

**Regulatory Workshop**  
**August 6, 2009**  
**Portland, Maine**

**How Do I Comply - What Did I Hear?**

**Andy Bodnarik**, NH Dept. Environmental Services, In view of the fact that many of the regulations have still not been proposed and finalized, it is important to know and understand your current status. Review your current permits. Know your current emissions levels. Review your compliance options and your current control strategies. Review your business plan. Carbon requirements are here in many states and are coming nationwide. Understand your energy requirements. CIBO has an Energy Efficiency Handbook. This is a good start to review your options for energy efficiency. Continue to operate and maintain environmental controls. Keep informed. Conferences such as this one provide invaluable information and allow interactions with peers and regulators regarding technology and regulatory activities.

The site location determines many of the requirements that are needed for permits. There are federal, regional, state, and local regulations. There are attainment and non-attainment areas. The non-attainment areas have several categories, all of which have their own requirements. There are criteria pollutants, hazardous air pollutants (HAP), greenhouse gases (GHG), and regional haze precursors. The latter include SO<sub>2</sub>, NO<sub>x</sub>, and ammonia. Modeling is used to relate these precursors ultimately to PM<sub>2.5</sub>. Regional organizations include the Ozone Transport Region (OTR), Regional Greenhouse Gas Initiative (RGGI), and South Coast Air Quality Monitoring District (SCAQMD). Again, these organizations all have additional requirements that may apply to your plants.

Control strategies include process changes, major or minor source (synthetic minor source), fuel switching, boiler size limitations, and control devices. Fuel sulfur for oil is trending down. Boiler tune ups can help with emissions and efficiency. Secondary impacts need to be considered (waste disposal, trucking and transportation requirements, water use, etc.). On Regional Haze, SIPs were due at the end of 2007, but will need to be revised due to the CAIR vacatur. The NAAQS levels are trending down. There is continued research on health effects. Technology continues to improve. All sources and all sectors will be impacted. All regions of the US will be impacted.

**Vince Albanese**, Fuel Tech, Inc., commented on the proceedings this week and some of the implications. With regard to the lower sulfur fuels for smaller units, the cost figures are still range of thousands of dollars per ton. Current allowance prices are in the hundreds of dollars per ton. For small users, if there is a way to get into a cap and trade system, it might be less expensive to buy allowances. With regard to NO<sub>x</sub> control, it was pointed out that 1/3 of the reductions from the OTR cap and trade system came from better operations. With regard to ozone attainment and PM<sub>2.5</sub>, the link between ground level ozone, PM<sub>2.5</sub>, and pulmonary function is well established. The implication is that tighter controls will be required to meet ambient standards for ozone and PM<sub>2.5</sub>. Costs will increase. As noted during the week, the financial status of companies (and SEC requirements) will need to take into account the potential financial liabilities of control requirements including GHGs. Finally, with regard to condensables, there may be a point of confusion of where the impact of the plume might be. If the precursors are emitted in one state and condense in another, are the models and the rules adequate? The CAIR rule ended up in vacatur because of the impact of emissions from one state on another.

**Bob Fraser**, AECOM, pointed out the consultants get to see what a number of companies are doing to try to meet compliance requirements. Conducting an EHS audit involves looking at your environmental compliance programs. Documents and quality control procedures receive a lot of attention. The auditor is role playing the part of an EPA inspector. Typical violations are missing

documents or labels rather than emissions failures. Occasionally, a new “source” is found (an overlooked vent or stack) that does not have a permit. A consultant or auditor will review the permit. The permit will have the representation of the unit in question by reference. Campuses, hospital complexes, and large manufacturing facilities often have vents or small stacks that can be overlooked.

Title V renewals often have to clean up assumptions or errors from earlier applications. States are getting more vigilant about enforcing opacity limits on a continuous basis. Start up, shut down, or malfunction limits can become an enforcement issue. These should not be left silent in permits as it could be interpreted as accepting the normal limits during SSM events. Units subject to BART will see a ratcheting down of requirements as states attempt to meet their “glide slope” requirements. Continuous compliance will require some evidence that control systems are working. A stack test every 5 years is not sufficient.

