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# Technical Focus, Energy & Environmental Committee Meetings

**December 2-3, 2014**
**Radisson Hotel, Reagan National Airport**
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# M I N U T E S

## TUES-WED December 2-3, 2014

**TECHNICAL FOCUS GROUP SESSION**
**Jason Philpott, Eastman Chemical Company**, Technical Committee Chairman

Carbon Capture and Storage and Handling (CCS)
Moderator, **Mark Calmes**, **Archer Daniels Midland Company**

The 3 speakers are **Scott Frailey**, **Illinois State Geological Survey**, **Scott McDonald**, **Archer Daniels Midland Company** and **Carl Bozzuto**, **ALSTOM Power, Inc..** The topics will include reservoir engineering aspects of geologic storage, the ADM storage project, and a review of capture technologies.

**Scott Frailey, Illinois State Geological Survey**, started out reviewing some of the engineering aspects of storing CO2 underground. Geologic storage involves the injection of a fluid into a porous and permeable formation for some period of time. The storage mechanisms include free phase CO2, capillary trapping, solution trapping, carbonate precipitation, and enhancement by geologic structures. Most of the storage occurs in the pore space between the grains of rocks. For saline aquifers, salty water occupies the pore space. The CO2 will start to displace the water as well as dissolve in the water. The CO2 is less dense than the saline water. The CO2 will tend to form a pool at the top of a subsurface geologic structure that tends to dissolve in the water with time. If there is no structure, no CO2 pool will form. The CO2 will migrate until a geographic trap is reached.

Regulatory issues include the protection of underground sources of drinking water and the migration of CO2. The most likely source of a leak is the well that is drilled for storage. The good news is that this is the easiest to monitor. Considerations include storage volume, injection rate, CO2 migration, and pore space ownership. The ideal site would have high horizontal permeability and porosity, high fracture propagation pressure, and low vertical permeability. For caprock (which provides the vertical field), a thick, non-reactive composition is desired along with a high capillary entry pressure. These properties should be extensive so that large quantities can be stored.

Design criteria include reservoir characterization, reservoir pressure and temperature, injection rates, injection pressure, and perforated interval. Reservoir characterization includes the porosity, thickness and permeability. One of the challenges is to assess the net thickness capability of the formation. If there is a 1500 ft formation, the key is to identify the percentage of that depth that is capable of storage. Both porosity and permeability are important. Another consideration is micro seismicity. If the injection pressure is too high, it is possible to estimate whether the pressure is enough to move the rock. There is a fracture propagation pressure for each formation. Laboratory tests can be used

to determine this value. Shales tend to have a very high fracture propagation pressure, which tends to minimize the potential for micro seismic activity.

Numerical modeling is used to determine where the CO2 migrates to underground. There are many design elements to geologic storage. Caprock integrity is necessary for vertical containment. Wellbore integrity is necessary for "out of zone" releases.

**Scott McDonald, Archer Daniels Midland Company,** reported on the ADM CO2 injection project. The first project has just been completed which took 1000 ton/day and injected CO2 from a fermentation process. The project was completed at 1 million tons of CO2 storage. The second project will inject 3000 ton/day, which is the equivalent of a 250 Mw plant. One of the goals is to study the interaction between the two CO2 plumes within the same formation.

The CO2 is collected at atmospheric pressure. A blower brings the CO2 to a dehydrator to remove water. A compressor raises the pressure to 1,425 psi. Once the CO2 reaches dense phase, a pump is used to raise the pressure to 2500 psi. The compression work is about 10 times the pump work. A 4 stage compressor is used to bring the CO2 to the required pressure. The equipment that is being used has been used in the oil and gas industry. Reciprocating compressors are used for better turndown control. A glycol absorption system is used to remove the water from the CO2.

Site selection was basically the Illinois basin, which has been identified by the DOE as having a large potential storage capacity. The ADM facility happens to be in the middle of this geologic formation, which covers 60,000 sq. miles. There is no observable faulting, thus minimizing any seismic activity. There is a thick permeable formation for storage. There are additional seal formations. There are no local penetrations of the primary seal formation and a relatively low population density.

A substantial number of core samples and well logging have been taken. All of the information is put into a geophysical model that runs out for 50 years. The permit application for a Class VI well was submitted in July of 2011. EPA Region V issued the draft permit in April of 2014. The final permit was issued at the end of September of 2014.

Environmental monitoring will be carried out at both near surface and subsurface locations. Infrared aerial imagery will be used to evaluate plant stress. Soil resistivity will be characterized. Surface soil CO2 flux will be monitored. Five surface arrays will be deployed. Deep Seismic monitoring will include over 40 geophones. Current micro seismicity has been -1 on the Richter scale. Most of the activity has occurred when the well is first initiated, with a second flurry when the well is shut down.

