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

NEW WEBSITE

Check out the new LM-A&WMA website (www.lmawma.org). We've worked to update the design and content. It is still a work in progress but we think you'll find it much improved from our previous site.

One of the new features of the website is a "Did You Know" section on the home page. This is a random environmental curiosity. We're looking to our members to help up with this feature. Share your knowledge and send us your random environmental facts to include.

Rothblatt Scholarship

The LM-A&WMA recently awarded the 1st Stephen Rothblatt Scholarship (see page 2) and will soon begin the process of soliciting applicants for next year's scholarship. If you know of a college/university that offers a Graduate Program in Environmental Studies, please let us know. We want to make sure we contact all the colleges/universities within our Section. Information can be sent to djacobson@istc.illinois.edu.

RCRA Here and Now May 20, 2010 - Glen Ellyn, IL

About 60 members and colleagues gathered in Glen Ellyn on May 20th to learn the latest regarding the EPA Resource Conservation and Recovery Act (RCRA) hazardous and solid waste issues at the one day program hosted by the Lake Michigan Air & Waste Management Association (LM-A&WMA). This article provides highlights of the program for those who wanted to attend but could not, and for those who may be interested in joining us at next year's conference that will be held, once again, in the spring. The food was terrific, from the continental breakfast (great coffee), outstanding formal luncheon and open bar at the conclusion. The program was scheduled so that there was ample time for informal conversation and networking.

Networking opportunities abound at Lake Michigan Air & Waste Management Association (LM-A&WMA) conferences such as this one at Abbington Banquets at Route 53 and Butterfield Rd in Glen Ellyn. At a time when we are each under pressure to do more with less and minimize costs for travel and meetings, seminars such as this accomplish many objectives for the local professional.

- You increase your regulatory and environmental knowledge. Presenters are hand picked to be among the most experienced knowledgeable in the region.
- You meet in person people important to the environmental arena. Attendees comprise an eclectic group from industry, government, institutions, legal, consulting and service sectors.
- You increase your access to knowledge. Many knowledgeable and helpful professionals are associated with this program, so if you have a need or a question, you are likely no more than one degree of separation from a person who can help you find the best path to take.
- The conference materials are posted on the LM-A&WMA web site. This is a great place to start your search for additional information or follow up on details about what you learned at the conference and to reconnect with someone who spoke or attended.
- You maintain your professional development and continuing education requirements whether for legal, engineering or professional certifications.
- You continue the quest to become indispensable to your employer. Increasing your professional development and knowledge is one of the best ways to secure your position.

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STEPHEN H. ROTHBLATT SCHOLARSHIP



Pictured above: Joanne Rothblatt (Steve Rothblatt's daughter), Hua Wei (scholarship recipient) and James Powell (scholarship Chair).

LM-A&WMA was pleased to present the first **Steven Rothblatt Scholarship** to Hua Wei during the May 7, 2010 Section Annual Luncheon Meeting. Hua Wei is pursuing a PhD in Public Health Sciences from the University of Illinois at Chicago. We were pleased to have Joanne Rothblatt join us for the awarding of this scholarship which was founded in memory of her father.



Current Contributors:

*Al Gans
Richard and Pat Hellman
Donna M. Kenski
Dennis A. Lawler
Mary T. McAuliffe
Scott J. Mermel
Mark J. Rood
Robin M. Rotman
Mr. & Mrs. Carlos A. Rotman
John Summerhays
Mary Pat Tyson*

The Lake Michigan States Section of AWMA has established a graduate student scholarship in memory of Mr. Stephen H. Rothblatt. Mr. Rothblatt was a long time supporter and contributor to the LM-AWMA, including serving as Chairman of the Board from 1987-1988. In his professional capacity Mr. Rothblatt was the Director, Air and Radiation Division, U.S. Environmental Protection Agency, Region 5, headquartered in Chicago, Illinois.

We continue to solicit donations from our members and friends for this scholarship fund. The scholarship recipients will be outstanding graduate students studying in the environmental field.

As a Section, we feel that scholarship programs are a vital function and provide needed support to the future environmental professionals within the territory of the Lake Michigan State Section. Ideally, we will be able to provide several generous scholarships to reflect the strength of our membership. The fund amount each year will be dependent upon annual donations and/or the interest generated from the investment fund.

Since the scholarship program will be funded strictly through the generosity of our members and supporting businesses, the Section's Board of Directors is hopeful that you will give serious consideration to making a tax-deductible donation in support of this program.

Please consider making a donation today! Make your check payable to LM-AWMA Scholarship Fund and mail it to LM-A&WMA, 11 W. Pleasant Hill Blvd., Palatine, IL 60067.

Any donation amount will be graciously accepted. Thank you very much for your consideration and continued support.

