will have exhibits on display at the conference. There are also sponsorship opportunities available. For information on exhibiting or sponsorship, contact Robin Pelsis at (847) 202-0418 or robin@lmawma.org.

Clean Air Act Primer

Wednesday, November 11, 2009

7:00-9:00 p.m.

Environmental professionals working in the air quality area should have an understanding of what the Clean Air Act is and what it entails. This primer is perfect for environmental managers with expanding air quality responsibility, supervisors directing air quality professionals, and experienced air quality managers looking for a broader perspective on their field. The course will provide an overview all of the Clean Air Act, with special attention on Title III - Air Toxics and Title V - Clean Air Act Permitting. Handouts distributed from the course will cover the Clean Air Act and its details, Air Toxics and other valuable information that can serve the professional as a reference for years to come.

Course Instructors are: Paul Farber, PE DEE, Senior Environmental Specialist with Sargent & Lundy with over 25 years experience in air pollution and air pollution control; and Dale G. Kalina, Ph. D., a Principal with Environmental Partners, Inc., with 20+ years experience in dealing with air pollution control regulations.

Attendees of this conference are eligible to receive a PDH certificate for 6.5 hours. LM-A&WMA is also an authorized CLE provider. Attendees in need of CLE credits can sign up to receive a CLE certificate for 6.5 hours.

2009 Air Conference Agenda

Wednesday **November 11, 2009**

7:00 p.m. **CLEAN AIR ACT PRIMER**

*Dale Kalina, Principal
Environmental Partners, Inc.*

*Paul Farber, Sr. Environmental Specialist
Sargent & Lundy*

Thursday **November 12, 2009**

8:00 a.m. **WELCOME & INTRODUCTION**

*John Yates, P.E., Vice President
Civil & Environmental Consultants, Inc.
LM-A&WMA Past Chair*

LAKE MICHIGAN STATES SECTION UPDATE

*Ferdinand Alido, Navistar, Inc.
LM-A&WMA Chair*

8:15 a.m. **ISSUES IN NATIONAL AIR QUALITY POLICY**

Speaker: *Mary Pat Tyson, Branch Chief, Air & Radiation Division
United States Environmental Protection Agency, Region V*

8:45 a.m. **STATE AIR POLICY**

Moderator: *John Yates, P.E., Civil & Environmental Consultants, Inc.*

Speakers: *Dan Murray, Assistant Commissioner
Indiana Department of Environmental Management*

*Laurel Kroack, Bureau Chief, Bureau of Air
Illinois Environmental Protection Agency*

*Lynn Fielder, Assistant Division Chief, Air Quality Section
Michigan Department of Environmental Quality*

10:30 a.m. **BREAK AND EXHIBIT VIEWING**

10:45 a.m. **CURRENT AIR PERMITTING CLIMATE**

Moderator: *Mark Horne, Environmental Partners, Inc.*

Speakers: *Geneieve Damico, Environmental Engineer
United States Environmental Protection Agency, Region V*

*Christopher Romaine, Manager New Source Review
Illinois Environmental Protection Agency*

*Matt Stuckey, Branch Chief, Office of Air Quality - Permits Branch
Indiana Department of Environmental Management*

2009 Air Conference Agenda

12:30 p.m. **LUNCHEON**

Moderator: **John Yates**, Civil & Environmental Consultants, Inc.

Speaker: **Bharat Mathur**, Acting Regional V Administrator
United States Environmental Protection Agency

2:00 p.m. **CLIMATE CHANGE AND REGULATORY ISSUES**

Moderator: **Eric Boyd**, Seyfarth Shaw LLP

Speakers: **Doug Scott**, Director, Illinois Environmental Protection Agency
Chair, Climate Registry

Melissa Hulting, Regional Climate Change Coordinator, Region V
United States Environmental Protection Agency

3:00 p.m. **BREAK AND EXHIBIT VIEWING**

3:15 p.m. **ENFORCEMENT: APPROACH AND EXPOSURE**

Moderator: **James Harrington**

Speakers: **Jennifer Brennan** (Invited)
BP Pipeline

Rebecca A. Burlingham, Supervising Attorney
Environmental Enforcement Bureau, Illinois Attorney General's Office

James T. Harrington, Retired
McGuireWoods LLP

4:30 p.m. **CLOSING RECEPTION - SPONSORED BY THE EXHIBITORS**

If you are unable to join us for this conference, but know of a colleague who would be interested in attending, please pass this brochure on to them.