ADM is also looking at different chemicals that can be made from CO2 including carbonates, fertilizers, alcohols, fuels, acids, and others. Enhanced oil recovery is the most likely means to utilize CO2. The southern Illinois basin was a major oil producer in the 1930s. An estimated 700 million bbls of oil are recoverable that could use 150 million tons of CO2. The all in cost is about $15/ton.

**Scott Frailey, Illinois State Geological Survey**, reported on CO2 EOR. CO2 for enhanced oil recovery has been used in the Southwest since the 1960s. Most of that CO2 is from naturally occurring CO2. For EOR to be successful, the CO2 has to mix with the oil. Oil needs pressure to move towards a well. Secondary recovery uses water or a gas to add pressure to the system to drive the flow of oil. Tertiary recovery includes any further activities, including CO2 stimulation. For EOR, miscible gases, chemicals, or energy can be used. Deep formations tend to be at higher

temperatures (80 - 100 F). At temperatures above 87.7 F and pressures above 1073 psia, CO2 is a supercritical fluid. This makes it more likely to dissolve in the oil. Liquid CO2 is used to clean well bores of oil so that just rock can be evaluated.

For immiscible fluids, there will be two distinct fluids. For miscible fluids, there will be one fluid. Since CO2 contact is desired, miscible fluids are desired. Dissolving the CO2 in oil adds to the energy in the oil in terms of flowing the oil. This is due to the CO2 vaporizing and expanding as the oil moves from the higher pressure field to the lower pressure recovery well. CO2 viscosity is less than oil viscosity. This makes it move faster in the formation and reduces contact. CO2 density is less than oil. This makes the CO2 want to stay on top of the oil. Oil recovery efficiency is dependent upon microscopic (saturation) and macroscopic (volumetric) displacement. In a field that was flooded in the 1950s, a water flood recovered 42% of the remaining oil, followed by 15% from CO2 viscous displacement and 14% from solution gas CO2 drive. Total oil recovery was 71%. Gravity can impact the displacement of oil as CO2 tends to move upwards and oil downwards. In West Texas with miscible CO2 EOR about 10% of the oil in place can be recovered and then 25% of cumulative primary and water flood production.

**Scott McDonald**, **Archer Daniels Midland Company,** reviewed the major demonstration projects for CCS. Of the 8 projects, 6 have EOR. Several are under construction. These are very complex projects requiring multi-billion dollar investments. Off take agreements have to be negotiated along with the Class VI permits. Regulatory drivers include the Clean Power Plan, Class VI UIC rules, and regional trading programs. These have not been sufficient to provide incentives to drive more of these projects.

There have been some financial subsidies in terms of loan guaranties and tax credits. These have not been adequate to drive the commercialization either. Hurdles to achieve financial closure include project complexity, major studies, and permit requirements. There are construction related risks. Comprehensive long term liability and stewardship frameworks are needed.

**Carl Bozzuto, ALSTOM Power, Inc.** reviewed current CO2 capture technologies. Technologies covered included post combustion, pre-combustion, oxy-firing, and chemical looping. For post combustion, amine scrubbing and chilled ammonia were reviewed. DOE cost estimates indicated a 65% increase in COE for these technologies. For pre-combustion, IGCC with CCS was reviewed. Costs were even higher for this technology. Chemical Looping is a second generation technology that is still at small scale. However, the cost estimates are much better at 20 - 25% increase in COE.

The post combustion technologies have been demonstrated at the 30 MW level with a 110 MW plant just starting up. IGCC has been demonstrated at the 250 MW level with 2 projects now at 500 MW. One of those will have 65% CO2 capture with EOR for utilization. Oxy-firing has been demonstrated at the 30 MW level and will be featured in the 250 MW FutureGen 2.0 project in the US and the 426 MW White Rose in the UK. The Chemical Looping technology is at the 3 Mw(th) level, but offers rather compelling cost and performance advantages.

**GOVERNMENT AFFAIRS SESSION**
**Anthony Reed, Archer Daniels Midland Co.,** *Government Affairs Committee Chairman*

**Jason Herbert**, **Bracewell & Giuliani, LLP**, reviewed the election results. The Republican Party now has a majority in both the House and the Senate. In the Senate, they went from 45 seats to 53

seats and possibly 54 seats. In the House, the Republicans added 10 more seats. Republicans also made gains in the Governor's races. There is one race still being decided. In Louisiana, there is a run-off election that pits incumbent Senator Landrieu against a Republican challenger. At the moment, the Republican challenger is leading in the polls. The run-off election is scheduled for Dec. 6th. The Republicans now control 33 State Houses and 34 State Senates.

