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# Lake Michigan States Section Air & Waste Management Association Newsletter<sup>®</sup>

## TWO IMPORTANT RULEMAKINGS IN ILLINOIS

There are two important Volatile Organic Compound (“VOC”) rulemakings pending before the Illinois Pollution Control Board of which you should be aware.

PCB R 2008-017 will apply to a vast array of consumer products from spray-on nonstick coatings for cooking to personal deodorants if adopted. Hearings on this rulemaking concluded on June 4. Wait for the Board ruling.

PCB 08-019 was filed May 9, 2008. NOX RACT is the Illinois EPA’s primary tool for achieving attainment of the ambient air quality standards for Ozone and PM 2.5 in the Chicago and Metro East nonattainment areas. It will regulate nitrogen oxide emissions from a wide variety of industrial sources if adopted. These sources include industrial boilers, process heaters, glass melting furnaces, cement kilns, lime kilns, iron and steel reheat, annealing and galvanizing furnaces, aluminum reverberating and crucible furnaces or fossil fuel fire stationary boilers at such sources that emit NOX in excess of 15 tons or greater in a year. The proposed compliance date is May 1, 2010. Hearings are scheduled in Springfield commencing Tuesday, October 14<sup>th</sup> and in Chicago commencing December 9<sup>th</sup>.

To review these regulations, the technical support documents, and the complete Pollution Control Board record on them, go to the Pending Rulemaking Section of the Pollution Control Board web page at <http://www.ipcb.state.il.us/>.

## D.C. CIRCUIT VACATES CAIR

*By  
David L. Rieser  
Neal Cabral  
McGuireWoods, LLP*

In a devastating critique of the EPA’s regulatory approach, the D.C. Circuit Court of Appeals vacated the entire Clean Air Interstate Rule (CAIR). Issued on July 7, 2008, the court’s opinion agreed with state and industry objections that the EPA acted beyond its statutory authority in the Clean Air Act (CAA) and that several of its regulatory decisions were without support in the record. The Court determined that the rule was so fatally flawed that the EPA needed to start from the beginning and craft an entirely new approach. In the meantime, the Court held that the prior NOx SIP Call rules, which had been vacated by CAIR, would remain in effect.

CAIR was intended to be EPA’s comprehensive program for addressing the impact of pollutants emanating from upwind states (primarily in the Southeast and Midwest) on the attainment of air quality goals in downwind states (primarily on the East Coast). The rule established a cap and trade program which set emission budgets for Nitrous Oxide (NOx) and Sulfur Dioxide (SOx) emissions for each of the upwind states with phased reductions in those budgets planned for 2010 and 2015. States were authorized to allocate emission allowances among their existing and future sources. CAIR further established a nationwide trading program to trade these allowances, thereby providing incentives for larger sources to reduce their emissions more quickly than provided for in the schedule. Such a cap and trade program had been extremely effective in reducing SOx emissions in the CAA Title IV acid rain program.

*Continued on page 3.*

# LM-A&WMA ORGANIZATIONAL NEWS

## *Scholarships*

LM-A&WMA recently awarded six (6) \$500 scholarships to students presenting papers during the Student Paper/Poster Contest held in conjunction with the 2009 ACE in Portland, Oregon. Synopsis' of the papers presented can be found on page 16.

Congratulations to the scholarship winners:

### *John Atkinson*

University of Illinois  
(Also won a \$7,500 scholarship from A&WMA)

### *Eduardo Carmona*

IIT - Stuart School of Business

### *Katty Davila*

IIT - Stuart School of Business

### *Hamid Emamipour*

University of Illinois

### *Jon Loftus*

University of Illinois

### *Whynde Melaragno*

IIT - Stuart School of Business

## *Fiscal Year*

It's official - by overwhelming approval, the members of LM-A&WMA approved making our fiscal calendar January 1 - December 31. This puts on the same calendar as A&WMA. The current Board of Directors will continue to serve until December 31, 2008. Look for ballots in the fall and announcement of successful candidates at the Annual Holiday Reception.

## *Teachers Training*

A&WMA is currently updating the Environmental Resource Guides (ERGs) that are presented and distributed to teachers through the Teachers Training Program. While LM-A&WMA fully supports this program, we are in need of a volunteer to head up the committee to present the ERGs locally. If you are interested in participating or want additional information, please contact Chris Blume at (312) 541-4200 x271 or [cblume@gaiatech.com](mailto:cblume@gaiatech.com). Additional information on the ERGs can also be found at [http://www.awma.org/enviro\\_edu/resources1/index.html](http://www.awma.org/enviro_edu/resources1/index.html)

## *Awards*

We are pleased to announce that a number of LM-A&WMA members were recipients of various awards from A&WMA during the 2009 ACE. Awards were given for various contributions and dedication to the environmental field.

Congratulations to:

### *Mary A. Gade*

Richard Beatty Mellon Award for Environmental Stewardship

### *Peter A. Scheff, Ph.D.*

Lyman A. Ripperton Award Environmental Educator

### *Mark Rood, Ph.D.*

Fellow Member



The **2008 Annual Air Conference** will be held on Friday, November 7, 2008. We will be at a new location this year - Doubletree Hotel in Downers Grove.

## *Volunteers Needed*

We are looking for members to volunteer to help LM-A&WMA with the following items:

- **Website** - help to maintain and update our existing website. No experience necessary - we will train.
- **Teacher Training** - learn to be an ERG presenter. No experience necessary - we will train.
- **Authors** - we are always looking for articles from our members.
- **Programs** - got an idea or topic for a program. If you have a suggestion or would like to assist with a seminar please contact Ferdinand Alido, Program Chair at (312) 836-3922 or [ferdinand.alido@nav-international.com](mailto:ferdinand.alido@nav-international.com)

## D.C. CIRCUIT VACATES CAIR (con't.)

As an attempt at a compromise, CAIR provoked complaints from all segments of the spectrum, most of which were adopted by the Court. The major conclusions and implications of the decision are wide ranging and go to the heart of the EPA's attempt to address regional air emissions issues:

- CAIR is vacated and the Phase I 2009/2010 and the Phase II 2015 compliance deadlines no longer apply.
- The Court effectively concluded that EPA has an obligation under the CAA to ensure that emissions from states do not significantly interfere with both the attainment and maintenance of air quality standards in other states. As a result, EPA will be obligated to replace CAIR with a new, and probably more stringent rule. This new rule is unlikely to be promulgated before the 2009-2010 CAIR Phase I deadlines, but will likely be issued and effective by or perhaps before the 2015 Phase II CAIR deadline.
- The Court's most devastating conclusion is that since multi-state regional emissions trading programs do not ensure that emissions from any specific state do not significantly contribute toward nonattainment in other states, EPA has no authority under the CAA to develop such broad trading programs. Consequently, unless the CAA is amended, EPA will likely have to promulgate a new rule that caps emissions from each state, which would severely diminish the favorable economics of regional trading programs, and make the new program more expensive. As well, since significant state contributions to nonattainment in other states must be eliminated (however EPA defines that) it is likely that the required reductions under any new rule will be more stringent than CAIR. This conclusion not only has significant implications for any new rule addressing interstate transport of NOx and SOx, but further calls into question the ability of EPA to use CAA authorities to generate any broad emissions reduction program for CO2.
- The Court held that EPA's determination of the level of a state's significant contribution to nonattainment must also include a meaningful analysis of whether a state also contributes to the ability of another state to maintain air quality standards. Hence, any new rule that EPA issues will also need to cover at least some areas that are attaining air quality standards, but just barely. As a consequence, EPA's new rules will likely need to require additional reductions from states than contemplated by CAIR, and may also require reductions from additional states not covered by CAIR.
- The Court further concluded that EPA has no authority to require sources covered by CAIR to surrender excess Title IV SOx allowances. While this restriction will have little impact on the requirements of any new rule regarding interstate transport, it will leave unaddressed EPA's obvious concern that if sources in the eastern half of the country must reduce SOx emissions well below Title IV's requirements, many excess SOx allowances will be generated, the allowance price will plummet. Sources in the western half of the U.S. will no longer have any incentive to continue to control emissions of SOx, and will buy allowances instead of reducing emissions. Since this issue can only be addressed by Congress, and the adverse implications to air quality in the western half of the U.S. seem quite real, there will be great pressure on Congress to address the issue, and perhaps the trading issue as well, by implementing a regional air quality plan akin to CAIR by statute.
- Finally, the Court concluded that the timing for implementation of any Title I interstate emissions reduction rule must take into account the Act's attainment deadlines, severely limiting EPA's ability to phase in emission reduction deadlines to address labor, material or financing concerns.