**Check out our website at: www.lmawma.org
for updates to this conference brochure.**

Conference Co-Chairs: **John Yates, Civil & Environmental Consultants Inc.**
Eric Boyd, Seyfarth Shaw, LLP
Mark Horne, Environmental Partners, Inc.
James T. Harrington, McGuireWoods LLP

Exhibitor Chair: **David Ozawa, Platt Environmental Services, Inc.**

2009 Air Conference Registration

NAME: _____

COMPANY: _____

ADDRESS: _____

CITY: _____ ST _____ ZIP _____

PHONE: _____ FAX: _____

E-MAIL: _____

REGISTRATION:

- Air Primer Course Only Members and Non-Members \$110
(not attending Nov. 12 Air Conference)
- Air Primer Course and November 12 Conference Registration
 - Members \$300
 - Non-Members* \$350
 - Government Employee \$225
 - Students \$110
- Air Conference Only (November 12)
 - Members \$225
 - Non-Members* \$275
 - Government Employee \$125
 - Students \$75
- Donation to Stephen Rothblatt Scholarship Fund \$ _____

**Non-members receive a one-year local associate membership with Lake Michigan States Section.*

A limited number of scholarships are available for anyone who requires CLE credit to maintain professional registration such as attorneys, professional engineers and professional geologists and who could not otherwise afford to attend this conference. Contact Robin Pelsis at (847) 202-0418 or robin@lmawma.org for more details.

There are also a limited number of government scholarship available to government employees interested in attending but cannot obtain funding to do so.

Payment via: check cash Visa Mastercard American Express

Amount Paid: \$ _____

Credit Card # _____ Exp. Date: _____

Signature: _____

Cancellations will be accepted until November 1st for a full refund.

After November 1 and before November 9, refunds will be given minus a \$50 processing fee.

After November 9, we will no longer be able to issue a refund, but conference handouts will be mailed if requested.

If you have any special dietary requirements, please contact Robin Pelsis at 847-202-0418.

To register - mail, fax, or e-mail your registration to:

Robin Pelsis, LM-A&WMA
11 Pleasant Hill Blvd.
Palatine, IL 60067
(847) 202-0418 FAX: (847) 202-0427
E-mail: robin@lmawma.org

There is a small block of hotel rooms set aside for conference attendees. Contact Robin Pelsis at (847) 202-0418 to reserve one of the rooms.

THE VALUE OF AN OFFICE-WIDE MENTORING PROGRAM

By: Perry Fisher

Besides being responsible for business development, while employed at Dames & Moore, an international environmental consulting firm acquired by URS in 1999, I volunteered to run an office-wide mentoring program at a time when there were substantial morale problems in the office. After running the program for seven years, I retired, only to return to the consulting field with ERM for five years on a part-time basis in which, besides undertaking business development, I was also asked to run a similar office-wide mentoring program. Based upon the total 12 years of experience in this capacity, what follows is what I learned about the value of a mentoring program and how to maximize that value. I am convinced that what I learned is applicable for any organization, not just environmental consulting firms.

Before initiating the Dames & Moore mentoring program, I researched similar programs. I found that many organizations, particularly in industry, have limited mentoring programs targeted at upper level management who are being groomed for top leadership positions in the firm. Most firms, I learned, have no formal mentoring programs, but rely on the supervisor to provide mentoring for those under their direction. Most firms, however, do provide mentoring for new employees as part of their orientation programs, but the mentoring is usually of limited duration, often less than six months.

From the outset, my concept was that, if having a mentor helps an employee to be more successful and happy in his work, a mentoring program should reach all employees in an organization — management, technical, and administrative. In running these programs I identified five distinct benefits: (1) provides support system to employee; (2) demonstrates firm's commitment to progress, happiness, and success of employee as part of human resources activity; (3) assists employee in resolving problems or difficult situations; (4) allows employee to discuss individual short/long term goals at any time; (5) provides ready source of answers to questions about firm (internal or external issues).

Based upon surveys I conducted during the course of the programs, it was clear that, to maximize the value of the program, both the protégé and mentor should clearly understand their responsibilities and expectations. For the protégé I identified six such responsibilities and expectations: (1) set realistic expectations of the mentoring program; (2) honestly evaluate needs and identify development goals; (3) set realistic development objectives and commit necessary time and effort to achieve them; (4) accept feedback from mentor and respond honestly and positively to it; (5) keep all commitments to the mentor; and (6) take responsibility for success of the relationship.

For the mentor I identified four such responsibilities and expectations: (1) respect the confidentiality of the relationship with the protégé; (2) provide honest feedback and direction; (3) commit to the protégé and follow through on commitments; and (4) take the mentoring relationship seriously and apply appropriate efforts in support of the protégé's development.