While the Republicans did very well in this election, the next election is a Presidential election and will include a number of Senate seats where Republicans will be at risk. The likely agenda for the 114th Congress will be more oversight legislation and, perhaps, a return to a more orderly budget process, rather than using continuing resolutions. There will be few changes in House leadership, which was already Republican. In the Senate, the Democrats will now be in the minority. Senator Inhofe will take over Environment and Public Works. Senator Murkowski will take over the Energy and Natural Resources Committee. The Keystone XL vote failed in the Senate to get to the floor by one vote (59 - 41, needing 60). The House has passed some EPA oversight bills. The other measures to be considered were tax extenders. The talks have fallen apart. There might be a one year extension. The Congress leaves for Christmas vacation on Dec. 11th. The most likely activity is to get a one year extension of the funding bill for the government.

A Government Affairs panel consisting of **Jake Kuhns**, **Cargill Incorporated**, **Erin Whitesill**, **E.I. DuPont de Nemours & Company, Chris Keuleman** of **International Paper,** and **Anthony Reed**, **Archer Daniels Midland Company,** reviewed some of the implications of the election to these companies.

**Erin Whitesill** noted that Congress has typically "kicked the can down the road" for many issues. Company strategies have been to attempt to establish a "marker" with either a bill or appropriation that, although not likely to pass, at least establishes a position.

**Jake Kuhns** worked on the Hill for a group called the "Blue Dog Democrats", which are now mostly gone from Congress. They now see the new Congress as being better for business. Trade measures and tax issues are also important and the new Senate should be more receptive to some of these ideas. **Chris Keuleman** noted that there are a lot of positives, but there are still some issues that will be difficult to resolve. The President can veto a bill. It takes a 2/3 majority of both houses to override a veto. It will be difficult to develop that many votes in the Senate. Infrastructure improvements are important to companies that have to get products to market. There is some concern that trade promotion authority might be sacrificed over the immigration issue that the President handled by executive order. **Anthony Reed** noted that ADM is in 36 states and has a number of new Senators and Congressmen to work with. Trade is a big issue along with biofuels. Tax reform is important. The highway bill is up for renewal. With a record harvest, the availability of train cars is an issue. (There is a similar problem for coal cars.) More education of Congress will be needed to develop a "coalition of the middle" to get traction on issues.

**ENERGY SESSION**
**Frederick (Fred) P. Fendt, The Dow Chemical Company**, Energy Committee Chairman
**Robin Mills Ridgway**, **Purdue University**, Energy Committee Vice-Chairman

**Phil Rader**, **ALSTOM Power, Inc.,** reported on ALSTOM's Zero Liquid Discharge Process. The Clean Water Act of 1972 charged EPA with protecting the nation's water resources. EPA, in turn, promulgates Effluent Guidelines. The latest proposal would prohibit the commingling of liquid waste

streams for compliance. Each stream would have to meet the guidelines on their own. Traditional methods of compliance include dilution, ponds, chemical fixation, treatment, and evaporation. The advantage of direct evaporation is that the liquid stream is eliminated. This eliminates the need for reporting and monitoring of this stream.

An early CE patent proposed to use flue gas ahead of the particulate collector to dry a purge stream from the wet scrubber. This approach suffered from some corrosion and deposition problems due to the direct sprays. In the current process, hot flue gas is taken ahead of the air preheater and used in a spray dryer (about 5 - 10% of gas flow). The use of hot gas allows the equipment to be less costly because more water can be evaporated. Lime is introduced into the purge stream to minimize corrosion issues. The dry material will absorb SO3, HCl, and some SO2. The typical inlet temperature to the spray dryer is 700 F. The outlet gas temperature is typically 300 F, which would be similar to the current gas temperature entering the particulate collector.

The spray dryer can use either a rotary atomizer or a two fluid nozzle to spray the purge stream. The rotary atomizer is shorter and wider. The dual fluid nozzle design will be taller with a lower diameter. The process has been demonstrated at the 825 MW Duke Cliffside Power Plant. This particular plant had very tight emission requirements as the plant qualified as a synthetic minor. As such, the entire flue gas was put through the spray dryer and then through the particulate system and then through the wet scrubber.

The original driver was PM2.5 from sulfuric acid mist. This necessitated the use of a wet ESP. In re-evaluating the system, ALSTOM came up with the spray dryer system to remove the SO3, which in turn reduced the acid mist. With the spray dryer system, the purge stream could be evaporated (along with HCl and HF). Over 100 million gallons of waste water streams have been evaporated. ALSTOM also uses the NID system for sulfur control. This system is also helpful in utilizing low quality water in the preparation of the lime slurry.