*Continued on page 4.*

## D.C. CIRCUIT VACATES CAIR (con't.)

The court recognized the significance of its complete demolition of the program, but believed that the EPA's many departures from its statutory directives left it no choice, even reminding EPA that it was a creature of statute, "lest it forget." As a going forward matter the Court held that its vacatur of CAIR left the NOx SIP Call regulations in place. While the Court's reasoning would also invalidate these NOx SIP Call rules, the Court specifically noted that the same issues were not raised in the NOx SIP Call challenges, and left those rules undisturbed. In the end, the Court found that the issues with the CAIR rule were so deep, fundamental and numerous that the EPA simply had to start again from scratch.

The impact of this decision will be to add to the regulatory chaos left in the wake of the numerous other decisions striking down portions of the EPA's air program. Many states had adopted SIPs to implement CAIR. Those that were based solely on CAIR will likely be revoked now and those, such as Illinois, which were based on independent state authority, will move forward with required reductions but without the CAIR trading program. Similarly, EPA and the states will have to start from square one in developing Best Available Retrofit Technology (BART) rules to combat regional haze. EPA's 2005 rules identified compliance with CAIR as meeting BART, a view upheld by the D.C. Circuit Court of Appeals in late 2006. Without this compliance mechanism, states will need to develop specific plans to control identified sources without the CAIR trading program.

This decision will have direct economic impacts as well. The market price for allowances has plummeted already and holders of the allowances are evaluating how to respond to this loss of value. Large generators upgrading to add SOx and NOx controls had planned the timing and financing of their control strategy around the availability of allowances and are now scrambling to evaluate what upgrades will be required and how they will be achieved.

Finally, this decision demonstrates the difficulty of using the current CAA to craft economic responses, such as cap and trade programs, to control greenhouse gas emissions. Because of the difficulty of clean air politics and the complexity of the CAA, EPA and the CAIR stakeholders attempted to craft a compromise program, building on the success of the acid rain program to spread the costs of compliance geographically and over time. Many discussions on implementing controls for greenhouse gases under the current CAA followed this same template. This decision demolishes that template and essentially bans further regional cap and trade programs unless those programs have specific statutory authority. As a result, further regional and national approaches to these issues will almost certainly require revisions to the CAA.

## US EPA ANNOUNCEMENT

The US EPA recently announced the appointment of Lynn Buhl to serve as Region 5 Administrator. An attorney and a public servant for over twenty years, Lynn brings both leadership and experience in environmental regulation and enforcement to this position. Lynn's appointment will become effective in mid-August.

Since September 2006, Lynn has served as Deputy Assistant Administrator in the Office of Enforcement and Compliance Assurance, where she works with Assistant Administrator Granta Nakayama to advise the Administrator on a wide range of environmental enforcement issues. Previously, Lynn served as Acting Secretary of Maryland's Department of the Environment and Deputy Secretary of Maryland's Department of Natural Resources. During her years of service in Maryland, she provided policy advice to Governor Robert Ehrlich, Jr., and was instrumental in reforming Maryland's contaminated site cleanup program. Prior to that, Lynn worked at Michigan's Department of Environmental Quality, Daimler Chrysler Corporation and in EPA's Region 5 office as an assistant regional counsel. Lynn holds a bachelor degree from the University of Virginia, and a J.D. from Wake Forest University School of Law.

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# PM2.5 – MILESTONES, STATUS, AND ISSUES

*By: Jeffrey Wentz  
Director, Corporate Environmental Health and Safety  
EPCOR USA Ventures LLC  
Past Chair, LMA&WMA*

PM 2.5 is the designation for particulate matter less than 2.5 micrometers in diameter. They present the most significant health risks because their small size allows them to both penetrate deeply into the lungs and to inhibit the ability of the normal lung functions to remove them.

Fine particles are both emitted directly from various sources and formed as secondary pollutants from the reaction and condensation of other “precursor” emissions in the atmosphere. Sources of fine particles include all types of combustion activities (motor vehicles, power plants, wood burning, etc.) and certain industrial processes. The major precursor emissions of concern are:

- Sulfur dioxide (SO<sub>2</sub>)
- Nitrogen oxides (NO<sub>x</sub>)
- Volatile organic compounds (VOC), and
- Ammonia

## ***History – the Standards***

Size-fractionated PM control in the US has a rather complex background. Back in 1971, USEPA issued the first National Ambient Air Quality Standards (NAAQS) for Total Suspended Particles (TSP), with no real particle size differentiation. Then, in 1987, EPA issued its first size-fractionated standard, replacing TSP with PM10 to target particles <10 µg in diameter.

In 1997, EPA again revised the standards by establishing annual and 24-hour NAAQS for PM2.5 for the first time. The standards were set at 15 µg/m<sup>3</sup> for the annual and 65 µg/m<sup>3</sup> for the 24-hour.

Several industry and organizations, including some state governments, immediately challenged EPA’s standards in the D.C. Circuit Court. The appeals eventually wound up in the U.S. Supreme Court. In

2001 the Supreme Court upheld EPA’s authority under the Clean Air Act (CAA) to set standards and clarified that EPA cannot consider cost in setting certain standards. The Justices also remanded several issues to the appellate court. So in 2002, the Washington DC District Court rejected all the remaining legal challenges to EPA’s 1997 standards, paving the way for EPA to designate 39 areas as not meeting the PM2.5 standards.

In the October 17, 2006 Federal Register, EPA issued a final rule revising the national ambient air quality standards for PM. This rule revoked the annual PM10 standard but retained the existing 24-hour PM10 standard of 150 µg/m<sup>3</sup>. At that time, EPA also retained the existing annual PM2.5 standard of 15 µg/m<sup>3</sup>, but lowered the 24-hour PM2.5 standard to 35 µg/m<sup>3</sup>. EPA will designate areas under the new standard by November 2009, effective April 2010. State implementation plans for the 2006 standards will be due to EPA by April 2013. Areas must attain the 2006 standards by April 2015, although the EPA may grant extensions to April 2020.

