



A&WMA

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A Summary of the Particulate Matter (PM_{2.5}) National Ambient Air Quality Standards by Jeff Jaros and Scott McQuiston



Jeff Jaros

Background

Particulate matter is made of solid particles, fine liquid droplets, or condensed liquids adsorbed onto solid particles. EPA first issued National Ambient Air Quality Standards (NAAQS) for particulate matter in 1971; and has revised the standards in 1987, 1997, and lastly in 2006. In 1971, EPA's standards regulated larger particles, known as total suspended particulates, or TSP. By 1987, research had shown that the particles of greatest health concern were those equal to or less than 10 micrometers (PM₁₀) that can penetrate into sensitive regions of the respiratory tract. The standards were revised again in 1997 to include the addition of a standard for particles less than 2.5 micrometers (PM_{2.5}).

Fine particulate (or PM_{2.5}) is now the pollutant of primary concern for EPA due to its contribution to regional haze, smog, and health impacts. It is important to note that PM_{2.5} does not just constitute carbonaceous particulate, such as dust, dirt, or metals; it also includes sulfates and nitrates that are formed as a result of combustion of fossil fuels.

Recent Actions

On September 21, 2006 EPA again revised the NAAQS for particulate matter. In this action, EPA has taken two sweeping steps that are likely to cause many areas of the country to show nonattainment. First, EPA reduced (strengthened) the 24-hour PM_{2.5} standard from the 1997 standard of 65 micrograms per cubic meter (µg/m³) to 35 µg/m³. Second, EPA revoked the annual PM₁₀ standard of 50 µg/m³ due to a lack of evidence linking health problems to long-term exposure. (EPA chose to retain the annual PM_{2.5} standard at 15 µg/m³ and the 24-hour PM₁₀ standard of 150 µg/m³).

Discussion

By strengthening the 24-hour PM_{2.5} standard to 35 µg/m³, many more areas of Ohio now are nonattainment. EPA has developed a timeline (see Table) and set a target date for the attainment for April 2010. The figure shows the areas and counties within Ohio that have been designated as nonattainment (failing to meet the standards) for the 1997 standards for PM_{2.5}. Upon designation, Ohio is now required to prepare a State Implementation Plan (SIP), consisting of new Ohio control strategies designed to achieve attainment.

In addition, new or modified major sources in these nonattainment areas must go through a more rigorous permitting known as Nonattainment New Source Review (Part D of Title I of the Clean Air Act) for the pollutant which is in nonattainment. This process also requires sources to meet strict air quality requirements such as the installation of the most stringent control technology available, known as the Lowest Achievable Emission Rate (LAER). Furthermore, in order to have an increase in emissions of a nonattainment air contaminant, a facility must offset the emissions through reductions at existing sources within the same nonattainment area.

[continued on page 2](#)