The process utilizes a moistened ash mixed with lime from the particulate collector that is moistened (3 or 4% moisture) with a special mixer. The free flowing dust is injected into the flue gas stream ahead of the dust collector. The lime addition is controlled for acid gas removal. The water addition is controlled to achieve the desired gas temperature. Nominal gas flow modules or 50,000 to 300,000 acfm are available. Larger sizes can be obtained with multiple modules. A spare module is usually included to allow full load performance with one module out of surface. The modular design allows for shop fabrication with minimal field construction.

**Bob Bessette**, **CIBO**, reported on the National Energy Outlook for 2015. The Energy Information Agency recently issued a report on the anticipated increases in cost of electricity state by state due to the anticipated shut down of coal fired power plants. The impacts range from 3% to 37% increase in approved electric rates. **Scott Lynch**, the new president of the **American Boiler Manufacturers Association (AMBA),** noted that he is looking to revamp the organization going forward. In particular, there are many issues that are in alignment with **CIBO** issues. The new **ABMA** looks forward to working together with **CIBO** on common issues. Start up and shut down issues and maintenance issues under New Source Review are two immediate issues that will need work going forward.

**Frederick (Fred) P. Fendt, The Dow Chemical Company**, led a discussion on a National Energy Policy and its potential implications for **CIBO** activities. On Wednesday, the afternoon session will be

used as a workshop on **CIBO**'s approach to industrial energy use beyond coal fired boilers. Industrial energy use by our members goes beyond boilers to include reciprocating engines, gas turbines, electricity, air, and other utility inputs.

**ENVIRONMENTAL COMMITTEE SESSION**
**Stephen (Steve) Gossett, Eastman Chemical Company**, Environmental Committee Chairman
**Robert (Rob) Kaufmann**, **Koch Companies Public Sector, LLC**, Environmental Committee, Vice-Chairman

**Lisa Jaeger, Bracewell & Giuliani, LLP**, reported on the EPA NSPS 111 (d) proposal. The comment period closed on December 1. The coalition comments were filed yesterday. There are 4 rules altogether. Under 111 (b), EPA proposed regulations for new sources and then for modified and reconstructed sources, even though such unit would be treated as new units. Under 111 (d), EPA proposed regulations for existing units. A follow up rule was put out under a NODA (notice of data acquisition). This proposal was not really a data acquisition and one of the complaints is a procedural complaint that a new rule should have been issued with a new comment period. The first proposal is the 30% reduction in CO2 emissions from utility power plants by 2030. This rule proposed a building block approach.

**Robert (Rob) Kaufmann, Koch Companies Public Sector, LLC**, noted that the first building block called for a 6% improvement in power plant efficiency. The second building called for environmental dispatch rather than economic dispatch to get natural gas units dispatched vs coal. The third building block is to use more renewables. The last building block is overall end use efficiency. The main complaint is that EPA does not have authority to make these regulations. Building blocks 2 - 4 are not unit specific.

Units regulated under Section 112 cannot be regulated under Section 111. Finally, there has been no category specific endangerment finding. The rules are inconsistent. State authority has been usurped. There is conflict with the Federal Power Act. States give Section 111 regulations not EPA. While EPA claims their plan is the best systems of emissions reductions (BSER). But BSER is source based. Shut down is not a system of emissions reduction. BSER is not a beyond the fence line approach (i.e. renewables and nuclear). Finally, BSER is arbitrary based on the science (i.e. a 6% improvement in efficiency for an existing plant). EPA cannot require a SIP what EPA cannot do in FIP.

Modified or reconstructed sources cannot be regulated under 111(d) and cannot be regulated under both (b) and (d). Simple cycle turbines will need to be treated separately. The cost/benefit analysis is arbitrary. The social cost of carbon is flawed. Full economy modeling is required. Using co-benefits of criteria pollution reduction is illegal. Small business impacts must be considered.

In the social cost of carbon, the benefits are from worldwide reductions, while the costs are only US. There are implementation issues. SIPs should give EGUs compliance flexibility. States should be able to use existing GHG reduction programs. Notice and comment of energy efficiency and renewable credit programs are required. Credit systems need to be linked to future GHG reduction plans. A mass based system should be used instead of an emission rate system. Without trading, costs of compliance go up. EPA has now proposed to include territories and tribal authorities with comments due by Dec. 19th.