## ***History – the Regulations***

- In 2005, EPA proposed rules to implement the 1997 PM2.5 NAAQS, including revisions to the New Source Review (NSR) program. (“PM2.5 Implementation Rule”).
- On April 25, 2007 EPA finalized the PM2.5 Implementation Rule, which addressed the non-NSR provisions of PM2.5 NAAQS.
- On September 21, 2007, EPA published the PM2.5 NSR Rule, which completed the PM2.5 preconstruction review program framework by establishing Increments, Significant Impact Levels (SILS) and Significant Monitoring Concentrations (SMC).

*Continued on page 6.*

## PM2.5 – MILESTONES, STATUS, AND ISSUES (con't.)

- On May 8, 2008 the USEPA published a final NSR rule to accompany the April 25, 2007 PM2.5 Implementation Rule

Together, these rules finalized several NSR program requirements for sources that emit PM2.5 directly and other pollutants that contribute to PM2.5. They specify that pollutants that contribute to PM2.5 are subject to NSR regulations; and they require that NSR permits address both directly emitted PM2.5 as well as pollutants responsible for secondary formation of PM2.5 in the following manner:

- Sulfur dioxide (SO<sub>2</sub>) – regulated as an NSR pollutant;
- Nitrogen oxides (NO<sub>x</sub>) – regulated as an NSR pollutant unless the permitting state can prove that NO<sub>x</sub> emissions are not a significant contributor to PM2.5 formation in the state;
- Volatile organic compounds (VOC) and Ammonia – not regulated as an NSR pollutant unless the state demonstrates that their emissions are a significant contributor to PM2.5 formation;

However, there is an exemption that further complicates an already convoluted situation. On May 15, 2008, EPA issued guidance that adopted a transition period to allow industry and EPA time to validate test methods used to measure emissions of secondary particles. The May 15, 2008 rule does not require states to account for condensable emissions in PM2.5 emissions limits in PSD or nonattainment NSR permits until the date the transition period ends or January 1, 2011, whichever is earlier.

### ***Issue – Testing***

Originally, particulate testing was based on Method 5 for filterable and Method 202 for condensable PM emissions – primarily due to the familiarity testing entities had with those methods. This was adequate as most of the data previously provided to the states was actually total suspended particulate (TSP). Also, as Method 5 filters can collect PM down to 0.3µm in diameter, the agencies apparently deemed that to be sufficient.

However, over time, and with more stringent limits, began to document that Method 202 had poor repeatability and artificially high results. They later determined that RM 202 suffered from a number of issues, including:

- Interference – SO<sub>x</sub>, NO<sub>x</sub> and Ammonia produced “weighable” artifacts.
- Matrix Effect – differences in air chemistry vs. water chemistry produced effects similar to interference with the production of “weighable” artifacts.
- Precision – EPA laboratory studies reported an acceptable precision of 23% compared to field reports 20-80% error.
- Accuracy – the lack of verified standards prevent real comparisons.

EPA Recognized these concerns and has received funding to evaluate issues with RM202 and explore a modified 202 and a Dry Impinger Method to overcome the concerns. These are currently being validated, but in the meantime, on May 13, 2008, EPA published updates to M202 under OTM-28. OTM-28 is designed to be used for all applications and can be found on EPA’s website at: <http://www.epa.gov/ttn/emc/prelim/otm28.pdf>.<sup>1</sup>

### ***Issue – PM2.5 and the CAIR Vacatur***

By now, most of the readers of this article will have heard the DC Circuit court vacated (nullified) the Clean Air Interstate Rule (CAIR) on July 11, 2008; and I refer you to David Rieser’s insightful article on the subject in this issue. But I would like to very briefly note some resulting issues that could have serious effects on designated PM2.5 nonattainment areas.

States and EPA expected air quality to improve due to reductions from various national, regional, and state programs already in place, including CAIR and the NO<sub>x</sub> State Implementation Plan (SIP) call. In fact, EPA allowed the states to take credit for those improvements in developing their 2008 PM 2.5

*Continued on page 7.*

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## PM2.5 – MILESTONES, STATUS, AND ISSUES (con't.)

attainment SIPs. These SIP attainment demonstrations and revisions were due April 2008, and none of those submitted at that time could have foreseen CAIR's demise. These plans were designed to reach attainment no later than five years from date of designation – that is, April 2010. Extensions of 1-5 years are possible, but the regulations set out conditions for such extensions based on ambient air quality supporting analysis. It is unclear what leeway EPA and the States have, but the states may be hard pressed to prepare local rules that would have effects equal to that of CAIR.

Also, given the length of time it takes to do that analyses, develop, propose, and promulgate state rules, it seems impossible for the states to pass, much less realize the air quality benefits of new rules by the attainment date. The implications of missing the attainment dates are serious, and include the loss of Federal Highway funding.

It is also unclear how various community action and environmental groups will react to the CAIR vacatur. Many believe they will file legal suites to force actions quickly at the state and federal levels. If they do so, many wonder if other air quality issues will be included in those suits, such as requirements for local or national actions on controlling CO<sub>2</sub> and other Greenhouse Gases.

Furthermore, remember the main reason for the CAIR was to control interstate pollution. Without CAIR, the states are left with essentially one option, petitions under Section 126. Therefore, we may well see a number of states bring suit against upwind states, contending that they interfere with downwind states' ability to achieve the ambient air quality standards. It may well be that the most immediate drivers for new state actions will be environmental group lawsuits and 126 petitions.

The full implications of CAIR's vacatur won't be known for some time yet, but in any case, they will be far reaching. I encourage everyone in the field to stay informed on developments, so watch for more updates in future issues.

### Sources:

<sup>1</sup> "Particulate Matter: A brief history, current progress and future development." Patty Strabbing, Chrysler LLC, CIBO June 2008

### References:

"Dispersion Modeling of PM2.5 Emissions for New Source Review DRAFT Frequently Asked Questions," Iowa Department of Natural Resources;

"Final Rule for Implementation of the New Source Review (NSR) Program for Particulate Matter Less Than 2.5 Micrometers (PM2.5)," USEPA, May 8, 2008

Final Rule on the Implementation of the New Source Review Provisions for Particulate Matter Less Than 2.5 microns (PM2.5) Fact Sheet; USEPA, May 8, 2008

"Particulate Matter (PM2.5): Implementation of the 1997 National Ambient Air Quality Standards (NAAQS)," Congressional Research Service, Robert Esworthy, October 4, 2007

"16th Annual Conference on Air & Water Permits in Ohio, Workshop A: Implementation of Fine Particulate Standards – Quantification & Measurement Issues for Stationary Sources," Kirk Lowery, Trinity Consultants, July 27, 2006

# IEPA PLANS INDOOR AIR AND OTHER AMENDMENTS TO TACO

*By  
Heather Nifong, Programs Advisor  
Division of Remediation Management  
Illinois EPA*

By the end of summer, Illinois EPA expects to propose to the Illinois Pollution Control Board an amendment adding the indoor inhalation exposure route to its risk-based cleanup methodology called TACO (Tiered Approach to Corrective Action Objectives, 35 Ill. Adm. Code Part 742). Volatile organic chemicals and mercury can travel from soil gas, soil and groundwater to building interiors, creating a health risk when occupants breathe contaminated air. This migration pathway is also called vapor intrusion. Illinois EPA has identified 59 chemicals of concern for the new exposure route.