NAAQS violations are a problem. Units can be shut down for contributing to NAAQS violations. The problem usually stems from fugitive emissions. These come from trucks delivering limestone or coal or running on dirt roads. Modeling is needed to establish that such operations do not contribute to a NAAQS violation at the fence line of the plant.

Conflicting requirements often trigger PSD requirements. Steam turbine modifications that allow the boiler to run more during the year will trigger new source review (NSR). State requirements to add activated carbon injection for mercury control can lead to a PSD requirement for particulate. The potential increase of PM10 (15 ton/yr) or PM2.5 (10 ton/yr) will trigger PSD. Subsequent measurements may demonstrate that these levels were not exceeded, but at the time of the installation the potential to emit can't be verified. In one case, a baghouse was being added after an ESP. The ESP performance was very good. The baghouse vendor guarantee was for a level higher than the performance of the ESP. In this case, the potential to emit on paper exceeded the 15 ton/yr and triggered PSD.

**Norb Wright**, Energy Consultant, noted that the inclusion of small units in the Area Source category will put a lot of pressure on the smaller owners as the talent base at these units is nearly non-existent. Small gas fired units have not had to have controls and therefore the people tend to the controls. There are many more of these types of units. It will become more difficult to burn solid fuels.

**Rhett McClaren**, Penn State University, noted that University Park is like a small city. On any given day, over 60,000 people are on campus. They have electric generation, water treatment, police, fire dept., food service, and HVAC. The University has a permit limit of 80,000 ton/yr of coal use. This level was anticipated to last until 2018. However, new buildings have increased the load on the system. Building space increased from 11 million sq. ft. to 17 million sq. ft.

The new space is high tech/high demand space. Most new buildings require independent emergency generators. Review of the reliability and performance data of the existing units indicated that retubing and extensive maintenance of the existing boilers was the most cost effective approach. A PSD review indicated that no increase in emissions of any kind was anticipated. No NSR requirements were triggered. A new 7 Mw Solar Turbine with an HRSG at 110,000 lb/hr will be added. Keeping up with the activities on campus is difficult. There are over 100 emergency generators. There are many small boilers. There are thousands of employees. It is difficult to know everything, everywhere, at the same time. There is a state law about anti-idling. Diesel fired vehicles over 5 tons are limited to 5 minutes idle time for every hour. Signs to that effect must be posted and must be reasonably spaced and relatively visible. It took several days to put up 100 signs around campus.

The Title V renewal is coming due next year. They are taking inventory of all equipment including water heaters at the football stadium. They have been doing GHG inventories since the 90s and feel reasonably prepared for mandatory GHG reporting.

## Issue Discussions

**Pat Dennis, Archer Daniels Midland Company**

**Andy Bodnarik, N.H. Dept. of Environmental Services, Facilitators**

**Pat Dennis**, Archer Daniels Midland Company, noted that ADM has over 30 solid fuel boilers that will come under Industrial Boiler MACT. The oldest is 75 years old. They have 17 CFBs. They burn a number of fuels including sunflower seed hulls, TDF, rail ties, and other biomass fuels. Topics for discussion include:

BART vs MACT differences

EPA activities to converge BART and MACT

When is the next round of restrictions for criteria pollutants

Future of coal

Where is the GHG money going to go

Concern for US dwindling manufacturing base

Ability of purchase equipment to meet all standards simultaneously

Broad reach of rules applied to ICI units

CAIR modifications and impacts, uncertainty

Asthma due to building materials rather than air emissions

Indoor air vs outdoor air

Any studies to determine if control creates more emissions than control

Apply dioxin equivalency strategy to HAP or all pollutants and control to total amount

Simultaneous compliance

Regulatory flexibility

NSR clarifications, trigger one trigger others

NSR exemption for efficiency in Waxman Markey

Dispersion of PM2.5 after scrubber (low temp) modeling issues

Wet scrubbers and PM2.5 vs WESP

Cold plume and NAAQS violations

Multi pollutant regulations

Area source MACT approach

Small gas units at a major source

Testing fuel supply (natural gas)