**Lisa Jaeger, Bracewell & Giuliani, LLP**, also reported on some of the litigation issues. Nebraska sued EPA under the Federal Power Act. The case was dismissed in Nebraska, but may go for appeal in the 8th Circuit court. West Virginia sued EPA on the Settlement Agreement. The case is in the DC Circuit court. Briefing is underway. Murray filed 2 cases under the existing unit rule and the lack of authority. The cases have been consolidated. Typically these cases would be dismissed because the rules are only proposed rules and not final rules. However, in this case, the court has set up a briefing schedule. Murray has also sued EPA on the NSPS in that EPA did not consider jobs and economic considerations under Section 321. Again this case could be dismissed as only a proposed rule. This case is in a trial court in Virginia. Decisions are not likely much before June 2015. EPA is supposed to issue a final rule by June or July of 2015. Given the number of comments that are expected, it will be difficult to do this. CIBO is part of the NAM coalition, which filed 137 pages of comments, not including any additional data and appendices.

**Greg Bertelsen**, **NAM**, reported on the NAAQS update. The EPA has released their ozone proposal at 1,200 pages plus references and appendices. The **NAM** has done an economic study on the impact of a 60 ppb standard. This would be the most expensive regulation in the history of the US. Although EPA cost estimates are also relatively high, they are still artificially low.

Ground level smog forms from NOx and VOC reactions in the atmosphere. The NAAQS are supposed to be reviewed every 5 years. The EPA is late and were sued to get a court ordered date to issue the rule. The EPA has proposed tightening the standard from 75 ppb to a range 65 - 70 ppb. EPA is accepting comments down to 60 and up to 75 ppb. Even at 65 ppb, this regulation will be the most costly regulation in the history of the US. Today, about 140 counties are considered to be out of attainment at 75 ppb. At 65 ppb, most of the US except the northwestern states would be in non-attainment. In order to reach these levels, reductions will have to be made to much smaller plants to bring the total NOx and VOC reductions to a level that might bring most regions down to attainment. EPA has estimated the cost at $15 billion/yr. All of the counties are not included in the analysis. Further, the EPA assumed that the Clean Power Plan would make some contributions. States that attain the standard below 2025 are not included. Finally, the estimate does not include California (probably the largest cost). There are also assumptions of unknown controls that are presumed to be less expensive than current controls.

The **NAM** estimate is $270 billion/yr. It looks like EPA assumed a flat rate of $15,000/ton for "unknown controls". The estimated reductions required from unknown controls was about 2/3 of the total. Because of the higher cost of unknown controls, the total cost for unknown controls would be in the range of 98 - 99% of the total costs. The proposed standard is approaching background levels. This means that naturally occurring events will routinely exceed the standard. The EPA uses "exceptional events" to deal with this. For the PM standard, a dust storm can put the particulate concentration over the standard. A cold front passing through will pull ozone from the stratosphere and cause an exceedance.

The comment period will begin shortly. In the spring, EPA will make final selections. The rule will go to the OMB over the summer leading to a final rule in October, 2015. The NAM is pushing for keeping the standard at 75 ppb. **Scott Darling**, **Alcoa Inc**., noted that the Mid-West Ozone Group does a lot of ambient modeling on ozone issues, particularly in cases where some states attempt to go after upwind states on ozone. **Scott Darling** suggested that we start talking to this group and see if they can be of help to us in bringing some scientific basis of where we are at.

**John C. deRuyter**, E.I. DuPont de Nemours & Company, and **Amy Marshall, URS,** provided an update on the reconsideration activities relative to the Boiler MACT suite of rules.

The MATS startup and shutdown reconsideration rules were issued on Nov. 19th. There are 2 startup definitions. There is a preferred definition and an alternate definition. A 3rd party PE must evaluate the choice of the alternate definition. There are also additional requirements for the alternate choice. If there is a common stack for 2 units, the emission limits must be met if one unit is operating and one unit is in startup. According to the rule, startup ends when any steam from the boiler is used to generate electricity for sale over the grid or for any other purpose. This holds for cogeneration units making steam.

The second definition allows 4 hours from the start of electricity production. There is no definition of useful thermal energy in MATS. In Boiler MACT, it looks like useful thermal energy is defined as steam at the required temperature and pressure. The work practice standard for startup requires the use of clean fuels during startup. For the alternate startup, PM controls must startup within one hour of firing coal.

The shutdown period begins when no electricity is being generated or no useful thermal energy is generated or no fuel is being fired. All emissions must be monitored and hourly emission rates must be reported. For coal firing, all control devices must be operated when firing coal. Clean fuels, if required, must be fired during the shutdown period. There are record keeping requirements and reporting requirements. These rules are now final. Any disagreements will now have to go to court.

Regarding the use of the UPL in floor calculations, EPA took remand on several "small data set" floors, those with less than 9 data points. In a memo on ferroalloys, EPA used a 3 step proceedure. First a log normal distribution was used. If a top performer has a high variance, a second performer would be checked and possibly used. The result is compared to the average. The HCl limit could be at risk since the best units have no controls (mostly wood units) and the best unit had a high variance. Mercury could also have an issue.