The indoor inhalation pathway will be managed similarly to the existing exposure routes under TACO. It follows the basic framework of TACO's three tiers, calculates both residential and industrial/commercial remediation objectives, and allows for pathway exclusion, including the use of building control technologies to limit contaminant migration.

Also, as part of these amendments, Illinois EPA is updating remediation objectives for all of the other exposure routes. This is because of new data available on toxicity values and on the physical and chemical properties of TACO chemicals.

# ~~Waste Management & Research Center~~ ILLINOIS SUSTAINABLE TECHNOLOGY CENTER (ISTC)

It's a new day for us with a different name, a different leadership, and a renewed commitment to our values. The Waste Management & Research Center is now known as the Illinois Sustainable Technology Center (ISTC). The new name better represents the goals and direction of the organization.

The name change is part of even larger changes at ISTC. The Center is now part of the University of Illinois. It joined the other scientific surveys (Illinois State Water Survey, Illinois State Geological Survey, and Illinois Natural History Survey) in moving out of the Illinois Department of Natural Resources. The four organizations are now part of the Institute of Natural Resources Sustainability at the University of Illinois.

ISTC will continue to offer direct technical assistance from specialists, energy and pollution prevention assessments, a sophisticated analytical laboratory, research funding to explore a wide range of environmental issues, and information on environmental and pollution prevention issues. In addition, ISTC will continue to serve as the coordinating agency for regional and national programs including the Great Lakes Regional Pollution Prevention Roundtable and the Printers' National Environmental Assistance Center.

For more information please contact Acting Director Dr. Gary Miller at 217/333-8940 or Deb Jacobson, Regional Operations Manager at 630/472-5019 or [djacobson@wmrc.uiuc.edu](mailto:djacobson@wmrc.uiuc.edu).

# IIT-STUART'S EXCELLENT ENVIRONMENTAL MANAGEMENT PROGRAM HAS BECOME EVEN BETTER

Although you may be aware of the M.S. in Environmental Management program at IIT – Stuart School of Business, you need to know that it has become even better. Every two years, the Aspen Institute conducts a survey of over 600 accredited graduate business schools worldwide to determine which schools are doing the best job in integrating environmental and social sustainability into its business programs. In its most recent survey, that of 2007/08, Aspen determined that IIT-Stuart is ranked:

- Overall number 48 in the world
- Overall number 35 in the U.S.
- Overall number 1 in Chicago
- In terms of course content, number 11 in the world.
- In terms of course content, number 8 in the U.S.
- In terms of course content, number 1 in Chicago

Despite this outstanding ranking, the school took advantage of its switch from a quarter system to a semester system to modify the curriculum and introduce some new courses. The new curriculum for the M.S. in Environmental Management and Sustainability program includes the following new courses:

- Carbon Management and Climate Change
- Environmental Communications
- Environmental Economics
- Sustainable Communities
- Water Quality and Management

In addition, IIT-Stuart offers a Certificate Program in two different tracks, one in Pollution Prevention and Compliance and one in Sustainable Enterprise.

More information on these programs can be obtained on the web at <http://www.stuart.iit.edu/graduateprograms/ms/environmentalmanagement/index.shtml>

Or you can contact the program director, George P. Nassos at [george.nassos@iit.edu](mailto:george.nassos@iit.edu)



## New Members

*Jim Alexander*  
USS - Gary Works

*Mary Pat Bomher*  
ERM

*Brian Borofka*  
WE - ENERGIES

*Benjamin Brem*

*Amanda Butler*  
MWH

*Sharon Cameli*  
WE - ENERGIES

*Eduardo Carmona*  
Illinois Institute of Technology

*Linda Childers*  
ADM

*John Ciba*  
Brady Corporation

*Terry Coughlin*  
WE - ENERGIES

*Zandra Davila Tueme*

*Roger Dodds*  
WE - ENERGIES

*Bruce Dumdei*  
URS Corporation

*Abigail Fontaine*  
Lake Michigan Air Director's Consortium

*Steven Froisland*  
Unimin Corporation

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# INDIANA BEGINS RISK-BASED RULEMAKING

*By: Lawrence L. Fieber, PG  
Principal*

*Burns & McDonnell Engineering Company, Inc.*

On June 11, 2008, the Indiana Department of Environmental Management (IDEM) made public its intention to develop new rules at 329 IAC 17 for use in the assessment, clean up, and closure of contaminated soil, sediments, and water in Indiana.

Practitioners in Indiana are already familiar with IDEM's Risk Integrated System of Closure (RISC) which IDEM has used as a non rule policy document since February 2001. Ms. Lydia Kuykendal of the Rules, Outreach, and Planning Section of the Office of Land Quality of IDEM confirmed that it is IDEM's intention to draft rules that are generally consistent with the existing RISC non rule document.

With the planned rule making, Indiana follows many other states that have developed rules regarding RISC based assessment, clean up, and closure of contaminated sites. IDEM anticipates that the new rules will provide flexible approaches and encourage creative solutions for site clean up and intends to apply the risk based remediation rules to the following programs at industrial, commercial, and residential sites:

- I. Voluntary Remediation Program
- II. Leaking Underground Storage Tanks
- III. State Clean Up
- IV. Brownfields
- V. Superfund
- VI. Defense Environmental Restoration Program
- VII. Hazardous Waste Closure and Corrective Action (Resource Conservation and Recovery Act).

IDEM plans to establish a work group with representation from interested persons to address the issues presented by the rule making. Interested participants should contact Lydia Kuykendal, of the Rules, Outreach, and Planning Section of the Office of Land Quality at (317)234-5345. IDEM is

soliciting public comments concerning alternative ways to achieve the purpose of the rule, suggestions for the development for draft rule language, and fiscal impact of the rule making.

Through July 11, 2008, IDEM received comments from energy, retail and petroleum companies and law firms and industry groups. Commenters offered the following comments and concerns:

1. The financial impact of the risk-based closure rulemaking is underestimated, particularly due to the stated rulemaking preference for remedial methods involving treatment or removal.
2. The rulemaking preference for remedial methods involving treatment or removal contradicts or is incompatible with existing risk-based remedial methods and federal policy encouraging "Green Remediation" approaches.
3. Carefully construct the definition of "practicable" as it relates to treatment or removal.
4. Leave the non-rule RISC guidance as is and abandon the risk-based rulemaking.
5. Adopt the RISC guidance as the risk-based rule.
6. Adoption of risk-based rules will be positive for Indiana.
7. Extend the public comment period.

On July 23, 2008, Ms. Kuykendal stated that IDEM plans to extend the public comment period to enable others to provide valuable input on the rulemaking process. Written comments should be addressed to:

08-422 (SWMB) [Risk-Based Closure Rule Making] Marjorie Samuel  
Rule, Outreach, and Planning Section  
Office of Land Quality, MC65-45  
Indiana Department of Environmental Management  
100 North Senate Ave.  
Indianapolis, IN 46204-2251

# CITY OF CHICAGO - WASTE FRANCHISE

The City of Chicago is developing a proposal to franchise the collection of waste and recyclable materials for commercial, industrial, institutional, and multifamily buildings. Under a proposed ordinance to be introduced in the City Council on July 30, the City would establish approximately thirteen exclusive franchise service areas and select a single waste and recyclables hauler to operate in each service area. Businesses and buildings that currently contract with private waste haulers would be required to participate in the City's waste hauling franchise program.