Congratulations to LM-A&WMA Member, Mark Rood, Ph.D. on being awarded the Lyman A. Ripperton Environmental Educator Award.

Lyman A. Ripperton Environmental Educator Award

Mark J. Rood, Ph.D.



Lyman A. Ripperton (1921–1978) spent his career as a practitioner in education and research for air pollution control. He left the Los Angeles County Air Pollution Control District in 1958 to assume a teaching and research position in the Department of Environmental Science at the University of North Carolina at Chapel Hill. There, he initiated an air pollution education program that developed into one of the foremost of its kind in the United States. The Lyman A. Ripperton Environmental Educator Award is presented to an individual who has inspired students to achieve excellence in their professional and social endeavors. It recognizes the ability that only a few educators possess: to teach with rigor, humor, humility, and pride. Recipients of this award are educators we would have chosen as our teachers if we had a choice. They are known by the accomplishments of their students.

A&WMA presents the 2010 Lyman A. Ripperton Environmental Educator Award to **Mark J. Rood, Ph.D.**, the Ivan Racheff Professor of Environmental Engineering in the Department of Civil and Environmental Engineering at the University of Illinois.

Dr. Rood received a bachelor's of science degree in environmental engineering at Illinois Institute of Technology. He then worked as an air quality engineer for Pacific Environmental Services Inc. in Elmhurst, IL, before completing his master's and Ph.D. degrees in environmental engineering at University of Washington.

Dr. Rood specializes in the use of physical and chemical principles to characterize the optical and chemical properties of ambient aerosols related to opacity, visibility, and climate change. These techniques use extractive- and remote-based sampling techniques. He also pioneers the development of effective methods and materials to separate hazardous materials from gas streams and the separation and recovery of organic vapors/gases from gas streams for reuse. Dr. Rood was coordinator of the Environmental Engineering and Science (EES) Program at the University of Illinois for six years. EES is consistently ranked among the top environmental and civil engineering programs in the United States.

Dr. Rood has taught environmental engineering courses at both the undergraduate and graduate level. He has been recognized for his teaching abilities by inclusion in the "List of Teachers Ranked Excellent by Their Students" four times and for his commitment to advising by receiving the "College of Engineering Excellent Advisor Award" four times at the University of Illinois. His advisees have been acknowledged with at least 20 A&WMA Annual Conference poster/paper awards and at least five A&WMA scholarships. His advisees were also awarded the Smolokowski Award from the American Carbon Society, the Richard A. Glenn Best Paper Award from the American Chemical Society, and two thesis awards through the Association of Environmental Engineering & Science Professors (AEESP). He has advised 22 Ph.D. and 42 master's

graduate students that have resulted in 82 peer-reviewed journal publications, eight book chapters, 110 conference proceedings, two patents, and one ASTM International Standard Test Method. His advisees have been placed at academic institutions, government agencies, and in the private sector; and 11 of his Ph.D. advisees have themselves become professors in the United States, Taiwan, Canada, China, and Turkey. He is very proud of his advisees' national and international achievements.

An A&WMA Fellow, Dr. Rood has been an active member of the Association since 1986. He currently serves as Chair of the Higher Education Division, Chair of the Faculty and Graduate Student Recruitment Committee, and member of the Scholarship Trustees Committee. He has also co-chaired at least eight Annual Conference technical sessions and helped develop the ever-popular joint A&WMA-AEESP "Meet & Greet" session—an annual breakfast seminar held during A&WMA's Annual Conference for academicians to network about their educational experiences. Dr. Rood was also an Associate Editor of the *Journal* for 10 years.

In addition to his affiliation with A&WMA, Dr. Rood has contributed to the American Society of Civil Engineers as an Associate Editor and Editor-in-Chief of the *Journal of Environmental Engineering*, and received the Distinguished Recognition Award as Treasurer and Executive Board Member of AEESP. He recently received the Best Research & Development Team Award from the U.S. Department of Defense's Energy Research and Development Center, as a result of collaborations with Byung J. Kim and Michael R. Kemme; and the Outstanding Cooperator's Award from the Illinois State Geological Survey, as a result of collaborations with Massoud Rostam-Abadi. Dr. Rood is a member of the Environmental Engineering Committee of U.S. Environmental Protection Agency's Science Advisory Board; was president of the Board of the Community Recycling Center in Champaign-Urbana; and was a member of Urbana Park District's Advisory Committee in Illinois.

USEPA Publishes National Enforcement Initiatives for 2011-2013

The United States Environmental Protection Agency's (EPA) Office of Enforcement and Compliance Assurance (OECA) has announced new enforcement goals and the National Enforcement Initiatives for fiscal years 2011-2013.

Every three years, EPA sets national enforcement initiatives to address the particular environmental issues, particularly those that are confined to a specific industry sector or source type, which EPA believes may be addressed through a concentrated enforcement initiative. These initiatives are led by national enforcement teams. EPA sets strategies for enforcement initiatives, and teams of EPA and regional staff and management direct work and monitor the progress necessary to achieve the goals and annual milestones set forth in the performance-based strategies.