There were 3 issues for reconsideration: startup and shutdown, CO limits, and PM CPMS requirements. Affirmative defense was removed from all rules. Enforcement discretion will be used for malfunction according to the preamble. Fuel changes or category switches now have only 60 days to demonstrate compliance. An option to use CO2 for dilution for CEMS was added. The PM CPMS certification requirement was deleted.

For startup, there are again 2 choices. The alternate path allows 4 hours after the generation of useful thermal energy. Useful thermal energy is defined as steam at required temperature and pressure. Again data monitoring will be required and submitted. Clean fuels were expanded to mean any fuel that meets the appropriate HCl, mercury, and TSM requirements. The alternate path requires that control devices must be brought into service as expeditiously as possible. There is a possibility to request an exemption for particulate control devices if the requirement violates the manufacturer's specifications.

On shutdown, the shutdown period begins when useful thermal energy is no longer generated or fuel is not be fed to the boiler. If support fuel is required, it must be a clean fuel. A startup and shutdown plan must be written, maintained on site, and made available upon request. Record keeping must

include the time and date of each startup and shutdown, the types of fuels, the time when firing begins, the time when controls are engaged, hourly steam temperature and pressure, hourly flue gas temperatures, and hourly CMS data. The amount of fuel during start-up must also be recorded. This could be difficult for some types of units. A definition of load fraction has been added. This definition compares actual fuel fired against the fuel used in the performance test that established compliance. These proposed changes will have a 45 day comment period after publication in the federal register.

It was pointed out that the Area Source rule had similar changes, but fewer of them. There were some change to the startup and shutdown definitions and the definition of useful thermal energy was added. For Area Source, the PM CPMS requirement was not included. For CISWI units, CEMS data is required during startup and shutdown. The definition of kiln was modified. A summary paper will be posted on the web site with the web links to the various rules. We will start working on comments in January.

**Lisa Jaeger**, **Bracewell & Giuliani, LLP**, reported on the arguments that have been filed on the briefs thus far for the Boiler MACT litigation. Opening briefs were filed by industry and environmental groups. EPA has filed a response briefs. Industry and environmentalist then file responses to EPA. The environmentalists claimed CO surrogacy for organic HAP was illegal. EPA countered that there are strong correlations for CO2 and organics. The environmentalists claimed that the subcategories are illegal based on fuel. The EPA points out that class, size, and type are fuel dependent and thus legal. The environmentalists claimed that gas co-fired biomass units should not be excluded from the floor. This biomass units were remanded anyway, so this claim is specious. The environmentalists claimed that the use of UPL was unreasonable. The court had 2 concerns on future average and accuracy.

These were addressed by EPA. An intervenor support brief will be prepared in support of EPA on these issues. Industry issues included the pollutant by pollutant approach to MACT standards. Industry wants malfunctions factored into numeric standards. EPA replies that the rule they are not compelled to use either of these factors. Industry wanted health based standards included. EPA replied that they are not compelled to include this either. Industry claimed that the energy assessment requirement was beyond EPA authority. EPA claims that the rule does not restrict EPA to the boiler and that the regulated facility is the entity.

Industry asked for a work practice standard on CO similar to MATS. Industry requested that tune ups to optimized CO will be sufficient to minimize organic HAPs. Industry does not challenge that CO is a surrogate for VOC. MATS coal is similar to ICI coal. Data sets for utility units were more extensive. Non detect measurements were 57 - 80% for MATS vs 33% for ICI boilers. However, data for the ICI boilers only looked at a few HAP. On a comparable basis, the ICI units were at least as good as the MATS units. There was also a pilot study that indicates that these levels are low. Further EPA claims that industry did not raise this issue during the comment period. However, this data and the MATS rule came out after the Industrial Boiler MACT rule. **Steve Gossett** ,**Eastman Chemical Company,** worked on a response for this issue. On Area Source MACT, the environmentalists claims that CAA 112(c)(6) list has oil and biomass for mercury and POM and these must get a MACT standard or be delisted. EPA stated that the list is subject to revision and is not a source category.