In subsequent newsletters I shall be addressing such issues as (1) Should the program be mandatory or voluntary?; (2) How should the mentor be selected, i.e., should the protégé have any input into the selection process? (3) Should the mentor be someone different from the protégé's immediate supervisor? (4) Should a mentor have more than one protégé, and, if so, how many? (5) If a protégé-mentor relationship is not working, what should be done? (6) Should new employees be required to have a mentor and, if so, for how long? (7) Who is the best person to run the program? (8) What are the responsibilities of the person running the program? (9) How often should surveys be conducted of the protégés and mentors to evaluate the success of the program? (10) While it is clear that the protégé benefits considerably from the program, are there any benefits received by the mentor? (11) What are guidelines for success of the program?

*Contributor: Perry W. Fisher
Mentoring Program Consultant
perrywf@aol.com*

COURTS IDENTIFY STRENGTHS AND LIMITS OF ILLINOIS' REMEDIATION PROGRAMS

By: David L. Rieser, Partner
McGuireWoods LLP

Two recent Illinois cases highlight the utility and boundaries of Illinois environmental remediation programs, including both TACO and the SRP. Taken together, these are the first formal risk based corrective action programs in the country. They remain successful and IEPA's determinations in these programs are rarely challenged in court. These two cases resolve disputes arising from the impact of these programs on other issues besides the remediation of a specific property.

The first case involved an unsuccessful attempt by a unit of local government to supersede the statewide programs. In *Village of DePue v. Viacom International, Inc.*, (2009 WL 1841582 (C.D. Ill.)), the court refused to allow DePue to force a more stringent remediation than that provided in a consent decree between Viacom and other responsible parties and the Illinois Attorney General. Although the consent decree predated TACO and the SRP, it contained many attributes of both programs. The underlying site had been included on the National Priorities List and was being actively remediated pursuant to the consent decree which required compliance with the National Contingency Plan. Two years ago, the District Court dismissed DePue's first attempt to bring a nuisance ordinance enforcement action holding that the Village had no authority to enforce an environmental program more stringent than or inconsistent with the state pursuant to its Illinois Environmental Protection Act ("Act"). The court also held that the

DePue's efforts were preempted by CERCLA. The Seventh Circuit reversed the court's CERCLA finding, but upheld the court's decision regarding the Village's lack of authority under state law, (*Village of DePue v. Exxon Mobil Corporation*, 537 F.3d 775, 7th Cir. 2008).

Undaunted, DePue became a home rule unit of government, drafted a new nuisance ordinance and initiated a new ordinance enforcement action in state court. Defendants promptly removed the action to federal court on the basis of diversity and moved to dismiss based on the DePue's lack of authority to disturb the ongoing remedial process under the Consent Decree. Again, the District Court dismissed DePue's case. The court held that DePue might have significantly broader authority as a home rule unit of government, but that its actions conflicted with the goal of a unified environmental approach expressed by the Illinois Constitution and were therefore beyond even its expanded authority. While the court dismissed the Village's ordinance action with prejudice, it did allow the Village to amend its complaint bringing common law trespass and nuisance actions requiring it to allege some tortious conduct by Defendants and public injury to support its claims.

The second case outlined some of the limits of a No Further Remediation ("NFR") letter. In *Snellback Properties, L.L.C. v. Aetna Development Corp.*, (2009 WL 1606945 (N.D. Ill.)), the court was asked to decide whether the

NFR issued by the Illinois Environmental Protection Agency ("IEPA") required the court to dismiss a RCRA citizen suit brought by an adjacent property owner claiming that its property was contaminated by releases from defendant's property. The RCRA action alleged that defendant created an imminent and substantial endangerment by allowing dry cleaning fluids to be released onto plaintiff's adjoining property and sought an injunction to force defendant to remediate. Defendant moved to dismiss the complaint, claiming that the NFR precluded further liability under other environmental statutes, including RCRA. The court refused to dismiss the action based on mootness, noting that under Illinois law, the NFR released only claims under state law, but not federal claims. The court also held that while the NFR constituted prima facie evidence that defendant's property was clean, it was not conclusive regarding the adjoining property for the purpose of a motion to dismiss.

Both cases represent the efforts of third parties to probe the limits of the Illinois remediation programs. The *DePue* opinion is somewhat tied to its facts in that DePue sought mainly to attack collaterally the Consent Order issued by the court and the Record of Decision issued by the state. Since the remediation was proceeding according to state standards and under state supervision in a public process, the court was

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REMEDiation PROGRAMS (con't.)

reluctant to allow the Village to intrude through its own independent process adopted for the sole purpose of attacking the state approved remedy. The lesson here is that when the state acts comprehensively to achieve both its general and specific environmental goals, other units of government cannot expect to set up an alternate process to achieve their own independent standards.