According to the City's plan, exclusive waste hauler franchise agreements consisting of 7-year terms would be competitively bid, with a built-in escalation like the CPI. All existing service contracts would be deemed invalid fifteen months after the franchise is awarded.

The City maintains that establishing exclusive franchises will lower collection costs for customers, enhance enforcement of public safety and health laws, cut greenhouse gas and vehicle pollutant emissions by reducing the number of vehicle trips and miles traveled, increase recycling rates, and create recycling related jobs.

The City's franchise proposal represents a major change in how the commercial waste hauling businesses is conducted in Chicago. It constitutes regulation of a private enterprise, which has not always resulted in the savings, efficiencies and other beneficial outcomes predicted. We need your help in analyzing this proposal. While a copy of the proposed ordinance has not yet been released, we've included the City's issue briefing summary for review.

*Continued on page 12.*



## New Members (con't.)

**Donald Higgins**  
Unimin Corporation

**Mark Janssen**  
Lake Michigan Air Director's Consortium

**Andrew Jarrick**  
IIT - Stuart School of Business/Navistar, Inc

**Dave Johnsen**

**Arezoo Khodayari**  
UIUC

**Crystal Koles**  
American Transmission Company

**King Shan Kwok**

**Brett Losey**  
Sanimax

**Kaitlin Mallouk**  
University of Illinois

**Whynde Melaragno**

**Nadine Miles**  
WE - ENERGIES

**William Mills**  
Mills Consulting, Inc.

**Melissa Mrotek**  
Georgia-Pacific

**Tristana Nordstrom**

## Exclusive Franchise Limited Impact Evaluation

### Briefing Summary

The City of Chicago (hereafter referred to as the “City”) is proposing an ordinance to franchise the collection and disposal of certain wastes and recyclable materials produced by commercial, industrial, institutional and multifamily buildings. Under the proposed ordinance, the City will establish several exclusive franchise service areas throughout the City and will grant the authority to select a single qualified waste and recyclables hauler to operate in each service area. Establishes exclusive franchises that will:

- Lower and standardize collection and disposal costs within service areas;
- Stabilize yearly cost increases;
- Enhance the enforcement of current public safety and health laws;
- Reduce greenhouse gas (GHG) emissions and vehicle pollutant emissions
- Minimize and more effectively control the flow of heavy equipment on City alleys and streets;
- Provide every customer with recycling services and reduce landfilled waste volumes; and
- Create jobs through increased recycling.

### Current Collection System

- Chicago’s Department of Streets and Sanitation (DSS) collects waste generated by residential structures containing four units or less (approximately 750,000 households), along with some places of worship, institutions and municipal locations. This roughly accounts for two-thirds of the residential collected waste in the City, or approximately 1.2 million tons.
- Privately-owned collection firms collect the remainder of the waste and recyclables generated in Chicago.
- Combined, approximately 6.6 million tons of municipal solid waste are generated in the City each year of which 3.5 million tons is construction and demolition (C&D) waste.

### Exclusive Franchise System

- The City is considering the development of an exclusive franchise agreement for the collection and disposal of certain wastes and recyclable materials produced by commercial, industrial, institutional and multifamily buildings. Approximately 1.9 million inns of waste and recyclables will be collected as part of the exclusive franchise, estimated to be 500,000 tons from multifamily residential, 1.2 million tons from commercial/institutional, and 200,000 tons from industrial lunchroom and office buildings.
- Under an exclusive franchise agreement, the City grants a single private company the right to charge residents and/or businesses in a designated area of the City for waste collection services. The City will divide its jurisdiction into Service Areas and grant exclusive franchises for each area.

### Benefits of Waste Franchising

- Potential cost savings to entities currently contracting with privately-owned waste collection companies.
- Potential increased recycling rate resulting from a non-fee separate recycling collection program.
- Potential reduction in traffic, reduced vehicle miles traveled (VMT), and reduced infrastructure improvement costs associated with reductions in equivalent single axle loads (ESALs).
- Potential benefits to the environment including reduced noise and improved air quality, public health and safety.
- Reduction in GHG emissions from reduced VMT and reduced quantity of landfilled waste.
- Potential job creation within the recycling industry.

*Continued on page 13.*

# CITY OF CHICAGO - WASTE FRANCHISE (con't.)

## Cost of Service Impacts

- The 2008 Chicago Waste Collection Survey results indicate customers are charged a wide range of prices for similar services. For example, prices range from \$35 to \$175 monthly for a 1 cubic yard container that is collected once per week. Prices range from \$68 and \$251 monthly for a 2 cubic yard container that is collected 2 times a week.
- Although the extent of cost savings in the City can not be accurately predicted without the waste haulers' actual bids, the City can expect a significant cost savings based on results seen in other communities from marketing and operating efficiencies realized by the haulers.
- Through the Village of Skokie's franchise agreement, 88% of businesses saved an average of 44% on waste collection and 12% of the businesses' costs were the same, or were frozen with no increased costs.
- It is predicted that more than 80% of customers will pay less for refuse services under the exclusive franchise program. The remaining customers will pay the same rate as they are currently paying for a one year period.

## Recycling Rate Impacts

- Approximately 17% of City businesses currently have separate recycling containers and 8% use a "Blue Bag"-type recycling program. The current recycling rate for industrial, commercial and institutional sources is approximately 29%. The majority of this material is collected from entities in the Loop and near-Loop areas and minimal recycling: (3 to 5% estimated) is done in the remainder of the City.
- Approximately 10% of multifamily residential buildings currently have separate recycling containers and 12% use a "Blue Bag"-type recycling program. The current multifamily recycling rate is approximately 3 to 5%.
- The current recycling rate for privately collected ICI and multifamily residential waste is 22% (i.e. 400,000 tons per year recycled and 1,500,000 tons per year landfilled).
- The predicted recycling rate with an exclusive franchise for privately collected ICI and multifamily residential waste is 40% (i.e. 800,000 tons per year recycled and 1,100,000 tons per year landfilled).

## Traffic and Infrastructure Impacts

- Private haulers indicate a waste collection vehicle typically travels between 46 and 75 miles per day, with a weighted average of 68 miles per day. It is anticipated that with the efficiencies expected from an exclusive franchise program, the majority of trucks will travel approximately 45 miles per day.
- Currently, approximately 381 to 425 trucks collect waste and recycling streams from entities proposed to be covered under the franchise. Combined, these trucks travel approximately 7,246,000 miles annually.
- Under an exclusive franchise program, approximately 358 to 399 trucks will be needed to collect waste and recycling streams, and as a result of increased efficiencies, they will travel approximately 5,893,000 miles annually.
- Therefore, under an exclusive franchise program, there will be 6 percent fewer trucks and 19 percent less miles traveled.
- Reduced vehicle miles traveled will reduce wear and tear on City streets and alleys, prolonging pavement life expectancy and reducing pavement rehabilitation costs.

## Environmental Impacts

- Annual (GHG) emissions for the current collection program are approximately 589,000 metric tons of CO<sub>2</sub> equivalent. This equates to the annual CO<sub>2</sub> emissions of approximately 108,000 passenger vehicles.
- An exclusive franchise program could reduce GHG emissions by 23%. This equates to taking 25,000 passenger vehicles off the road for an entire year.
- Nitrogen oxides (NO<sub>x</sub>) and sulfur oxides (SO<sub>x</sub>) emissions are estimated to be reduced by 27%.