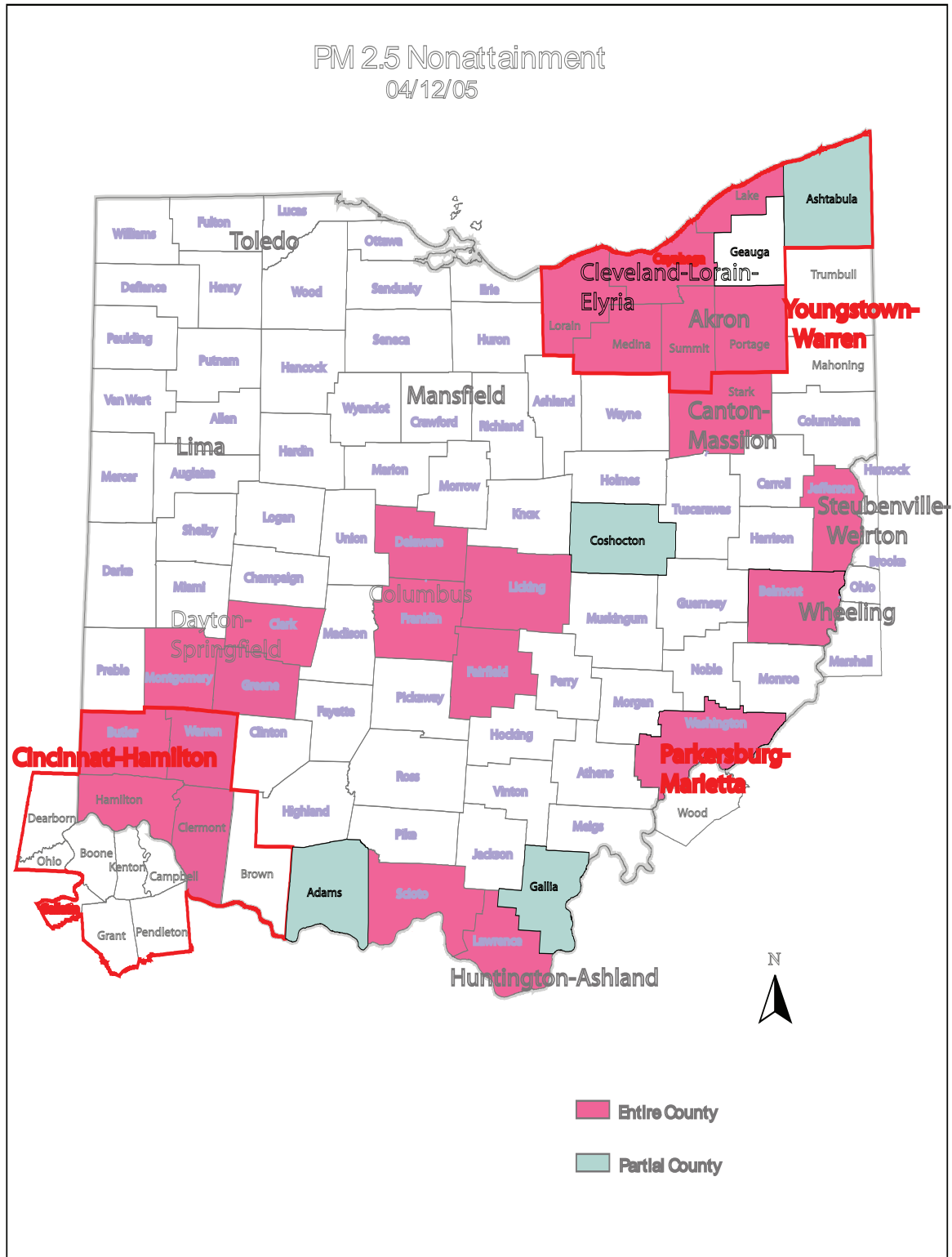
Spring Conference Features Air Permits

[Conference Agenda on page 8](#)



The chapter's annual spring technical conference will be held Thursday, May 24 at the eastern campus of Cuyahoga Community College. A registration form and agenda are enclosed with this newsletter. There have been many important developments that all professionals who deal with air permits need to know and other environmental professional should find interesting. Ohio EPA is implementing Ohio HB 265, which has already changed air permit drastically, with more changes to come. Ohio HB 265 deals with BAT. BAT is not your old BAT, but it not gone away either. The return of ozone nonattainment means the return of case-by-case RACT. If you are a major source, you need to understand this subtle rule that created havoc in the 1980's. A background article on PM_{2.5} is covered as the lead article of this issue, but its implications for Ohio will be addressed at the conference. PTIO, a merger of PTI and PTO, is almost here. It's a great concept, but there are problems as well. The Starship revision is also almost here, this time for real. If that's not enough, over lunch you will be treated to a layman's discussion of the Supreme Court's April 4 decision, which puts USEPA into the global warming business and has been given the authority to dictate what kind of car you will be driving. If you haven't been to one of our conferences in awhile, this is not the one to miss.