In *Snellback*, defendant sought to use the NFR as a shield from liability for contamination on adjacent properties. The court ruled in the context of a motion to dismiss and without the benefit of any factual record regarding the data and reports which supported the NFR. As a result, the court was not in a position to determine what, if anything, that information indicated regarding the adjacent property. The NFR may still be the final word on the question, but only if the data behind it supports or defeats the claim. This demonstrates a key point of the SRP, which is that NFR letters are only as good as the facts which support them. If the property owner previously documented that contamination was contained to its original property, that finding should prevail in subsequent proceedings. If not, especially if the property owner limited its evaluation of potential off-site contamination, the property owner faces additional liability despite the NFR.

Contributor: *David L. Rieser*
Partner, *McGuireWoods LLP*
drieser@mcguirewoods.com

THE PROBLEM: OBSOLETE ELECTRONIC PRODUCTS

By: Melville Nickerson
Environmental Law & Policy Center

Everyone heralded the arrival of the Digital Age. We all benefit from the electronic gadgets that allow us to work and communicate more efficiently, and that serve as an inextricable source of entertainment. One of the economic benchmarks of the Digital Age is the seemingly perfect equilibrium between supply and demand that results in relatively inexpensive cellular phones, televisions, computers, printers and other gadgets that feed our ever increasing consumer demand. In contrast, the low-water mark of the Digital Age is the surge in obsolete electronic products. In 2002, INFORM, a national environmental organization determined that by the year 2005 U.S. consumers would throw away 130 million cellular phones annually. In 2005, ABC News reported 315 million to 600 million computers would become obsolete in the United States by 2007—equivalent to a twenty-story pile of trash covering the entire City of Los Angeles. In 2006 the U.S. Environmental Protection Agency reported that obsolete electronic products are the fastest growing component of our nation's municipal waste.

The disposal of obsolete electronic products, or e-waste, has become an enormous threat to human health and the environment since these products contain varying

amounts of toxic materials, such as lead, mercury, brominated flame retardants, cadmium and beryllium. Cathode-ray tube televisions, the predecessors of flat-screen televisions and monitors, contain four to eight pounds of lead. Lead is a neurotoxin that can harm to the brain, kidneys and nervous system. Lead accumulates in the environment and affects the natural development of plants, animals and microorganisms. Flat screen televisions and monitors contain mercury. Exposure to mercury can cause damage to the central nervous system, kidneys and brain. Mercury can be passed through breast milk and is harmful to a developing fetus. 1/70th of a teaspoon of mercury can contaminate 20 acres of a lake, making the fish unsafe to eat. The plastic casings of computers and other products contain brominated flame retardants and polyvinyl chloride (PVC). Brominated flame retardants accumulate in human tissue and may cause thyroid damage, harm to fetal development and cancer. The incineration of PVC produces highly toxic dioxins that can cause cancer and harm to the immune and reproductive system. Cadmium is used to produce cables, wires, semiconductors and other items contained in electronic products.

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THE PROBLEM: OBSOLETE ELECTRONIC PRODUCTS

Cadmium also accumulates in living tissue and the environment. Exposure to cadmium can cause kidney and respiratory damage. Beryllium is used in motherboards and connectors and has been linked to lung disease. As consumers we bear responsibility to ensure the proper disposal of these items.

In Illinois the vast majority of consumers toss their e-waste into the garbage. That e-waste ultimately ends up in landfills where it accumulates by the ton and becomes a ticking toxic time bomb. The solid waste associations contend that a properly run landfill can handle e-waste without the risk of leaching, but in 2005, the General Accounting Office reported, “even with the uncertainty surrounding the risks associated with toxic substances in used electronics, EPA has identified a number of these substances as priority toxic chemicals for reduction because they don’t break down when released into the environment and can be dangerous even in small quantities.” Simply tossing e-waste into the garbage is not a viable option.

Recycling or reusing e-waste is the correct answer, but due to some very bad actors recycling can be as much of the problem as it is the solution. Recently, the news programs *20/20* and *60 Minutes*, as well as *National Geographic Magazine*, all reported on the ills of sham recyclers that export e-waste to developing nations where the dismantling of e-waste becomes a health risk for unprotected workers

and a plaguing environmental problem. In cities like Accra, Ghana or Guiyu, China poor laborers burn e-waste, for a few dollars a day. In the process, they release harmful toxins into the air, ground and water. In November 2008, *60 minutes* reported “potable water must now be trucked into Guiyu and scientists have discovered that the city has the highest levels of cancer-causing dioxins in the world. Pregnancies in Guiyu are six times more likely to result in miscarriages, and seven out of ten children have too much lead in their blood.”