## Job Impacts

- Implementation of the exclusive franchise program will create between 590 and 670 recycling related jobs as a result of the 18% increase in the recycling rate, according to the 2001 Illinois Recycling Economic Information Study.
- As a result of the decreased waste collection and increased recycling collection vehicles needed, employment may increase by 18 jobs or decrease by 67, depending on the actual number of collection trucks needed.
- Therefore, the total employment impact of a citywide exclusive refuse and recycling private collection franchise will be a net gain of between 523 to 688 related jobs.

*Continued on page 14.*

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# CITY OF CHICAGO - WASTE FRANCHISE (con't.)

7/8/2008

## City of Chicago Exclusive Waste Collection Franchises

As part of the City's efforts to improve recycling, reduce wear-and-tear on the alley's, reduce noise and pollution, and reduce greenhouse gas emissions, the City is pursuing an ordinance to franchise the collection of certain wastes and recyclable materials produced by commercial, industrial, institutional and multifamily buildings. A preliminary framework for this effort is outlined below.

- Franchise Areas:** The City would be divided into 10 - 20 exclusive franchise service areas.
- Scope of Work:** A Franchisee would have exclusive rights within a Service Area to collect certain wastes and recyclable materials from entities for which private disposal materials collection is required, including residential buildings with five units or more and commercial, industrial and institutional establishments. Wastes to be covered by the franchise program are anticipated to include garbage, household waste, commercial/retail waste, institutional waste, and industrial lunchroom and office waste, as those terms are defined in the Chicago Municipal Code, Section 11-4-120. Separate collection of recyclables would be required.
- Not all wastes, recyclables or collection services would be included in the franchise program. For example, temporary roll-off services, construction and demolition debris collection services, and certain wastes requiring special handling will not be included. Provisions for exemptions will be included.
- The estimated quantity of waste to be handled under the franchise agreements is 1.9 million tons per year (approximately 500,000 tpy from multi-family residential, 1.2 million tpy from commercial and 200,000 tpy from industrial establishments).
- Term:** The term of the exclusive franchise would be seven years.
- Cost of Services:** Each Service Area is proposed to have a pricing matrix that will outline the costs of services to be provided under the franchise. Any entity that has a lower cost of service than shown in the pricing matrix would have that pricing grandfathered for a determined amount of time.
- Existing Contracts:** All existing contracts for services to be covered by this program would be deemed invalid 15 months after franchise award. The Franchisee would be responsible for notifying entities of existing contract expiration and conversion to the franchise.
- Fines and Penalties:** There would be fines and penalties if the Franchisee misses a collection.
- Admin Fee:** An administrative fee would be collected on a regular basis and would be based on the volume of containers serviced "and/or the revenues collected. The fee would cover such things as cost of franchise administration, inspections, enforcement, and public education and outreach.

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## A&WMA Podcasts



Check out A&WMA's first ever podcasts, featuring Q&As with keynote speakers *Will Swope* of Intel and *Thomas Dunne* of the U.S. EPA.

<http://www.awma.org/podcasts/index.html?src=mailing040808>

Once you've listened to the podcasts, tell A&WMA what you think! E-mail Kristen Maser ([kmaser@awma.org](mailto:kmaser@awma.org)) with comments and suggestions for future podcast topics.



## New Members (con't.)

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and Champaign

**Stan Zagula**  
PepsiCo Chicago

## STUDENT SCHOLARSHIPS

### Development of Nano-Engineered Carbon Adsorbents and Their Environmental Applications

*By: J. Atkinson, M. Rood*  
*University of Illinois Urbana-Champaign, Urbana, IL;*  
*M. Rostam-Abadi, X. Chen*  
*Illinois State Geological Survey, Champaign, IL;*  
*R. Chang*  
*Electric Power Research Institute, Palo Alto, CA.*

Conventional carbon-based adsorbents, such as activated carbon, activated carbon fiber cloth, and carbon nanotubes contain high internal surface areas and desirable pore structures, making them effective materials for gas purification, separation, storage, and clean-up. We have developed a method for synthesizing a new class of carbon-based materials which could be attractive adsorbents for environmental and energy applications. Previous research by Suslick, *et al.* at the University of Illinois at Urbana-Champaign, utilized an ultrasonic spray pyrolysis system (USP) to produce novel meso- and macroporous carbons with varying surface areas (60 - 700 m<sup>2</sup>/g) and diameters (0.5 - 2 ¼m) from aqueous organic precursors. In this research, a fixed-bed pyrolysis system is used to synthesize high surface area carbons from solid organic precursors. Compared with the USP method, the fixed-bed pyrolysis system shows several advantages. First, the aerosol production step is eliminated, allowing for higher carbon production yields (50% by mass). Second, by grinding the solid organic precursor to a desired size before pyrolysis, control over particle diameters is easily achieved. Finally, preliminary analysis indicates that carbons prepared by the fixed-bed pyrolysis method are highly microporous (>75% pore volume is microporous) with surface areas consistently exceeding 400 m<sup>2</sup>/g and as high as 750 m<sup>2</sup>/g. This fixed-bed pyrolysis technique provides control for synthesizing carbons with properties that are pivotal to adsorption capacity including surface area and particle diameter. Work is in progress synthesizing these porous carbons from different, low-cost precursors. Environmental applications of these novel carbons will be determined by evaluating their adsorption performances using select adsorbates such as volatile organic compounds (straight-chain, aromatic, and ketone), mercury vapor, H<sub>2</sub>O vapor, and CO<sub>2</sub>. These data will help us understand the impacts of the process conditions on the resulting physical, chemical, and adsorption properties of the carbons to develop improved, low-cost adsorbents.

# STUDENT SCHOLARSHIPS

## Design and Implementation of an Effective Environmental Management System for Stuart School of Business at Illinois Institute of Technology

*Eduardo A. Carmona  
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Whynde Melaragno  
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Students from the Illinois Institute of Technology – Stuart School of Business presented a paper at the 2008 AWMA Conference in Portland, Oregon. The paper evaluated the effectiveness of the existing Environmental Management System (EMS) at Stuart, identified areas for improvement and demonstrated how developing a comprehensive EMS can meet the objectives of sustainable development while responding to daily operational requirements. The main goal of developing the EMS was to ensure sustainable operation at Stuart and to produce a model for similar organizations to follow. The EMS mainly focused on reduction of waste streams, energy usage and paper usage. Procedures were created to implement carbon footprint reduction strategies, enable organizational functions to integrate the Environmental Policy into daily activities and ensure that measurement and monitoring of environmental impacts occurs on a continual basis. A software program was also developed to support the EMS which enables electricity usage to be calculated for each room within an office setting. In order to ensure long-term success, an Environmental Management Board (EMB) was established to oversee and provide strategic direction and support for the EMS. The EMB consists of representatives from the student body, faculty, staff and administration. Significant education was provided to the Stuart community to promote awareness of the Environmental Policy and each individual's contributions to minimize the environmental impact of the school.

## A&WMA Scholarships

Each year, the Air & Waste Management Association also recognizes outstanding graduate students who are pursuing courses of study and research leading to careers in air quality, waste management, environmental management/policy/law, and sustainability.

The following is a list of scholarships available. Visit [http://www.awma.org/awards/scholarship\\_programs/index.html](http://www.awma.org/awards/scholarship_programs/index.html) for complete details.