A Summary of Particulate Matter ...continued



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Table. EPA Timeline for the 1997 and 2006 PM_{2.5} NAAQS

Milestone	1997 PM _{2.5} Primary NAAQS	2006 PM _{2.5} Primary NAAQS
Promulgation of Standard	July 1997	Sep. 2006
State Recommendations to EPA	Feb. 2004 (based on 2001-2003 data)	Dec. 2007 (based on 2004-2006 data)
Final Designations Signature	Dec. 2004	Dec. 2009
Effective Date of Designations	April 2005	April 2010
SIPs Due	April 2008	April 2013
Attainment Date	April 2010 (based on 2007-2009 data)	April 2015 (based on 2012-2014 data)
Attainment Date with Extension	Up to April 2015	April 2020

These policies must be followed when the designations are implemented, regardless of the date the permit was submitted. Therefore, if a source submits a permit before the final designations, but the permit has not yet been issued by the date of designation, that permit is subject to the more stringent Nonattainment New Source Review.

EPA has also recently issued two additional regulations, which should further reduce emissions of sulfates and nitrates, and carbonaceous particulates. These are the Clean Air Interstate Rule (CAIR) and the Clean Air Mercury Rule (CAMR). CAIR will permanently cap emissions of sulfur dioxide and nitrogen oxides in the eastern U.S. and CAMR requires that coal-fired electric utilities reduce their emissions of mercury. Since PM_{2.5} consists mainly of sulfates and nitrates, CAIR will help to achieve attainment of the PM_{2.5} standard.

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Message from the Chapter Chair by Louise Barton

As my term as Chair comes to a close I would like to thank those who helped make the journey a truly positive experience:

Herb Mausser, Immediate Past Chair. I stepped up to a sound organization that provided excellent support. Herb stayed active, providing for an easy transition, and served as a sounding board for me to bounce my thoughts off of. His tact and patience did not go unnoticed.

Doug Rider, Nominating Committee Chair. When Doug first called to inquire whether I might be interested in stepping up to the plate, he was probably as surprised as I was when I said yes. Since then, he's been one of my biggest fans. He has served as a personal cheering squad, supporting my efforts and continuing to feed the fire with ideas and initiatives of his own.

Bob Perry, Treasurer. Bob has been our Treasurer for a long time. He has the tasks associated with the position down cold. He also has an excellent knack for menu planning, so that meals at our events were delicious and interesting. There are not many conference where you can describe meals that way.

Dave Marzely, Newsletter Editor. Dave supports this organization in MANY ways and is truly an unsung hero of our planning efforts. He is also an extremely interesting person to know and talk with, and he brings great perspective to the table at our meetings.

Yes, there are many others who have helped make this an enjoyable time. To all of you, I say "Thank You".

I think the biggest lesson I learned from this experience has been one on the value of involvement. In my first Chair's Message a couple years ago, I wrote:

"My point is that whether your level of involvement is simply reading this, or if it is looking forward to giving your presentation at the National Convention in New Orleans in 2006, there is more for you to do. And I'm sure you all realize that."

I still believe that there is more to do, for me and for everyone reading this. There are many reasons to be involved. All of them have to do with the people you will meet. People who will help you. People who will support you. People who will make you think, get you even more involved, make you laugh, make you bite your tongue, make you wish you could do more. People who will deserve every "Thank You" you give.

Ohio EPA Regulatory Review

The State Emergency Response Commission (SERC), in its routine review of rules, updated an applicability rule, OAC 3750-25-1, which now provides an exemption for unpermitted daily releases of combustion NOx in excess of one ton. NOx is a reportable chemical for release notification, but permitted releases are exempt. The default RQ for NOx is one pound. Previously, all owners of exempt combustion sources were technically required to report the NOx emissions as a continuous intermittent release. USEPA was flooded with these ludicrous release notifications. USEPA modified its rules to exempt these releases. Now SERC has followed suit.