These human tragedies are the result of the new erupting global market for electronic equipment components. E-waste contains many components that can be reused such as gold. According to the same General Accounting Office report mentioned previously, one ton of e-waste contains more gold than seventeen tons of ore. In Illinois, responsible recyclers are able to safely retrieve other valuable items such as copper, aluminum, and circuit chips and in the process safely dispose of the toxins contained in e-waste.

So far the United States has refused to join 170 other countries in ratifying the Basel Convention, an international agreement governing the transboundary movements of hazardous wastes and their disposal. Federal law is not in sync with the current problem. The U.S. Environmental Protection Agency (EPA) is charged with regulating the

disposal of hazardous waste under the Resource Conservation and Recovery Act (RCRA). RCRA regulates some—but not all—e-waste. Even when a particular class of e-waste is regulated, cathode-ray tubes for example, residences and small businesses are exempt. In September 2008, the Government Accounting Office released a scathing critique of the EPA’s failure to control the export of cathode-ray tubes. As a result several states have taken the lead on solving the problem.

The Solution: Electronics Recycling and Reuse Act

Illinois’ landmark Electronics Recycling and Reuse Act, 415 ILCS 150/1, was signed into law on September 17, 2008. Illinois became the seventeenth state in the nation and the second in the upper Midwest to pass an electronic recycling law. Nineteen states have passed e-waste laws, with Indiana and Michigan being the latest states to pass e-waste legislation. Illinois’ new law is one of the nation’s strongest, protecting the environment and the public from the toxic substances contained in electronic products while providing incentives for reuse and donation to underprivileged families, the disabled and public schools. I and colleagues at

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OBSOLETE ELECTRONIC PRODUCTS (con't.)

the Environmental Law & Policy Center drafted and advocated for the bill for the past two years.

The good news is that Illinois' law provides a solution to the growing problem of e-waste. The law requires electronic manufacturers, retailers and the Illinois Environmental Protection Agency to participate in the management of obsolete residential electronic products. The result is a five-fold win for Illinois residents. First, the law does not require state or local government funding. Instead, manufacturers of televisions, computers, monitors and printers are required to set up and pay for the collection, transportation, recycling and reuse of obsolete residential electronic products. Second, there is a real benefit to the environment since the law bans all televisions, computers, monitors and printers from landfills starting January 1, 2012. Thus, non-residential consumers will need to work with their IT hardware provider to properly handle the disposal of their obsolete televisions, computers, monitors and printers. Third, the electronic recycling and reuse program is free to Illinois residential consumers. Fourth, the law will create an estimated 4,000 new jobs and \$740 million in new revenue.

Fifth, the law creates standards for electronic recyclers that protect workers and the environment while adding transparency to the national and international shipment of e-waste.

As previously mentioned obsolete electronic products contain valuable materials that can be recycled for reuse. The reuse of these items conserves energy and natural resources. Entities and individuals may also take advantage of other tangible benefits through the donation of their obsolete equipment to most 501(c)(3) non-profit organizations or by partnering with reuse companies that refurbish computers and share a portion of the resale revenue with the partnering entity.

The Electronic Products Recycling and Reuse Act illustrates the synergy that can be achieved when environmental policy and economic development work toward a common goal.

Contributor: Melville Nickerson is a Staff Attorney at the Environmental Law & Policy Center, where he played a key role in drafting, negotiating and lobbying for the passage of the Electronic Products Recycling and Reuse Act. MNickerson@elpc.org



New Members

Sara Bals

Soil & Materials Engineers, Inc.

Yvette Borrego

John Crane, Inc.

James Brunson

Waukesha Mfg/Navistar

Fonda Bryant

Lacks Enterprises

Danielle Cella

Illinois Institute of Technology

Jennifer Ebert

UWGP

Ann Erhardt

Charles Hall

U.S. Environmental Protection Agency

Vijayamala Hettiarachchi

Geosyntec Consultants

Colin Knue

Aquinas College

Eric Lee

William Mills

Mills Consulting, Inc.

Patrick Neff

Lacks Enterprises

Melissa Peters

Camp Dresser & McKee, Inc.