For the 2011-2013 time period, EPA will be employing the National Enforcement Initiative approach to address the following six environmental and public health issues:

- **Keeping Raw Sewage and Contaminated Stormwater Out of Our Nation's Waters.**

This National Enforcement Initiative will focus on reducing discharges from Combined Sewer Overflows (CSOs), Sanitary Sewer Overflows (SSOs) and Municipal Separate Storm Sewer Systems ("MS4s").

- **Preventing Animal Waste from Contaminating Surface and Groundwaters.**

This National Enforcement Initiative pertains to Concentrated Animal Feeding Operations (CAFOs), which are agricultural operations where animals live in a concentrated environment. The animals generate a large amount of manure, which if not properly controlled, can overflow from the lagoons or ponds in which it is typically held and contaminate surface water or groundwater. The Clean Water Act prohibits the discharge of these pollutants into surface waters, and federal regulations require larger CAFOs to have permits in certain circumstances. However, many CAFOs are not complying with these requirements. EPA will focus primarily on existing large and medium CAFOs that have been identified as discharging without a permit.

- **Reducing Widespread Air Pollution from the Largest Sources, Especially the Coal-Fired Utility, Cement, Glass, and Acid Sectors.**

This National Enforcement Initiative pertains to the New Source Review (NSR) and Prevention of Significant Deterioration (PSD) programs in the Clean Air Act and the requirement that certain

large industrial facilities install state-of-the-art air pollution controls when they build new facilities or make "significant modifications" to existing facilities. However, EPA contends that many industries have not complied with these requirements, leading to excessive emissions of air pollutants such as sulfur dioxide, particulate matter, and nitrogen oxides. EPA intends to address this issue by bringing enforcement actions against the following entities: large refineries, coal-fired power plants, cement manufacturing facilities, sulfuric and nitric acid manufacturing facilities and glass manufacturing facilities.

- **Cutting Toxic Air Pollution That Affects Communities' Health.**

In 1990, Congress identified 187 toxic air pollutants that significantly affect human health. The Clean Air Act and federal regulations impose strict emission control requirements (known as Maximum Available Control Technology or MACT) for these pollutants, which a wide range of industrial and commercial facilities emit. EPA intends to focus on excess emissions caused by facilities' failure to comply with EPA's leak detection and repair requirements and

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USEPA Publishes National Enforcement Initiatives (con't.)

restrictions on flaring, and to address excess emissions during start-up, shut down and malfunction events.

- **Reducing Pollution From Mineral Processing Operations.**

According to EPA, mining and mineral processing facilities generate more toxic and hazardous waste than any other industrial sector, based upon EPA's Toxic Release Inventory. EPA reports that it has spent over \$2.4 billion to address human health and environmental threats to communities, such as exposure to asbestos and lead poisoning in children, as a result of mining and mineral processing. EPA stated that it intends to bring such mining and mineral processing facilities into compliance.

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For more information about EPA's National Enforcement Initiatives, visit <http://www.epa.gov/compliance/data/planning/initiatives/index.html>. If you would like more information or have any questions, please contact the author at clandgraf@btlaw.com.

- **Assuring Energy Extraction Sector Compliance With Environmental Laws.**

As the United States develops "clean energy" sources, some energy extraction technologies, such as new techniques for oil and gas extraction and coal mining, pose a risk of pollution of air, surface waters and ground waters if not properly controlled. To address these emerging problems, EPA will develop an initiative to assure that energy extraction activities are complying with federal requirements to prevent pollution of our air, water and land.

MEMBER NEWS

Environmental Partners, Inc. (Holland, MI and Naperville, IL) is pleased to announce the addition of **Dennis J. Cote, P.E.**, to its staff. Dennis has over 40 years experience in environmental engineering, air emissions characterization, and pollution control system technologies, with extensive expertise in the surface coating, metal decorating, and printing industries. Areas of expertise include recuperative, regenerative and catalytic oxidizer air pollution controls and carbon adsorption solvent recovery systems for the control of VOC and air toxic emissions. Other areas of specialization include secondary heat recovery systems for process and building energy conservation, evaluation of permanent total enclosure designs for capture and control of process emissions, safety testing for VOC explosion hazards, primarily in the printing industry, evaluation of dust explosion hazards in process handling and ambient work environments, and NESHAP-specific controls such as mesh pad air filtration systems for control of chrome mist emissions. Dennis is a registered Professional Engineer in the state of Illinois.



Platt Environmental Services, Inc. is currently looking for both experienced and entry level emissions testing personnel to join a rapidly growing firm staffed with experienced personnel and new state of the art equipment.