In more substantive rule revisions, Ohio EPA, Division of Air Pollution Control, is revising OAC Chapters 31 (Permits to Install) and 35 (Permits to Operate) in order to implement two major changes in the permit process. Last year, the state legislature enacted HR 265, a bill to change the way that Ohio EPA conducts Best Available Technology. In addition, Ohio EPA has decided to combine the PTI and PTO process for non-Title V sources. This concept developed from a joint effort of Ohio EPA and the regulated community that was formed in December 2003. The workgroup was called Permit Process Efficiency committee, and it was responsible for developing the Permit-by-Rule and General Permits that were implemented last year. Benefits achieved by combining the two programs into one include reduced paperwork, elimination of redundant steps in the process for both facilities and Ohio EPA, reduction in material resource usage, increased staff efficiency and increased compliance with air pollution regulations. The program was not without its controversy with the regulatory and environmental communities, specifically compliance certification requirements and the lack of periodic review. The BAT provisions are dictated by statute, unlike the PTIO provisions. The rules should be final by the time of the NOC-AWMA conference on May 24. It should be interesting to review the details.

Another rule worth following is OAC 3745-21-11, which is basically case-by-case RACT (Reasonably Available Control Technology). Major facilities of NOx or VOC in nonattainment areas that do not have specific RACT control requirements under OAC 3745-21-09 must develop their own control requirements. This was the rule for many years, but with the new nonattainment, the rules had to be modified and new case-by-case RACT studies must be developed. This has a significant effect on covered facilities.

HB 265, BAT, PTIO and RACT will be covered in the Spring NOC-AWMA technical conference.

The Division of Air Pollution has made significant changes in the guides on its web pages. Changes in regulations have to be accurately reflected in the guides. The procedure is for a district office or local air agency to work on a specific guide, and submit the updates to all the offices for comment. Modifications are made based on the comments and the final work is submitted to Central Office for review and sign-off. Guides that have been recently updated and posted on the web at the following link:

<http://www.epa.state.oh.us/dapc/engineer/eguides.html>

Guide 1 - PTI/PTO for Pollutants

Guide 2 - Issuance of PTO for SO2 Sources

Guide 3 - Bake-off Ovens: Incinerator or Process?

Guide 4 - VOC Definition of "Potential to Emit"

Guide 8 - Compliance Tests at Bulk Gasoline Terminals

Guide 73 - Answers for several questions concerning procedures and policy on visible emission observations by field inspectors and the use of visible emission test methods.

Annual Outing at the Akron Aeros

This year the chapter will again get together at Akron's Canal Park to route on the Aeros. The game is Saturday July 7 at 7:04. We have really good seats, it's fireworks night and the tickets are free, at least for the first four. Bring the kids, work colleagues, college buddies, whoever. For kids it's better than Jabob's Field since they are so close to the field. It's the fun event of the year. For free tickets contact Bob Perry at rrperry@firstenergycorp.com.

Chapter Celebrates Twentieth Anniversary



On September 21st, the chapter celebrated its twentieth anniversary at the Stan Hywet Hall and Gardens in Akron. The beauty of the Stan Hywet made for a fitting venue for this event. A number of charter members and former members attended. Some the charter members and former chairs shared their perspective of the early chapter. We thanked Dave Woodring, the chapter's sparkplug, for his vision to charter the chapter.

Gerald Rich, an Ohio EPA retiree, shared his characteristic brand of humor, as he described how the environmental field of compliance has changed over the twenty years that the chapter has been in existence.

Louise Barton, chapter chair, stated how the chapter has provided many opportunities for professional growth and networking. In fact for some, the chapter has been the professional organization of choice in Northern Ohio. She thanked the commitment of our many sponsors through the years.

Personally, it was pleasant reconnecting with colleagues we haven't seen for awhile. The twenty-fifth will be on us before we know it.

Doug Rider

Important Dues Information for Local Members

The chapter has modified its dues policy for chapter-only members. About two-thirds of our chapter are members in the International AWMA, which makes them automatically local chapter members. The other third are members only of the Northern Ohio chapter. Effective May 1, dues will be \$12 per year. New members who join after September 1 need only pay \$6. If you are a non-member and attend one of our events, you will be charged an additional \$15, but that charge will include a local membership. Therefore, you only need to pay the non-member fee once in a year.

Members receive all local announcements and invitation, generally by email. The cost of local membership helps to defray the cost of running this organization. More importantly, we hope that holding membership will encourage you to participate. Our regular planning meetings are held on the second Wednesday of each month, generally at the Breckville library. As a member, you will get a notice of this meeting and we hope you will attend when you can.