The environmentalists claimed that the temporary boiler exemption is illegal. EPA claims that these units were never in the list. Temporary boilers normally fire gas and are exempt anyway. Any claims about firing coal do not apply. Oil would be the only fuel in question and light oil is a clean fuel. The

environmentalists claimed that PM standards should be MACT and not GACT. EPA pointed out the Congress specifically cited Area Sources as needing special consideration where rules are too costly or impractical. Work practice standards for coal are not consistent with 112(d). EPA points out that there are no control devices available for such small boilers. The environmentalists claim that GACT standards must require generally available controls. EPA pointed out that their analysis showed that such controls are generally available for large, coal fired boilers, not small boilers. Therefore, such controls are not generally available for small units. Also, tune ups reduce organic HAP and reduce fuel use, thus reducing all HAP and are, therefore, consistent. The environmentalists claim that the Title V exemption for synthetic minors was illegal. EPA replied that their analysis showed that this category was different. The point in the environmental brief was based on one comment which used a different definition of synthetic minor and is not relevant. Industry requested malfunction work practice standards. EPA responded that their decision is within their discretion. Industry claimed that the energy assessment was beyond EPA's authority. EPA replied with arguments similar to the MACT rule.

The CISWI briefs are a few weeks behind the others. EPA has not replied as yet. On NHSM the final briefs were filed in November. Two issues were segregated: C&D wood and treated wood as a waste. Right now, there is a request to schedule oral argument on the NSHM cases for April, after the briefs on the other cases. There is another lawsuit on the EPA claim that they have met their obligation to regulate sources that emit 90% of HAP (CAA 112(c)(6). The court stated that it couldn't be decided until some of the other issues were finalized. The environmentalist went back to court to set a date. A May date has been set.

There is a case going to the Supreme Court on the need to regulate utilities under 112(n). The basis was that MATS will cost $9.6 billion/yr and the estimated benefits are $4.6 million/yr. The case turns on whether EPA unreasonably refused to consider costs. A decision is expected by June 2015.

On the startup and shutdown issue, there is an issue on the 8 year review of MACT standards. There are a number of MACT standards that do not SSM provisions. EPA has agreed to take the affirmative defense provisions out of all MACT rules. Comments are supplied every time this issue comes up. There are 7 proposed rules that will need comments filed. The MATS rule is final. Judicial review will be held Jan. 18, 2015. The BMACT suite of rules will be due towards the end of January. The 112(c)(6) notice will need comments by the middle of February. The coal ash comments will be mid March.

There are a few more cases that we are watching for potential impacts. There is a chromium review case. The 8 year review for this came up. The question is whether EPA must reset the MACT floor when doing the 8 year review. The environmentalists are opening up certain areas with the appointment of new judges to the DC circuit court. There is a clean water issue. The Supreme Court did not grant certification in the nuisance filing suit. This case centers around someone filing suit against a facility even though the facility meets its air permits. There is a petition for rehearing on the acid gas aquatic acidification. There is a law suit against an agency to require notice and comment when an agency changes its interpretation of a regulation.

**Robin Mills Ridgway, Purdue University**, and **Gary Merritt, Inter-Power/AhlCon Partners, L.P.**

There is a coal ash rule that is scheduled to be issued on Dec. 19th. The rule has gone to OMB. The rule is stated to apply for utilities and independent power producers. The concern is that the states

will include industrials in compliance. For those that switched from coal to gas, there might be some "look back" issues. The major issue is the classification of subtitle C or subtitle D under RCRA. Subtitle C is for hazardous wastes.

The proposed rule will not be applicable to beneficial use and mine fill applications. There have been some proposals for a hybrid approach with some requirements from both subtitles. The EPA has also issued new effluent guidelines. Again, these are aimed at utility plants, but the states can adopt these rules to industrials. The discharge limits deal with leachate from coal ash. Wet ash handling systems and impoundments are under pressure. The leaning is that the regulation will come out under "D", but with more requirements. The language is broad. The definitions are broad as well. The concerns are that some of these definitions will drag in unrelated facilities. A farmer that spreads coal ash on the soil for pH control could be construed as a coal ash landfill. There is a 30 year responsibility for site maintenance and monitoring after site closure.

EPA is pushing to move away from impoundments. EPA is also encouraging Citizen Action suits in this area. EPA has also used the term "open dump". It will be important to understand how each of these terms and definitions apply. EPA is also looking at sources for radioactive releases. The Office of Surface Mining is responsible for ruling making on beneficial use. The OSM has to be careful not to use the term waste disposal to avoid RCRA.

**Energy Policy Workshop**

At the Annual Meeting, it was brought up that many of our boiler issues extend beyond boilers to include reciprocating engines, turbines, electric use, and all of the fuels.

**Bob Bessette**, **CIBO,** noted that perhaps a **CIBO** policy piece would be something that other groups could sign on to.

**John (Jay) Hofmann, Trinity Consultants, Inc.** pointed out that he has been trying to broaden the CIBO scope in terms of our issues.