Please contact Jim Platt or Eric Ehlers at 630-521-9400 or fax your resume to 630-521-9494 or e-mail us at hr@plattenv.com.

THE MAINSTREAMING OF CORPORATE SOCIAL RESPONSIBILITY IN THE 21ST

Summary: Corporate Social Responsibility (CSR) strategic decision making is becoming mainstream for publicly traded companies, and for small and medium size businesses (profit and non-profit) that do business with them.

What began as the 20th century environmental movement has evolved into the 21st century sustainability movement. Experts agree that sustainability issues will increasingly drive corporate strategy. Although corporate sustainability reporting is not yet mandatory, companies (*profit and non-profit*) that want to lead are making an effort to inform their stakeholders about their sustainability results, goals and challenges.

This article provides a definition of terms used by sustainability professionals, explains why corporate social responsibility (CSR) is main stream for publicly traded companies, and how CSR may impact small and medium business owners.

What Is Sustainability?

Many definitions of sustainability exist today, but experts¹ agree that the world has widely accepted the definition of sustainable development that was released by the World Committee on Environment and Development (WCED) in 1987:

Sustainable Development meets the needs of the present without compromising the ability of future generations to meet their own needs.

In other words, the sustainability movement focuses on whether

our society is making choices that are *enduring* from the perspective of preserving life on Earth as we know it, and also conserving natural resources on Earth. Sustainable Development, when applied to businesses, refers to a business's own contribution to Sustainable Development, within its "sphere of influence" (*explained further in article*).

How Did We Get Here?

During the 20th century, we witnessed the rise in power and influence of the multinational corporation. Today, 90 of the 100 largest economies in the world are multinationals, with only a few countries having economies as large as Wal-Mart, Exxon-Mobil and GE, and many of these companies also have significant control over the world's natural resources². At the heart of the sustainability movement is the societal belief that this level of wealth and resource control imposes a duty of responsibility on companies to help society address some of our larger societal problems, some of which are related to corporate behavior (*e.g. recent BP oil spill*).

The 20th century awakened society to the effects of decades of untamed emissions and waste from corporate manufacturing practices. In response, the USEPA was created in 1970 to regulate air, water and waste emissions from industrial sources,

and Earth Day was launched with contributed greatly to community understanding. In the 1990s, the SEC began requiring publicly traded companies to disclose "material" environmental impacts in annual reports. Regulation and reporting requirements and community education significantly deepened the environmental movement because various stakeholders had the information to begin holding companies accountable for environmental issues through shareholder, community, labor and enforcement actions.

As a result, by the turn of the 21st century, the 20th century corporate model inherited from the Industrial Revolution - with its focus on manufacturing efficiency, product quality, price and profit - began to evolve. As one expert puts it "[w]e now live in a time of a new corporate trinity, a set of beliefs that puts social concerns on par with price and performance."³

Sustainable Development → Corporate Social Responsibility (CSR)

The term CSR refers to a company's commitment to sustainable development within its sphere of its influence. A company's sphere of influence refers to those stakeholders (people, organizations) effected by a company's actions and

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vice versa. The consensus of sustainability professionals is that primary stakeholders fall within these four sectors:

1. the marketplace (includes investors, customers, suppliers)
2. the workforce
3. the environment/energy (includes regulators, impact of pending legislation)
4. the community(ies) where a company does business.

Secondary stakeholders, such as competitors and the media, are also powerful stakeholders that can greatly affect the strategic objectives of a company.

Corporate strategy begins to fully incorporate CSR principles when the company accurately identifies its primary and secondary stakeholders, understands their needs and expectations, prioritizes their concerns, and responds accordingly through strategic action, measurement and reporting.

ESG Performance Indicators. Sometimes the term CSR is used interchangeably with the term *environment, social and governance* (ESG) performance indicators. ESG indicators are now used by financial markets and stock analysts around the world when providing stock analysis. Professional investors use ESG data to define a wide range of socially responsible investment strategies ranging from climate change, to human rights, labor practices, product responsibility and more. It is important to note that international

sustainability stakeholders agree that the primary current challenge of our time is to measure and reduce climate change emissions.

Evidence That CSR and ESG Performance Indicators Are Becoming Mainstream For Publicly Traded Companies

There is no doubt that ESG criteria are a primary driver for CSR practices in publicly traded companies. Although the U.S. has lagged behind Europe in developing ESG reporting practices to evaluate a company's CSR performance, it seems poised to catch up and perhaps eventually lead the CSR movement.

Most recently, on Feb. 8, 2010, SEC released guidance to public companies regarding SEC disclosure requirements as they relate climate change matters, requiring companies to evaluate the "materiality" of climate change on the company from a risk management perspective. Other evidence includes:

- In 2009, financial giant Bloomberg began using ESG criteria in its stock analysis platform in 250,000 terminals around the world.
- Reuters uses ESG criteria and in May 2009 reported that 84% of globally "buy" investors use ESG criteria to make an investment decision.
- NASDAQ is currently developing sustainability indexes which will require listed companies to report on ESG criteria.