We will be contacting you about renewing your membership or joining if you have not. If you have not been contacted, please send an email to Ed Fasco, our membership chairman at edfasco@epa.state.oh.us.

New Chapter Officers

The chapter elected the following new officers for the coming year: Chairperson Scott Smith, a Regulatory Compliance Manager for ERM Cleveland; Vice Chairperson Keith Gaydosh, Project Manager for Affinity Consultants; Secretary Chuck Sisia, a Project Consultant with Labyrinth; Treasurer Bob Perry, an Advanced Environmental Scientist with First Energy; Director (3 yr term) Natalie Oryshkewych, a Supervisor with OEPA DSWM and Director (2 yr term) Pat Nortz, a Principal at NTH Consultants. Ed Fasco, a Manager with OEPA DAPC, is the other Director, serving in his final elected year. We wish them all success in their new endeavor.

Chapter Participates in Science Fair

On September 13, chapter members, Louise Barton, Scott Smith and Pat Nortz, participated in the annual Northern Ohio Science fair at Cleveland State University. As usual, the fair affirms that science is not dead in our schools. The science fair awards its own winners, but the chapter awarded saving bonds to the following other students: NOC-AWMA's first place and a \$150 bond went to Eli Ramos (11th/12th Grader) for "Effects of 2-4 dichlorophenol on microorganisms in the soil." Second place and a \$100 bond went to Malerie Schreiner (7th/8th) for "Biodiesel versus Diesel." Third place and a \$50 bond went to Melanie Miranovich (7th/8th) for "Oil, oil go away." Congratulations to these three, to all of the students who made the effort to participate in this important event and to our chapter members for serving as judges. If you would like to be a judge next year, contact Bob Perry at rrperry@firstenergycorp.com.

Governor Appoints New Ohio EPA Director

Governor Strickland appointed Chris Korleski as the new Director of the Ohio EPA. While Chris is an attorney who previously worked in the Attorney General's office in environmental enforcement, he did not come directly out of that office to run the Ohio EPA. Instead, the governor picked Chris from industry. Chris has been the Environmental Counsel for Honda in Marysville. As a former enforcement officer, we can expect the new Director to understand the need to go after the people who flaunt the environmental laws. As a former member of the regulated community, we can also expect Chris to work with those in industry who want to obey the law. He understands that what they want is to have the flexibility under the law to compete in the world economy without using more of the environmental resources than a strict bureaucratic compliance of the law would allow.

Your editor has worked with Chris over the last three years on the Perfect Permit Efficiency Committee, where Chris was a prime mover. The PPEC was a joint effort of Ohio EPA DAPC and the industrial regulated committee. Chris has the balance perspective to run this agency in a way to balance the needs of the environment and the economy of the state. The Governor should be congratulated for making such a fine choice.

Global Warming Hydra

Prologue: Rolling a small snowball from the top of a snow-covered hill is easy to accomplish. Tying to stop the ever-growing snowball as it goes downhill is extremely difficult. Attempting to move the snowball back to the top of the hill is virtually impossible. This metaphor for Global Warming is appropriate because a conclusion that we caused the earth to warm does not necessarily mean we can, or even try, to stop it.

Global Warming is a multi-headed issue, like the mythological Hydra, the nine-headed Greek monster, who grew a new head when each head was severed. The global warming issue is scientific, political, economic and moral. Address one issue and another grows in its place. This article is an attempt to address a few of the multi-headed issues of Global Warming. These are not all of the answers, but this approach is certainly more scientific than claiming that "the" (meaning one) issue is settled. Which one of these issues, if any, is settled?

Is there global warming?

Probably, but what does that mean? Direct and indirect measures of temperature seem to indicate higher temperatures. But not all temperature changes are in the same directions. Are all temperature measures equally important? Are surface temperatures more relevant than upper-air temperatures? Are tropics, subtropics, temperate or arctic temperatures equally important? What about land vs. water temperatures?

Is global warming a bad thing?