Michael Quinn

Kubasiak, Fylsta, Thorpe & Rotunno, PC

William Shuff

IIT/Stuart School of Business

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2009 ACE STUDENT SCHOLARSHIP WINNERS

*Contributed by: Mark J. Rood
University of Illinois*

ACE 2009 occurred in Detroit Michigan during June 15-19, 2009. Members of LM-A&WMA met Wednesday morning for the annual LM-A&WMA breakfast to network before the beginning of the technical sessions and exhibitions. The discussions and food were superb. LM-A&WMA also provided \$1,000 of support to graduate students that gave platform presentations and/or poster presentations at ACE. Names of the student authors are underlined in the list of papers and posters as provided below.

Platform Paper Presentations:

Development and Performance Evaluation of a Short Path Extinction Cell

Authors: Benjamin Brem, Francisco Mena, Scott R. Meyers, Tami C. Bond, Mark J. Rood, University of Illinois

The measurement of aerosol optical properties is critical for the understanding of the role of aerosols in visibility and the earth's radiative balance. The measurement of light extinction, which is the sum of light scattering and light absorption of ambient aerosol, is often measured by open-path systems such as laser transmissometers and light detection and ranging devices, and by closed-path extinction cells. Overall, this research project will measure light scattering and extinction at very high relative humidity conditions (85–95 %) in a laboratory setting, with the goal of determining light absorption by difference. This goal requires an extinction cell and a nephelometer in which temperature (and hence humidity) are very tightly controlled. We discuss here the development of a short path extinction cell (SPEC) for three wavelengths (blue/ 467 nm, green/ 530 nm, and red/ 660 nm) at dry conditions. The volume of the cell is 1.75 L and the cell has an optical path length of 1.25 m. The optoelectronics is based on a

modified Radiance Research Particle/Soot Absorption Photometer unit, which can measure changes in light intensity at one part in 10^6 . The benchmarking of the cell was performed in two ways: (1) comparing the measured light extinction with the measured light scattering of an integrating nephelometer for white ammonium sulfate aerosols; (2) comparing the measured extinction with Mie-Lorentz calculations based on the size distribution of the ammonium sulfate aerosols measured with a scanning mobility particle sizer. Results without correction indicate that the SPEC and the TSI nephelometer differ by less than 20% at all wavelengths for non-absorbing aerosol at 500 and 2500 Mm^{-1} ($\lambda = 467 \text{ nm}$) without any empirical corrections to the SPEC. We discuss the corrections made to bring the SPEC into closer agreement, as well as the current prognosis for the detection limit of light absorption and for chemical-optical closure.

Capture and Recovery of Organic Gases for Reuse

Authors: Kaitlin E. Mallouk, David L. Johnsen, Mark J. Rood

There are several industrial processes that use organic *gases* to produce their product. These organic gases are often “inerts” in the manufacturing processes and, thus are present at low concentration in the effluent gas streams. Due to these low concentrations, the organic gases are typically not reused in the process and are instead thermally oxidized. The ability to capture, concentrate, and reuse the organic gases that are in the effluent gas will increase the sustainability and economics of industrial processes that emit organic gases into the environment. A bench-scale system was developed to capture, recover, and condense low concentration organic *gases* using Activated Carbon Fiber Cloth (ACFC) and electrothermal desorption. Previous work by Sullivan, *et al.* captured organic *vapors*, such as methyl ethyl ketone, and recovered them as liquids. Economic calculations indicate that as much as \$18 million/year in raw

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2009 ACE STUDENT SCHOLARSHIP WINNERS

Platform Paper Presentations (con't.):

materials will be saved by using capture and recovery with this new system. Additionally, because the gases are normally thermally oxidized, implementing capture and recovery could reduce the CO₂ output from these thermal oxidizers by 60,000 tonnes/year. These estimates are conservative because they do not include the costs or CO₂ emissions from the supplemental fuel used to operate thermal oxidizers. Several simulations and experiments with a common organic gas have been conducted. The results indicate that it is possible to adsorb isobutane on ACFC at a capacity of 0.09 kg/kg ACFC and with 99.8% capture efficiency. This adsorption capacity and electrothermal desorption will provide for more than a 300-fold concentration increase based on the current laboratory setup, making condensation and recovery of the organic gas feasible.