- Milton Feldstein Memorial Scholarship
- Jacqueline Shields Memorial Scholarship
- Richard Stessel Memorial Scholarship

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# STUDENT SCHOLARSHIPS

## Tools for Environmental Management Systems: Development of an Environmental Attribute Calculator (EAC<sup>®</sup>) for Office Buildings

*Zandra C. Davila Tueme  
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Students were invited to join the many Professionals and Academicians that submit their projects and investigations by participating in a Student Paper/Poster contest. The participants were required to submit an abstract of their work, a full paper and a poster to display in the contest. As members of the Environmental Management program of the Stuart School of Business we registered our EMS and Environmental Attribute Calculator which is explained below.

An environmental assessment study was conducted at IIT Stuart School of Business (SSB). The objectives of this study were to design a comprehensive Environmental Management System (EMS) program for SSB and to develop an assessment tool that can identify and quantify environmental attributes associated with daily operations at SSB. The developed assessment tool (using Microsoft Excel and Visual Basic for Applications (VBA)) is an Environmental Attribute Calculator (EAC<sup>®</sup>) designed to assist EMS, and small businesses with the measurement and management of their energy usage, paper consumption, and other major waste streams. The program is capable of: (1) estimating the costs associated with material/resource use, (2) determining potential savings associated with the implementation of waste management programs, and (3) estimating the “carbon footprint” associated with the operations prior to, and upon, implementation of waste minimization programs.

The EAC<sup>®</sup> requires knowledge of the building, equipment, resources, operations and employees activity patterns. Since EAC<sup>®</sup> is able to display the individual and cumulative savings that result from the implementation of specific strategies, it allows users to compare and select strategies with pronounced economic and environmental benefits. The main advantage of the EAC<sup>®</sup> is that it enables users to integrate elements of the environmental policy into daily activities, and ensure measurement and monitoring of environmental impacts on a continual basis.

The current capabilities of the EAC<sup>®</sup> are focused in determining the amount of electricity used, map its distribution among the building, and create a customized set of strategies to reduce it. This is done by allowing the user to create a personalized data based with all the information on his/her facility. The designed tool is oriented towards small organizations. It was created not as a set of established practices or recommendations for waste minimization, but as a tool that will allow users to rapidly assess their environmental impact and develop minimization strategies. The flexibility, simplicity and handiness of the program make possible full exploration the user’s ideas.

Our experience in the conference was amazing. We were able to learn from some of the most recognized minds from across the country, we met other students with the same interests as ours, we were able to look at some of the most environmentally outstanding businesses, but above all, we had a lot of fun!

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# STUDENT SCHOLARSHIPS

## Capture and Concentration-Controlled Desorption of Organic Vapors with a Full-Scale Electrothermal Swing Adsorption System

*Hamidreza Emamipour*<sup>1</sup>

*Patrick Sullivan*<sup>2</sup>

*David Ramirez*<sup>3</sup>

*Mark J. Rood*<sup>1</sup>

*K. James Hay*<sup>4</sup>

*Byung J. Kim*<sup>4</sup>

*Robert Kennedy*<sup>5</sup>

*Robert Fisher*<sup>6</sup>

*Joseph Morici*<sup>6</sup>

Performance of a full-scale electrothermal swing adsorption (ESA) system that adsorbs organic vapors from air and then utilizes steady-state tracking desorption to desorb the organic vapors to a biofilter will be described. Air streams that are generated by painting operations in a recirculating paint booth contain 4 ppmv of equivalent methyl ethyl ketone (MEK) at a total flow rate of 2,000 ft<sup>3</sup>/min. The ESA system will capture the vapors from the air stream and then desorb the vapors at carefully controlled vapor concentrations and at a total gas flow rate of 50 ft<sup>3</sup>/min where they will be treated by a biofilter. Operation of the ESA system upstream of the biofilter is expected to allow biofiltration to occur with a much smaller device and to operate with more control. The ESA system contains 32 cartridges of activated carbon fiber cloth in a vessel. The device is designed in a manner that can adsorb organic vapors for eight hours per day and then steadily desorb the vapors overnight or during the weekend so that the biofilter can work continuously and efficiently. Treatment of the gas stream upstream of the biofilter is expected to be very suitable for industrial processes that emit organic vapors with widely varying concentrations.

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<sup>6</sup> Concurrent Technologies Corporation, 100 CTC Drive, Johnstown, PA 15904, USA

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# STUDENT SCHOLARSHIPS

## Mathematical Modeling of Concentration-Controlled Electrothermal Swing Adsorption System

*Hamidreza Emamipour*<sup>1</sup>

*Zaher Hashisho*<sup>1,2</sup>

*Mark J. Rood*<sup>1</sup>

*Deborah Thurston*<sup>1,3</sup>

*Patrick Sullivan*<sup>4</sup>

*K. James Hay*<sup>5</sup>

*Byung J. Kim*<sup>5</sup>

Electrothermal swing adsorption-steady state tracking (ESA-SST) desorption has been shown to capture dilute organic vapors from air streams and then desorb those vapors at much higher concentrations and at much lower total gas flow rates than for the inlet gas stream. The resulting gas stream can then be treated by a smaller secondary control device such as biofilter or thermal oxidizer at reduced cost. Unique capabilities of ESA-SST systems, which allow for independent and accurate control of vapor concentration and gas flow rate, make these systems very suitable for industrial applications that generate variable concentration organic vapors and high flow rate gas streams that need treatment.

A fundamental mathematical model for simulation of concentration-controlled ESA-SST was developed. The model consists of: a) material balances for organic vapors in the adsorption vessel and b) energy balances for the adsorbent, carrier gas, vapor, and fittings. The model will be used to predict outlet vapor concentrations, temperature profiles, power requirements, voltage requirements, and current requirements for a bench-scale system and will be evaluated with experimental data. The mathematical model will be used to design full-scale ESA-SST systems to predict system performance without having to conduct costly and time consuming experimental tests.

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# STUDENT SCHOLARSHIPS

## ECONOMIC EVALUATION OF BURNING BITUMINOUS AND WESTERN PRB COALS FOR POWER PRODUCTION BASED ON SELECT POLLUTION CONTROL SCENARIOS

*Jonathan P. Loftus*<sup>1,2</sup>

*Yongqi Lu*<sup>1</sup>

*Mark J. Rood*<sup>2</sup>

**Massoud Rostam-Abadi**<sup>1,2</sup>

**Scott Chen**<sup>3</sup>

The U.S. Environmental Protection Agency recently finalized its Clean Air Interstate Rule (CAIR) and Clean Air Visibility Rule (CAVR). As a result of these regulations, this study used the Integrated Environmental Control Model (IECM) to investigate the economic competitiveness of burning select blends of Illinois bituminous and western Powder River Basin (PRB) coals while meeting the air emission limitations in these regulations. Factors included in this study were the degree of blending for these two coal types before combustion, as-delivered coal cost, boiler size, air emission limits, air quality control technologies for SO<sub>2</sub>, NO<sub>x</sub>, particulate matter and mercury. A mono-ethanol-amine absorption process was then added to evaluate the effects of capturing 90% CO<sub>2</sub> from the flue gas. The results showed that for a 650 MW plant without CO<sub>2</sub> capture, it would be more cost effective to burn a \$27.5/ton PRB coal than a bituminous coal delivered at a cost > \$32/ton. However, a 70/30 PRB/bituminous blend coal is the most cost effective fuel for both the 650 MW boiler (\$68.7/MWh) and the 175 MW boiler (\$95.9/MWh). Additionally, it was concluded that bituminous coal is competitive with the PRB coal for a new mine-mouth electric generating facility.