Perhaps. Some geographical areas would benefit, while others would not. As a result, some would get more rain, others less. Even there, on balance is this good or bad? Glaciers would melt, which is bad for some avid skiers, and sea level may rise. But arctic ice shelves, the presumed main source of the water for rising sea level, calve mainly because of snow falling at the top to the glacier, not because of warming seas. Warm seas produce more snow fall. This appears to be happening now in Antarctica. However, any rapid climate change would likely have more bad effects, than good, because the earth system, including us, has adapted to the current climate. Change is a threat to the status quo we've grown to expect.

Is global warming caused by man's activities?

Maybe. But a natural climate cycle may also be responsible. When William of Orange conquered Britain in 1066, England and the world were much warmer than today. The little ice age started about the same time as Columbus set sail, and is believed to have ended about 1890. We must ask whether the pilgrims would have had such a bad winter in 1990. In 1975, we were concerned with the coming ice age in our life time.

If anthropogenic, is carbon dioxide the cause of the global warming?

Yes and no. Carbon dioxide is a relatively weak greenhouse gas and it is only about 0.4% of air. Water vapor is the main greenhouse gas. A basic postulate in Climatology 101 assumes that carbon dioxide could trigger a warming cycle. A carbon dioxide-induced warming heats the oceans, which causes water to evaporate into the air. The water vapor causes its own greenhouse warming, which causes more ocean water to evaporate. Water, not carbon dioxide, then controls. The water also creates more clouds, Clouds reject more sunlight than they trap as infrared from the earth, and the cycle reverses.

If carbon dioxide is a greenhouse trigger, is fossil fuel burning the cause?

Could be. But it's not the only cause. Methane is a stronger greenhouse gas than carbon dioxide. Plants grow by taking carbon dioxide out of the air. When they die, they give it back. But if the plants die in a reduced oxygen environment, such as a marsh, they give back methane, not carbon dioxide. Maybe global warming environmentalists should oppose the preservation of wetlands. The methane eventually turns to carbon dioxide, but not before the methane causes some global warming. Cattle (and humans) eat the plants, and produce some methane. Humans release their methane in a civilized manner at the local POTW. None of this has anything to do with burning fossil fuel.

Global Warming
Hydra
...continued

If fossil fuel burning is the cause, are alternative fuels the answer?

Perhaps. It's not a bad idea to find alternative fuels. For one thing, I may be wrong. More importantly, I don't like buying oil from people who are trying to kill us. However, a rapid switch away from fossil fuels is a bad idea, since we may need the energy to cope with the warming.

Is conservation a good idea?

Certainly. But the question is too simple. If conservation means doing the same or more with less energy, that has to be good. But if using less means reverting to the Stone Age, it's a formula for disaster.

Why do we need more energy, not less, even if the energy is fossil fuel?

We cannot stop global warming, even if it is man-made, but we certainly can adapt to it. The history of man is adaptation or extinction, mainly the former. The most likely adverse effect of global warming is a shift of the storm tracks. Many agricultural areas could find themselves in more frequent and persistent drought conditions. But there is no shortage of water. Water supply is merely a matter of salinity and location. Abundant cheap energy of any type would be our salvation, both for desalination and transport.

Therefore, ignore the Weather Channel, the popular press, some politicians and scientists and the Hollywood crowd that have declared that the debate is settled. Scientific debate is rarely, if ever, settled. The Hydra keeps sprouting new issues to debate.

David W. Marczely, Ph.D. (Meteorology), J.D.

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Comment:

Why do we, as knowledgeable environmental professionals, allow the radical/reactionary fringe to dominate the global warming discussion? This debate must not be primarily conducted in the black-and-white, "winner-take-all" context of the current political culture - it's too important. Let's stop using global warming as a convenient fund-raising tool and start building industry-environmental advocate-government collaborations that lead to real sustainability solutions, regardless of how big or small.

Herb Mausser

News from the Supreme Court

On April 2, the Supreme Court issued two decisions related to air pollution that will have significant impacts on which pollutants may be regulated and how utilities are regulated in the future.

Massachusetts v. EPA

The Supreme Court decided that the EPA has the authority under the Clean Air Act to regulate greenhouse gas emissions from automobiles, particularly CO₂, but it waits to be seen whether the agency also has the duty to do so.