- Various Sustainability Indexes rank companies based on CSR criteria such as: Dow Jones Sustainability Index, Financial Times and London Stock Exchange (FTSE) 4 Good Index, Business In the Community (BITC) Index (UK).

Implications of CSR on Small and Medium Businesses

Although multinational companies are driving CSR strategic decision making at this time, some small and medium companies, including not-for-profits, have jumped on board. A primary driver for this is that multinationals with a CSR ethic are increasingly demanding that their supply chain establish its own CSR ethic. Unless multinationals demand CSR accountability from their supply chain, they are at risk of having their supply chain undermine the multinational's claim of CSR progress.

Also, multinationals are increasingly entering into strategic partnerships with not-for-profits or non-governmental organizations (NGOs), but only with those who are "walking the talk" by adopting and reporting on their CSR ethic. Experience has taught us that even NGOs with socially responsible missions may not, in fact, be operating in a sustainable manner. Some common CSR problems with NGOs include: failure to measure and reduce climate change emissions related to internal operations, failure to

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New & Rejoining Members

pay employees a living wage, and failure to plan for the long-term financial solvency of the organization.

Finally, some of the risks common to both small and large companies are reduced by implementing a CSR strategy, such as maintaining organizational reputation and brand image, stakeholder activism on CSR issues, maintaining a competitive advantage, attracting and keeping the best employees, and avoiding government scrutiny. The benefits of CSR include the mitigation and management of these risks, which builds confidence among stakeholders, thereby protecting long-term growth, while providing social and environmental license to operate.

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(Footnotes)

¹ Center for Sustainability & Excellence (CSE).

² *Social Response Capitalism Today and Tomorrow*, Dr. Bruce Piasecki (2010) (www.ahcgroup.com).

³ *Id.*, Dr. Bruce Piasecki.

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RCRA Here and Now (con't.)

Presentation materials are available on the web site (www.lmawma.org). Below is a summary of the presentations and key points, together with some interesting hypothetical questions that were answered.

QUESTION: *Sometimes when inspecting the 90 day hazardous waste storage area, your technician arranges to have a drum's cover closed or have a drum or pallet moved to make the labels visible, or increase aisle space. Is this okay?*

Answer: Sure, but he should also note this on the inspection record. Auditors and regulators will suspect program non-compliance if inspection records appear 'pencil whipped'.

This tip and others were provided by **Kevin Moss of CITGO** in his presentation of strategies and lessons learned from years of managing the large quantity generator program at the Lemont Refinery to have one RCRA violation (lab error) in 14 years. They prefer paint sticks for labeling and audit/check every waste container at refinery every 3 days. Every container is tagged with a unique tracking number and entered into an excel data base.

When auditors/inspector's come Kevin recommends: don't keep them waiting; have records accessible; ask where they want to go; fix problems as they are discovered. Always conduct a closing meeting with the inspector before he/she leaves your facility. Ask the inspector if they plan to note any deviations and if these

can be resolved now or in the interim before their report is filed.

QUESTION: *What is an experienced auditor's preferred location for conducting the initial facility inspection and interview?*

Answer: "Up on the roof" is where the auditor can get a bird's eye view of site activities and set some priorities for the site inspection and follow up. [Many auditors review on line aerial photos, keeping in mind these may be dated.]

This tip and more were provided by **Patricia Peterson, PE with Amcol International** who addressed waste compliance auditing based on her years of experience with industry and consulting. She reported common physical waste issues included labeling, containment, signage, security, expired materials, open containers and satellite accumulation deviations. Common administrative issues include no waste minimization plan, missing records (manifests, training, and inspections), untrained signer, no documentation of corrective action. Findings should be framed in a manner that they are 'closeable', scheduled and tracked to completion.

QUESTION: IEPA RCRA Generator Inspections: *You are a hazardous waste generator with a clean compliance record. How often might you expect an Illinois Environmental Protection Agency (IEPA) inspection?*

Answer: If a large quantity generator (LQG), once in five

years, if a small quantity generator (SQG), possibly never. IEPA's goal is to annually inspect 20% of the LQG and some SQG's as time allows.

Charlene Thigpen, from IEPA's Des Plaines Field Office spoke regarding **RCRA generator inspections** under IEPA's 2 year agreement with USEPA. Current priorities are significant non-compliers (SNC), permit evaders, financial assurance gaps and federal facilities. SNC must be referred for enforcement. Tips for treating inspectors include: respect their time; be calm; have records in order; if you disagree with an inspectors observation, respectfully disagree and ask that they reconsider or further evaluate. The IEPA enforcement process was briefly described, with a focus on attaining a compliance commitment agreement.