It is recommended to fire select blends of bituminous and PRB coals in a field study to confirm the conclusions of this study. The field study should demonstrate that select blends of coal can be fired in a boiler while using selective catalytic reduction, dry flue gas desulphurization and electrostatic precipitation with 90% removal of mercury emissions without problems for the operator of the boiler. For a 650 MW plant with CO<sub>2</sub> capture, a bituminous coal delivered at cost <\$35.2/ton is competitive to a PRB coal at \$27.5/ton. However, at current market coal prices (\$27.5/ton for PRB coal and \$35/ton for Illinois coal); the lowest cost scenario is still the 70/30 PRB/bituminous blend for both boiler sizes (\$124.9/MWh for the 650 MW boiler, and \$165.1/MWh for the 175 MW boiler).

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# STUDENT SCHOLARSHIPS

## Environmental Challenge International (ECi) An Integrated Approach to Electricity Planning in Oregon

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The Environmental Challenge International (ECi) is a student team competition to prepare and present an optimal solution to a complex “true-to-life” environmental problem. The problem presented was representative of the location of the event, and require multi-disciplinary approaches for success. The challenge seeks not only technical and scientific analyses, but solutions that are presented in conjunction with an appropriate regulatory approach and resolution of political and community issues.

This year teams were required to propose alternatives for a new 1,000 MW Integrated Coal - Gasification Combined Cycle (ICGCC) technology power generating facility, which was rejected because it did not meet requirements to limit emissions of greenhouse gases. The facility was to be located in southeastern Washington or northeastern Oregon.

Students from the IIT - Stuart School of Business proposed a solution that took into consideration the growing energy needs in the region from an integrated perspective considering technological, environmental, economic, and social impacts.

First the current situation in the state was analyzed. This included a detailed description of the current electricity supply mix, population growth, and future electricity needs in the state of Oregon up to the year 2030. Then different types of resources within the region were assessed and the technologies that offered greater social and environmental benefits, while maximizing economical development were selected. Resources evaluated include: wind on-shore and off-shore, solar, wave, geothermal, and biomass. The entire analysis process was directed towards Oregon objectives and goals, which include: (1) energy independence, (2) reliable and affordable energy, (3) leader in renewable energies, (4) greenhouse gas emission reduction goals, (5) State Renewable Portfolio Standard (which requires 60% of the electricity coming from non-fossil fuel sources by the year 2025), and (6) no more nuclear or large hydroelectric developments.

Other considerations like population density, access to the grid and constrained transmission paths, land use, and existing projects were also taken into account. Energy conservation programs and other integrated strategies such as federal and state incentives, training programs, and energy campaigns were also proposed.

# DO YOU HAVE THE RIGHT A&WMA MEMBERSHIP?

Did you know that A&WMA offers various types of membership? The memberships have been tailored to fit today's environment. Below is a brief description of the memberships available.

## Individual Membership (\$180 USD)

This is a full membership that includes:

- A print subscription to either EM or the Journal
- Access to both EM and the Journal online (with archives back to 1997)
- Access to the online A&WMA membership directory
- Reduced pricing on A&WMA events and technical publications
- Access to local networking events
- And much more!

## Affiliate/Young Professional Membership (\$93)

This membership is designed for our younger professionals (under 27 years old), and includes all of the benefits of a full membership.

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Full-time undergraduate or graduate students are eligible for this discounted membership, which includes a print subscription to EM.

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Introduced in 2004, the Organizational Membership is popular with companies and organizations with more than 3 environmental professionals who want to reduce membership costs and increase participation in A&WMA!

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### Announcing the A&WMA Student Member Graduation Gift...

Are you close to graduation and a current Student Member of A&WMA? If so, the Air & Waste Management Association would like to extend a gift to you to honor your accomplishment. As an A&WMA Student Member and graduating senior (undergraduate, masters, or doctoral) you are entitled to a free one-year electronic membership in the Association. This electronic membership gives you access to all areas of the Web site, including the Journal and EM, plus entitles you to discounts on publications and conference/workshop registrations. This electronic membership will extend for one year after your current membership expires. To take advantage of this one-time gift, please contact Member Services at 1-800-270-3444. Unfortunately, we cannot apply your gift unless we hear from you. Tell your friends and fellow students, and spread the word about the new gift for A&WMA's graduating student members!



# Member News

## FTC&H Receives Award

Fishbeck, Thompson, Carr & Huber, Inc. (FTC&H) is pleased to announce it has received the **2008 Distinguished Corporation Award**, given by the Michigan Society of Professional Engineers (MSPE).

Each year, the award is presented to a well known and respected firm within the engineering community that has clearly demonstrated continued leadership in, and contributed to the engineering profession, MSPE, and the community in which it resides.

The MSPE committee awarded FTC&H for the firm's long-standing support and generosity to the organization and its programs not only monetarily, but also for efforts in encouraging its engineers' participation and leadership with MSPE.

The award was presented at the annual MSPE Conference held in June, and was accepted by Mr. John A. Condie, P.E., Senior Associate and Vice President, on behalf of FTC&H.

Serving clients for over 50 years, FTC&H is a full-service civil engineering, environmental, architectural/engineering, and construction management firm with over 350 employees. With offices in Grand Rapids, Lansing, Kalamazoo, Farmington Hills, Michigan; and Cincinnati, Ohio, FTC&H is one of the Top 500 design firms in the United States as ranked in Engineering News-Record. For further information about FTC&H, visit our website at [www.ftch.com](http://www.ftch.com).

**Environmental Partners, Inc.**, is pleased to announce that **Dale G. Kalina, Ph.D.**, has recently joined the firm. Dale, formerly Director of Environmental Regulatory Affairs for RR Donnelley, has over 20 years of environmental experience, with a strong focus on air issues. Dr. Kalina's areas of expertise include all aspects of air permitting - construction and operating permits, prevention of deterioration (PSD), nonattainment new source review (NSR), National Emission Standards for Hazardous Air Pollutants (NESHAP) and maximum Achievable Control Technology (MACT) requirements, best available control technology (BACT) and lowest achievable emission rate (LAER) determinations - compliance, recordkeeping and reporting procedures, air toxics and dispersion modeling, permit and compliance negotiations, and regulatory development, with experience in dealing with USEPA and over 30 state and local environmental agencies. Dr. Kalina also has experience in compliance auditing, solid and hazardous waste issues, environmental due diligence, CERCLA and Toxics Release Inventory reporting and wastewater and stormwater issues.

Dale can be reached at his Naperville, IL office at 630-527-4773 or [dale.kalina@enviro-partners.com](mailto:dale.kalina@enviro-partners.com). His addition to the staff further expands the operations and capabilities of Environmental Partners, 305 Hoover Boulevard, Holland, MI, to better serve its clients in the Lake Michigan region.

Dr. Kalina received his bachelor's degree in chemistry from the University of Minnesota and his master's and Ph.D. degrees from Northwestern University, is a former board member of the Lake Michigan States Section and has served as the co-instructor for the Air Primer held in conjunction with the Section's annual air conference.

### Platt Environmental Services, Inc. is

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