**Fred Fendt**, **The Dow Chemical Company**, pointed out that the Environmental Committee needs to anticipate the issues associated with existing and proposed regulations. The Energy Committee could be a more strategic committee thinking about the industrial energy user. There isn't any other organization that does what we do (voice of reason, technically based, balanced, economics, etc.).

**Leslie Witherspoon**, **Solar Turbines Incorporated**, pointed out that trade will be a big issue, but for her product line the type of fuels that will be burned is an even more important issue. All gases are not created equal. The NOx and CO emissions from some of the low carbon fuels are way high. Education will be important going forward.

**Denis Oravec**, **AAI-JMP Engineering,** pointed out that many of his customers are looking at the demand side as opposed to the supply side. Companies are trying to reduce their steam demand. They are looking at recovering heat from a variety of sources such as compressors, engines, chillers, etc. The industry is moving towards intermediate manufacturing. The primary manufacturers have moved overseas. Their products are imported and incorporated into a final product. Some of these plants don't have a power house any more. This leads to looking at all forms of energy being used in the plant.

**Robin Mills Ridgway**, **Purdue University**, indicated that some of the focus group meetings have been on topics that were non boiler subjects (RICE, islanding, water, etc.). Interactions with the grid can be improved. The university has a number of emergency diesel generators. These might be used in different ways. One of the considerations is that if a different use of equipment is not in a regulation, it can't be captured later. Educating ourselves on these issues will be important. Getting ahead of these types of issues has helped us in the past. One question is the definition of industrial and institutional energy use. Perhaps trying to identify this and writing it down will be helpful. Fuel diversity, reliability, cost, and availability are all considerations. A sense of why we need thermal energy, fuels, steam, electricity, etc. would be helpful. Energy cost doesn't always show up on the radar screen. However, low cost energy is important to the health of the economy. Reliability, availability, and sustainability are the buzzwords today. Sustaining our businesses is important as well as our environment.

**Chris Keuleman**, **International Paper,** pointed out that most staffers think energy and electricity is the same thing. Putting together a package that explains some of these things and puts some of these institutions in perspective could be very useful.

**Bob Corbin**, **CIBO** Member Consultant, noted that from a membership perspective, we have lost the refiners and the consumer goods members because they are more looking at their processes and not their boilers.

**John C. deRuyter, E.I. DuPont de Nemours & Company,** pointed out that we do need to be careful that we don't cross wires with other associations that cover these types of issues. Never the less, there are several areas that we can bring our expertise to bear. Fuel flexibility, reliability, and availability have been key issues. Electricity use is common to all our members.

**Bob Bessette**, **CIBO**, pointed out that we must be able to bring our message to the public.

**Gary Merritt**, **Inter-Power/AhlCon Partners, L.P.,** pointed out that once on natural gas, the options for back-up power are limited. One can fire gas in a coal fired boiler. We can't fire coal directly in a gas turbine. Reliability and availability become more important. The interactions amongst the various types of equipment will have an impact on overall emissions as well as reliability.

**Robin Mills Ridgway, Purdue University**, noted that executives don't often understand the energy requirements of the facilities they manage. Educating these folks is important. Many of our CIBO documents are getting old, but are still useful. In particular, the combined heat and power document has been used in several instances recently.

**Brian Bird**, **HDR,** noted that recent storm damage has promoted the rise in the demand for local generation and micro grids. These assets can be utilized as well.

**Leslie Witherspoon, Solar Turbines Incorporated,** noted that education was a common theme and that "one pagers" are helpful not only outside, but to ourselves.

**Scott Darling**, Alcoa Inc., echoed that opinion.

**Fred Fendt, The Dow Chemical Company**, noted that much of the energy dialogue has been about buildings. Very few organizations are looking at industrial energy. Chris pointed out that for working with the Hill, we need to provide the key data that sticks with the staff.

**Salo Zelermyer, Bracewell & Giuliani LLP,** pointed out that there will be a number of new members and staffers with the new Congress. A staff briefing can be a good building tool to start getting our education message across.

**Bob Bessette**, **CIBO,** suggested that the members of the sub-committee should propose a "sound bite" on each of these issues to be sent back to **CIBO**. Consideration should be given to "Why?" as well as "What is?". From these the **Bracewell & Giuliani LLP** team will put together something that can be circulated for review and comment. The sub- committee input is needed by the end of this year. The goal is have something ready by the March 3-4 Committee Meetings.

**Next Technical Focus Group/Environmental & Energy Committee Meetings**
**TUESDAY & WEDNESDAY, March 3-4, 2015**
**Radisson Hotel Reagan National Airport**
**2020 Jefferson Davis Highway**
**Arlington, Virginia 22202**
**Ph: 703-920-8600 ~~~Fax: 703-920-4033**