Measurement of Dust Emissions Generated by Military Vehicles Using Optical Remote Sensing Method at Fort Carson, Colorado
Authors: Wangki Yuen, Ke Du, Mark J. Rood, University of Illinois; Byung J. Kim, Michael R. Kemme, U.S. Army ERDC-CERL, Champaign, IL; Ram Hashmonay, ARCADIS, Durham, NC

Dusts generated by mobile military vehicles may cause adverse health effects to humans and degrade visibility during military trainings and operations. Therefore, it is important to quantify particulate matter (PM) emissions caused by select military vehicles. In this study, an optical remote sensing (ORS) method was used to determine the PM emissions by three tracked vehicles and one wheeled vehicle while moving at constant speeds ranged from 5 MPH to their maximum. Field measurements took place in Fort Carson, CO during September 16-19, 2008. In this ORS method, a vertical scanning Micropulse Lidar (MPL) was used to construct 2-D light extinction profiles across the dust plumes generated by the mobile vehicles at four different angles. To determine PM particle size distributions, path-averaged extinction values using select wavelengths of light were measured by Open Path - Fourier Transform Infrared Spectrometry (OP-FTIR) and Open Path - Laser Transmissometry (OP-LT). Future analysis will convert the time-dependent 2-D extinction profiles into 2-D PM mass concentration profiles, using measurement data from MPL, OP-FTIR, and OP-LT and assuming dust density and refractive index values. The PM mass emissions will then be calculated by integrating the time-dependent 2-D mass concentration profiles with concurrent wind vector data. This paper presents the results and interpretations of the time-dependent 2-D light extinction profiles for each vehicle type and speed.



Mark Rood with current and past Illinois students at the A&WMA Student Awards Ceremony.

2009 ACE STUDENT SCHOLARSHIP WINNERS

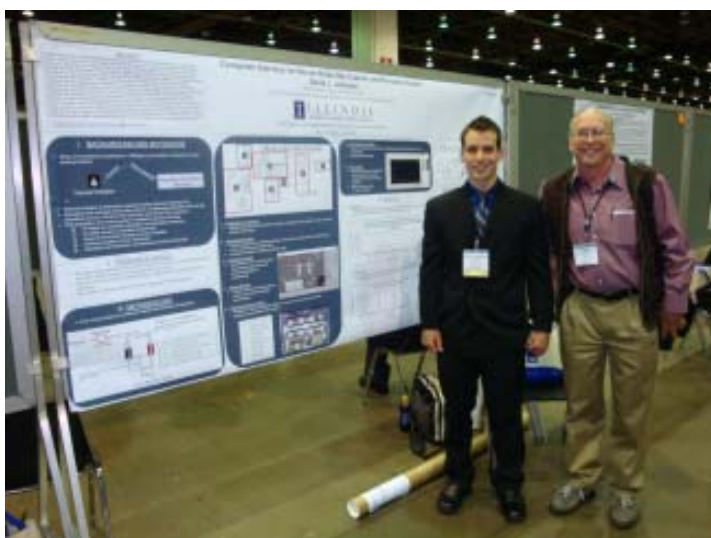
Poster Presentations:

Computer Interface for Bench-Scale Gas Capture and Recovery System

Author: David L. Johnsen, University of Illinois

A bench-scale system was previously developed using Activated Carbon Fiber Cloth (ACFC) to selectively remove organic vapors from a gas stream and provide the vapor as a liquid during regeneration of the ACFC. In this work, alterations were made to allow for the capture of organic gases (i.e., not vapors) by adsorption and then recovery of the gases as liquid during the regeneration of the ACFC. Based on experiments and simulations it is expected that the system will have 99.8% capture and recovery efficiency. A computer interface was developed with LabVIEW™ software to automatically control the system. This control program is composed of seven major blocks; initialization of variables, automation routine, hardware communication, alarms routine, automation routine, end of execution routine, and data

logging. It allows the user to input initial conditions and alarm values and then completes the adsorption and desorption cycles automatically by controlling the electrical components in the system. The program also has a graphical user interface that displays a process flow diagram indicating the location of gas flow as well as the components being powered. If any of the signals exceed a predetermined range of values the user interface displays an alarm and provides revised outputs to the system. When the adsorption process is complete, an end process is executed to turn off power and all data is logged in a spreadsheet. This computer interface allows for automatic control of variables in the experimental system, reducing the preparation time and increasing consistency across experiments.



David Johnsen with advisor, Mark Rood and his poster.