Cathy Csartari, IDEM, addressed electronic waste, salvage yards, 60-day notification for facilities that are closing [waste management], County garage HW management, and numerous compliance assistance tools offered by her department. For closing facilities, the waste focus was on tanks, pits, trenches, labs, process lines, expired materials, waste storage areas, sludges, dusts, oils, still bottoms, ends and heels.

Dr. George Nassos, Director of the Environmental Management Graduate Program at Stuart School of Business spoke at lunch about trends in **Sustainability**, and the growth of this issue in corporate decision making and planning.

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RCRA Here and Now (con't.)

Indoor Vapor Intrusion investigation techniques and regulations in Illinois were addressed by **Mike Roche of Bureau Veritas**. Potential compounds of concern include chlorinated solvents, fuels and mercury. Illinois regs were stayed owing the USEPA concern regarding modeling default parameters and failure to account for advection [e.g. increased vapor intrusion driven by negative pressures created by HVAC systems]. IEPA will propose adjustments and meet with USEPA. NFR letters could be reopened if a property is sold or refinanced or there exists a vapor intrusion issue on the property or next door.

RCRA Waste Remediation technologies were described by **Jeff Pope of Burns & McDonnell**. These included techniques to address metals in soil, volatile organic material (VOM) in soil and VOM in ground water. Prove in-situ technologies were described including chemical oxidation, electric resistive heating and reactive barriers.

QUESTION: Expired Drugs: *You visit your Mother at her Chicagoland long term care center and note a bunch of expired prescription pills in her room. Is it okay for her care givers to flush them?*

Answer: Not in Illinois since January 1, 2010 when disposal of solid dosages into wastewater systems was banned for health-care providers. [But still permitted for households.]

QUESTION: Laptop Disposal: *In passing you ask your corporate Information Technology manager what they do with old laptops replaced for home-based employees. He says after files are transferred and drive is cleaned the unit is recovered, but if damaged, is disposed with trash.*

Answer: You may want to revisit this practice. Effective 2012 in Illinois, such electronic devices may not be discarded with household trash or go to a landfill. Other States with bans include MN, IN and WI.

Jeff Gloyd of Waste Management addressed new regulation of pharmaceutical waste under the Safe Drinking Water Act, RCRA, Universal Waste rules, and Controlled Substances Act. He also addressed the variety of State regulations on electronic waste recycling.

Eric Boyd of Seyfarth Shaw addressed changes to the RCRA definition of solid waste, exemptions where materials are not solid waste when legitimately recycled or combusted, and recent actions on coal combustion products.

QUESTION: NFR v. RCRA: *Your property has been impaired by contamination from a neighbor. He says his no further remediation (NFR) letter protects him from your claim. Is he correct?*

Answer: No. The court in Snellback Properties v. Aetna Development ruled that the NFR is not a release under Federal law,

it is meaningful only for the subject property, and is not determinative of "imminent and substantial endangerment" under RCRA.

David Reiser of McGuire Woods addressed this case and other emerging issues regarding spent material, generator criminal liability and coal combustion residue.

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CONFERENCE EXHIBITORS

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SCHOLARSHIPS

Congratulations to this year's LM-A&WMA Scholarship Winners. These students presented papers at the 2010 ACE in Vancouver.

John Atkinson, University of Illinois at Urbana-Champaign

Beni Benjamin, University of Illinois at Urbana-Champaign

Dave Johnsen, University of Illinois at Urbana-Champaign

Kaitlin Mallouk, University of Illinois at Urbana-Champaign

Wangki Yuen, University of Illinois at Urbana-Champaign

Below is a synopsis of papers presented by the students.

One-Step Synthesis of Iron Impregnated Carbon Spheres and Their Potential for Use in Air Quality Applications

John D. Atkinson¹, Seyed A. Dastgheib², Massoud Rostam-Abadi^{1,2}, and Mark J. Rood¹
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Platform Paper Number: 211

Carbon-based materials impregnated with metal nanoparticles have relevance in the field of air pollution control. Among other applications, iron and iron oxide nanoparticles have been used to adsorb CO, catalyze destruction of dioxins/furans, and catalyze CO oxidation. Dispersing catalyst nanoparticles onto a porous support, like activated carbon, increases the catalyst's surface area and activity. These metal impregnated carbons are traditionally prepared in a multistep, batch-mode process: (1) carbonization of an organic precursor, (2) activation of the carbon product, (3) metal impregnation (using excess solution, incipient wetness, ion exchange, or Chemical Vapor Deposition (CVD) techniques), and

(4) catalyst activation. The process is non-continuous, and the steps must be completed in succession, requiring significant time and energy.