In a 5-4 decision, the court rejected EPA's interpretation that greenhouse gas emissions did not constitute pollutants within the Clean Air Act. The court majority accepted the claim of numerous states, a few cities and environmental groups, that carbon dioxide and other greenhouse gases are pollutants because they adversely affect human health and environmental welfare, which are the triggers for EPA regulation. Moreover, the majority held that EPA may regulate mileage and fuel economy in order to prevent global warming.

"A well-documented rise in global temperatures has coincided with a significant increase in the concentration of carbon dioxide in the atmosphere. Respected scientists believe the two trends are related," Associate Justice John Paul Stevens wrote in the majority decision.

The court ordered the EPA to reevaluate its contention that it has the discretion not to regulate greenhouse gas emissions, noting that arguments should be tied to the Clean Air Act. During the trial, the administration used foreign policy and economic considerations to justify its position.

Environmental Defense v. Duke Energy

The Court held that a NSR "Modification" is an Actual Annual Increase in Emissions. The Fourth Circuit Court of Appeals had held that the Prevention of Significant Deterioration (PSD) regulations defined "major modification" in terms of an hourly emissions rate. The Supreme Court vacated that decision and remanded to the appellate court to apply the facts to this new interpretation. The Court held that "[t]he Fourth Circuit's construction of the 1980 PSD regulations to conform them to their NSPS counterparts was not a permissible reading of their terms." Duke Power and much of the power industry have long argued that changes that did not increase the maximum hourly rate of

News from the
Supreme Court
...continued

emission, that is, the traditional and the NSPS definitions of Potential to Emit, were not modifications. With this decision, a modification may also mean a change that increases actual emissions by increasing efficiencies or reducing downtime. Technically, this decision applies only to Electric Generating Units and only to PSD. However, there does not seem to be any reason why it would not be applied to nonattainment NSR, and non-EGU NSR as well. If applied to non-EGU permits, it could vastly increase the number of NSR permits.

This update was modified with comments from an email update to Ohio EPA staff from Bob Hodanbosi, chief, OEPA DAPC. Any errors are those of this editor.

Northern Ohio Chapters

Spring 2007 Technical Conference

8:00 – 8:45 am	Registration and continental breakfast
8:45 - 9:00 am	Welcome: <i>Herb Mausser</i> and <i>Dr. Belinda Miles</i>
9:00 - 9:30 am	PM2.5 – <i>Amy Wainright</i> , Air Quality Planner, NOACA
9:30 - 10:00 am	Update from the Director's Office – <i>Bill Skowronski</i> , Northeast District Chief, Ohio EPA
10:00 – 10:15 am	Break – <i>Please visit with our exhibitors</i>
10:15 - 10:45 am	STARS and PTIO – <i>Linda Ours</i> , STARS II Project Manager, Ohio EPA
10:45 - 11:15 am	Case-By-Case RACT – <i>Kevin Kilroy</i> , Safety & Environmental Manager, Smithers-Oasis
11:15 - 11:45 am	Break - <i>Please visit with our exhibitors</i>
11:45 – 12:00	SB265 – <i>Ed Fasko</i> , Ohio EPA
12:00 - 12:30 pm	Emissions Trading – <i>David Webster</i> , President, Clean Air Conservancy Company
12:30	Lunch and Keynote "Supreme Court Decision on CO2" - <i>Heidi Gorovitz Robertson, J.D., J.S.D.</i> , Associate Professor of Law, Cleveland-Marshall College of Law, and Associate Professor of Environmental Studies, Levin College of Urban Affairs, Cleveland State University

Thursday, May 24, 2007 It's Up In The Air Cuyahoga Community College Eastern Campus



AIR & WASTE MANAGEMENT
ASSOCIATION

FROM THE EDITOR

The Northern Ohio Chapter Newsletter is published semiannually for members of A&WMA. David Marczely, newsletter editor, may be contacted at dmarczely@adelphia.net. Membership dues include subscriptions to the newsletter. For membership information contact Ed Fasco through the chapter web page at www.nocawma.org.