Research funding for data generation

Manufacturer standards instead of emission limits

Outdoor wood fired units

What is clean coal technology

On the CAIR rule, there are two paths being considered. One issue is that each state has responsibility for its impact on the next state. How can a cap and trade system take into account these impacts? One concept is the percentage contribution assessment – a combination of a state wide average with flexibility to account for transport. In order to avoid having no rule in place, the courts came back and allowed CAIR Phase I, which covered EGUs at 25 MW and up. The second phase of CAIR was to tighten the caps. The original Title IV was aimed at acid rain. The PM2.5 requirements need greater reductions in SO2 to account for sulfates. A third phase would drop the caps further. Modeling has indicated that even CAIR phase II would not bring many areas into attainment. One of the Carper bills proposed a “birthday” limit, which would have set 40 years as the useful life of a unit, after which it would have to meet certain limits. These were not as stringent as the current NSPS, but would still require controls. The states are pushing to have ICI boilers included in the CAIR cap and trade. It is not clear how the court will react.

The PM2.5 and ozone NAAQS standards are under review. Lowering these standards are likely to put most urban areas under review. The lead standard is also being considered. The fence line issues for these NAAQS needs to be considered. New rules can be coming for SO2 and NOx RACT as these are time dependent. The definition of solid waste will impact units that burn something other than coal, oil, or gas. Units that could be categorized as incinerators will have SO2 and NOx requirements that did not exist before. Testing natural gas for metals has been done before. It is not easy as natural gas is flammable. There are safety issues as well as testing issues.

Synergies and differences in regulations are being considered. The MACT rules concern the HAP. The BART rules cover a much smaller universe of units and are concerned about visibility. The Regional Haze rules attempt to reach background visibility by 2064. A "glide slope" has been used as a means to track progress. The first check will be in 2014. Regional Haze covers all programs that aim at particulates including diesel engines, area sources, materials handling, low sulfur fuels, utility units, industrial units, and transportation issues. Each state has to have a state implementation plan (SIP) that shows how they are going to meet the targets by 2064. BART (best available retrofit technology) is only a portion of the overall plan. The lead program has been very successful in reducing ambient lead concentrations; over 90% reductions of lead in the atmosphere and 70% in blood levels. However, we have not been able to close the loop in correlating real measurable health benefits to these actual reductions.

For regulatory flexibility, surrogates and toxic equivalents have been considered. Cross influences of pollutant trade offs (most notably the CO and NOx trade off) are known to EPA. The problems with the different sections of the Clean Air Act are that each section is independent. Thus Section 112 only covers HAP and do not cover NOx. For the NOx, the NSPS is the appropriate rule. These are independent. Likewise, salt laden wood can form chlorinated dioxins. The plethora of rules may make it impossible for any one unit to meet all of the rules simultaneously. Flexibility in some rules allow for reasonableness (eg RACT). Relative to the HAP issue, simultaneous testing would at least give data where a unit was operating to meet current emissions standards and measure what the proposed surrogates are. At least that would give a chance that units could meet some of the standards simultaneously. Likewise, NAAQS violations at the fence are likely to go up as more units scrub flue gas and reduce the plume rise.

With regard to the cap and trade system for GHGs, under the current Waxman Markey bill, most of the money is attempted to be recirculated into the economy. There were some provisions for auctioning allowances and using the money to reduce the deficit or to fund health care. As far as the future of coal, there is a lot of coal that is available and a lot of demand for energy. By 2050, we will need all of the energy we can get from all of the sources that we can get in 2050. The use of the words "clean coal" came from the Reagan administration program to address the acid rain issue. The gap between natural gas emissions and coal emissions has been narrowed dramatically in the last two decades. Emissions from new coal units are getting down to the levels of natural gas even for sulfur and particulates (within a factor of 10). Never the less, coal has the image of being a "dirty fuel".

With regard to R&D funding, one proposal was to work with NESCAUM, OTR, ICAC, CIBO, and others to form a collaborative effort to look at SCR applications for ICI boilers to provide input to the CAIR process. Case studies could help. EPA might be able to provide some funds as well.