We have developed a process for one-step, continuous production of iron-impregnated, porous carbon materials. This process uses an ultrasonic spray unit to aerosolize a precursor solution containing a carbon source, an inorganic salt, and catalyst precursors. A matrix of carbon supports and iron or iron oxide nanoparticles are formed when the aerosol particles are pyrolyzed in a flow reactor – the organic precursor is carbonized and the metal precursor is decomposed to zero-valent iron or magnetite, depending on processing conditions. The carbon support's porosity is generated from: (1) pore development as carbon networks around an *in-situ* salt template that is later removed with water washing, and (2) *in-situ* steam gasification of the isolated carbon. This new technique allows for production of micron-scale porous carbon particles impregnated with well-dispersed, iron nanoparticles – all in a single step. Beyond the simplified synthesis procedure, these materials have several properties, including high loadings of well-dispersed iron nanoparticles and magnetic properties for facilitated removal, which may make them ideal catalysts for air quality applications.

Electrothermal Heating Control during Regeneration of Activated Carbon Fiber Cloth

David Johnsen
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Student Poster Number: 23

Organic gases of dilute concentration (e.g. isobutane) are utilized in industry to produce packaging materials. In many cases these gases are disposed of through thermal oxidization. A method for recycling organic gases has potential to decrease emissions and cost from these applications. A system was developed using Activated Carbon Fiber Cloth (ACFC) to selectively adsorb an organic gas from an air stream and provide the adsorbate as a liquid during regeneration of the ACFC. The system utilizes two vessels containing ACFC to achieve Electrothermal Swing Adsorption (ESA) such that the ACFC in vessel 1 adsorbs dilute concentrations of an organic gas (< 5,000 ppm) from an air stream, while the ACFC in vessel 2 desorbs concentrated organic gas into N₂ using electrothermal heating. Adsorption and regeneration cycles alternate between vessels allowing for continuous capture and recovery of the organic gas. A series of tests

were conducted in which a 2,000 ppm isobutane air stream was adsorbed onto the ACFC until the breakthrough concentration reached 1,000 ppm. Feedback controllers, which control heating of the ACFC during regeneration including an On/Off, PID (Proportional Integral Derivative), PID delay, and PID delay with a secondary PID, were tested to determine the total energy consumption and isobutane mass exhausted during regeneration. The On/Off, PID, and PID delay controllers had similar regeneration energy efficiencies (49.1, 47.8, 46.7 mg/kJ), while the PID delay with a secondary PID controller, which allows for increased power application during initial heating, had a higher energy efficiency (63.5 mg/kJ). Similar regeneration tests were performed on ACFC with no loading. The energy required for desorbing the isobutane (31.0-36.0 kJ) was determined by taking the difference of the energy to heat the ACFC with isobutane and the energy to heat the ACFC with no loading.

Experimental Study of a Biocatalyst-Promoted Carbonate Absorption Process for CO₂ Capture from Post-Combustion Flue Gases

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Platform Paper Number: 784

A major source of carbon dioxide

(CO₂) emission into the environment is from the combustion of fossil fuels to generate electricity. Currently, mono-ethanol-amine (MEA)-based absorption processes are considered as the best available option for the capture of CO₂ from flue gas streams. However, the cost for CO₂ removal from flue gas streams with MEA ranges from \$50/mtton to \$70/mtton CO₂ avoided. The major contributor to the cost, which amounts to 60%, is due to energy consumption in the process.

It is preferable to use solvents with lower heats of absorption to reduce the energy consumption to remove CO₂ from gas streams. A novel Integrated Vacuum Carbonate Absorption Process (IVCAP) has been proposed to reduce such energy requirements. The process employs potassium carbonate (PC) as a solvent. The weak chemical affinity of CO₂ to K₂CO₃ enables CO₂ to be desorbed from the CO₂-rich solution at a low temperature and pressure and thus allows the use of a low quality steam from the power plant steam cycle. This, together with the low heat of absorption, reduces the energy requirements by 25-30% compare to a MEA-based process.

However, compared with the MEA solution, carbonate solutions with low heats of absorption generally exhibit much slower CO₂ absorption rates. Hence, a biological catalyst, *carbonic anhydrase* (CA) was investigated to promote the rate of CO₂ absorption in the PC solution. Experiments were performed in a stirred-cell reactor to evaluate the activity of the CA enzyme under IVCAP conditions. A mathematical model to simulate the CO₂ absorption into the PC solution was developed and evaluated with the experimental data. Results reveal that the CA enzyme increases the

absorption rate by a factor of 6-20 and shows promise to achieve fast kinetics for practical applications in the IVCAP. The mathematical model was evaluated by comparing theoretical predictions to the experimental results.