Synthesis and Characterization of Carbon-Based Iron Catalysts Prepared by Ultrasonic Spray Pyrolysis

Author: John D. Atkinson, University of Illinois

Environmental nanotechnology is growing in importance as air and water pollution regulations strengthen. Nanoscale devices will be necessary to measure low pollutant concentrations, and nanoscale pollution control technologies will be necessary to meet more stringent regulations in the future. In this work, a novel one-step synthesis method is used to produce nano-sized metal catalysts dispersed on/in porous carbon supports. An Ultrasonic Spray Pyrolysis (USP) system developed by the Suslick Group at the University of Illinois has been used to prepare carbon microspheres ($0.5 \mu\text{m} < d_p < 2 \mu\text{m}$) impregnated with well dispersed, Fe nanoparticles ($5 \text{ nm} < d_p < 400 \text{ nm}$) – all in one step. TEM, SEM, STEM, N_2 adsorption, and ICP-MS have been used to characterize the products. Physical and chemical properties of these materials will be compared to those of activated carbon-supported catalysts prepared from impregnating select commercial activated carbons with Fe by conventional catalyst loading methods (e.g., excess solution, incipient wetness). Potential applications of these materials including catalytic oxidation of low concentration air pollutants (e.g., BTEX, dioxins) and catalytic destruction of pollutants in water (e.g., trichloroethylene) will also be explored.

GRADUATE STUDENT AWARDS

By: Mark J. Rood, mrood@illinois.edu

2009 is a banner year for graduate students from the LM-A&WMA area to win scholarship, thesis, platform paper, and poster awards from A&WMA! Those awards, the winners, and the students' advisors are listed below.

Milton Feldstein Scholarship, 1st Place

Kaitlin E. Mallouk (mallouk2@illinois.edu)

University of Illinois

Advisor: Mark J. Rood (mrood@illinois.edu)

M.S. Student Thesis Award, 1st Place

Title: Development of an Isokinetic Air Sampler for Variable Flow Velocities
Benjamin Brem (bbrem@illinois.edu)

University of Illinois

Advisor: Yuanhui Zhang (y Zhang1@illinois.edu)

Ph.D. Student Poster Award for ACE 2009, 1st Place

Title: Synthesis and Characterization of Carbon-Based Iron Catalysts

Prepared by Ultrasonic Spray Pyrolysis

John D. Atkinson (jdatkins@illinois.edu)

University of Illinois

Advisor: Mark J. Rood (mrood@illinois.edu)

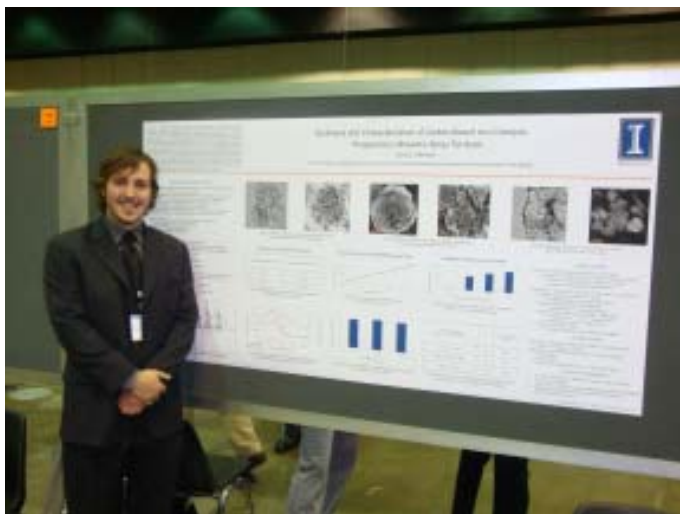
M.S. Student Platform Paper Award for ACE 2009, 1st Place

Title: Capture and Recovery of Organic Gases for Reuse

Kaitlin E. Mallouk (mallouk2@illinois.edu)

University of Illinois

Advisor: Mark J. Rood (mrood@illinois.edu)



John Atkinson with his poster.



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SAVE THE DATES

Young Professionals Networking and Social Event



Join us for an end of the summer
Happy Hour.

Expand your network while having
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August 27, 2009

5:30-9:00 pm

Where: The Crossroads Bar & Grill

www.thecrossroadschicago.com

1120 W. Madison, Chicago, IL

phone: 312-243-1113

There will be a cash bar. Appetizers will be provided by
LM-A&WMA. Please RSVP to deanapo@yahoo.com.
See you there!!

LM-A&WMA Annual Holiday Reception and Networking Event

December 1, 2009

IIT Stuart School of Business

This has always been a well attended event offering
members and non-members the chance to relax and
network in an informal setting. Watch your emails for
further details. Sponsorship opportunities for this event
are available. Please contact Robin Pelsis at
Robin@LMAWMA.org for additional information.

Vapor Intrusion 2010

September 29-30, 2010

The Westin Michigan Avenue Hotel

This conference is being presented by A&WMA
Headquarters. Additional information will be distributed
shortly.