Methods to Reduce Sample Heating of a TSI 3563 Nephelometer when Measuring Light Scattering Coefficients at High Relative Humidities

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Student Poster Number: 1155

The measurement of aerosol optical properties at high relative humidity (RH) conditions is critical for the understanding of the role of aerosols in the earth's radiative balance. Overall, this research project will measure light scattering and extinction at very high RH conditions (85 – 95 %), with the goal of determining light absorption by difference. The light scattering of aerosols is commonly measured by a nephelometer. A problem with this type of instrument is the sample heating of up to 4.5 K due to thermal radiation of the instrument's light source. Depending on the inlet RH, the heating of the light source can reduce the actual scattering RH by up to 25%. This RH reduction causes an overall lowering of the scattering coefficient for hydrated aerosol particles. This project describes measures to reduce and characterize the sampling heating of the TSI 3563 nephelometer. Additional work focuses on changing the nephelometer wavelengths to 470,

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530, and 660 nm to match them for future use with the extinction cell. Preliminary results indicate that the measured scattering of the modified instrument agrees within 4% with the Ångström coefficient corrected values of a standard instrument. A sample heating of 0.7 K for the modified instrument was observed which corresponds to a RH reduction of less than 4% at 95% upstream RH.

Quantification and Characterization of Dust Emissions from Tracked and Wheeled Vehicles Using Optical Remote Sensing

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Student Poster Number: 6

Unique military activities, such as movement of tracked and wheeled vehicles on unpaved roads emit particulate matter (PM) to the atmosphere. Both visual air quality and public health can be affected by PM emissions. Remote sensing methods to quantify the mass of PM that is emitted from these fugitive dust sources are not well established. In this study, a novel method using optical remote sensing (ORS) was developed and used to quantify the mass concentrations and emission factors for PM that is emitted into the atmosphere during select military activities for possible use as inputs to emission inventories and dispersion models. PM was detected by ORS devices (ground-based Micro-Pulse Lidar (MPL) and an Open-Path Laser Transmissometer (OP-LT)) and a DustTrak™ at Fort Carson, CO during September 2009. An algorithm was formulated to invert the Lidar

equation, which was applied to compute the dust extinction profiles from the MPL's backscatter light signals. These results were then integrated with measurements from the OP-LT and a DustTrak™ to determine PM mass concentrations and emission factors. Dust PM emission factors caused by the movement of M88, M577, M270, and HEMTT vehicles ranged from 320 to 647 grams per vehicle kilometer traveled for PM_{2.5} and from 718 to 2,141 grams per vehicle kilometer traveled for PM₁₀, while the vehicles traveled at speeds ranging 16 to 64 km/hr. This novel ORS method and the results from using this method in the field will be described during the presentation.

Capture and Recovery of Organic Gases with Activated Carbon Fiber Cloth, Electrothermal Desorption, and Post-Desorption Treatment

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Platform Paper Number: 85

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 improve the 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.

The bench-scale system was tested with isobutane, a typical organic gas, to determine adsorption capacity and post-desorption concentration ratio for isobutane (outlet concentration during desorption cycle divided by inlet concentration during adsorption cycle). With the concentration ratio provided by this technology, condensation of isobutane was possible with secondary treatment. Liquefaction of the organic gases was performed with a condensation system that included a combination of pressure and temperature control of the gas stream generated during the desorption cycles.

Knowledge of whether the liquefied organic gas is in equilibrium with its vapor phase is important for setting system parameters such as temperature and pressure in the condensation system and for conducting mass balances on the adsorption/desorption system. This paper describes a series of experiments to determine if the organic gas is in vapor-liquid equilibrium in the condensation system. The vapor phase concentration of a typical organic gas, isobutane, was measured at various temperatures and pressures inside the condensation apparatus. Experimental results were within 5% of the theoretical equilibrium vapor phase isobutane concentration, suggesting that vapor-liquid equilibrium is achieved in the condensations system.

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SAVE THE DATES

Integrating Greenhouse Gas Regulations into Environmental Compliance Programs



September 16, 2010
Full Day Program
Marriott Racine, Wisconsin

Join the Lake Michigan Air & Waste Management Association (LM - A&WMA) and Federation of Environmental Technologists (FET) for this program. This seminar will give environmental professionals the opportunity to hear the latest developments about greenhouse gas (GHG) legislation, EPA's regulatory approach including control technology development, and how corporations in the Midwest can plan to address and reduce GHG emissions.

Vapor Intrusion 2010

September 29-30, 2010
The Westin Michigan Avenue Hotel

This conference is being presented by A&WMA Headquarters. Conference information and registration can be found at: http://www.awma.org/events/view_event.html?typeid=1&id=125

US EPA Regional Administrator Luncheon

October 27, 2010
Union League Club

Plan on joining LM-A&WMA and the Union League Club Environmental Committee at this luncheon with special guest speaker Ms. Susan Hedman, Regional Administrator of USEPA.

2010 Air Conference

November 4, 2010
The Abbington Banquets
Glen Ellen, Illinois