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Technical Focus, Energy & Environmental Committee Meetings

March 2020
Hilton Garden Inn
2020 Richmond Hwy
Arlington, VA

M I N U T E S

TUES-WED, MARCH 10-11, 2020

TECHNICAL FOCUS GROUP SESSION
Mike Zebell, Environmental Resources Management, *Technical Committee Chairman*

Alex James, Environmental Resources Management, started the focus group meeting, pointing out that the US produces around 38.5 million tons/yr of plastics, of which about 13.5 % are combusted. With renewed attention being given to recycle and reuse, it is expected that more of this material is likely to be burned.

Carl Bozzuto, CIBO Consultant, presented some fundamentals relating to plastics. Plastics are basically an organic material that is produced by polymerizing base hydrocarbons into stable, solid materials that can be used extensively in many products and containers. About 2% of the plastics are truly recycled back to new plastics. Around 3% is actually exported. Some 81.5 % ends up in landfills. A very small amount of US plastic does end up in the ocean (about 40 tons/yr). The US is number 20 on the list of countries that put plastic in the ocean. China is at the top of the list with around 30 million tons.

In an effort to help make recycling somewhat easier, the industry created the Recycle Indicator Code (RIC). This code identifies plastics with a number that is usually imprinted on the plastic inside a triangle made up of arrows that indicate recycling. The numbers range from 1 to 7 with the lower numbers being easier to recycle. Then cities and towns can indicate which levels their particular recycle program can utilize. There are still some issues as plastic bags are difficult to handle and black plastics are hard to reuse when a clear plastic is desired.

One particular issue is the melting point of the plastic compared to the ignition temperature. If the plastic starts to melt in the system before it ignites, there is the potential for developing a sticky mess that can't readily be handled.

Ari Kokko, Valmet, Inc., presented some solutions for residue streams. Valmet manufactures BFB boilers, CFB boilers, gasifiers, and pyrolysis systems. In addition, air pollution control equipment for these boilers are also manufactured. These types of equipment can handle plastic materials for combustion or gasification. The EU recycles 1/3 of their plastics, compared to 10 – 12% in the US.

Plastics can be mechanically recycled, chemically recycled, or burned. CFB technology can burn plastics as the solid bed is recirculated, which enables the plastic to be broken down and burned. However, the handling and feed system will need special attention. The flue gas will need to be treated for any particular emissions resulting from the combustion process.

Municipal solid waste (MSW) is where most of the waste plastic is deposited. This material contains a host of other compounds that contribute to issues with handling and combustion of the fuels. It is desirable to get the metals and plastics out of the fuel before combustion. This results in refuse derived fuel (RDF). The CFB boiler is best suited for the combustion of these fuels. The highest temperature surface can be installed in the fluid bed heat exchanger (FBHE) where it is not exposed to any corrosive materials in the flue gas.

With the CFB, reasonably high steam temperatures can be achieved, allowing for a more efficient steam cycle and more power generation. The CFB produces lower conventional emissions, which helps reduce the size and cost of the air pollution control equipment. The CFB can accept a wide range of fuels due to the bed recirculation, provided the fuel can be handled properly.

With the FBHE, there is more flexibility in allowing more variation in the fuel than for other competing technologies. In many cases, the RDF is roughly 50% plastic. Paper mill rejects also contain plastics and can be burned in a CFB. A CFB in Sweden burns tire derived fuel. A CFB project in Germany utilized recycled wood.

Carl Bozzuto, CIBO Consultant, substituted for **Bob Morrow** of Detroit Stoker Company who was not able to attend due to travel restrictions. Bob noted that the amount of recycling has appeared to be going down in Michigan and the amount of landfill has been going up. The cost of recycling is fairly expensive, while the cost of some raw materials (like natural gas) has been declining.

This situation reduces the potential for cost recovery from recycled material. Again, the processing and handling of the material to get it into a form that is useful, whether it be burned or converted, is the major cost, once the material has been collected. Collection costs are still quite high, but in fairness, the material would have to be collected in any case.

There have been a number of processed type fuels made from either biomass or plastic that can be burned successfully. The cost becomes an issue when compared to the use of the product. **Steve Gossett,** Eastman Chemical Company, pointed out that some consumers want to have a "green label" on their products. In many cases, that means that they are willing to pay more to get a "green" product. Eastman has been gasifying plastic and will be gasifying carpet in the near future at their coal gasification plant in Kingsport, TN. Interest in waste to energy plants (WTE) is starting to surface again as cities and towns run out of landfill space.

Government Affairs Session

TBD, *Government Affairs Committee Chairman*

Denis Oravec, JMP Engineering, introduced two guest companies that are attending. **Gary Gleason** of Gleason Steam noted that they work with companies on their steam systems. **Fred Olivari** and **Julia Wozniak** from EA Engineering, Science, and Technology, Inc., PBC, noted that their company

works on environmental compliance for air and water issues. Denis noted that he will be retiring in July and introduced his replacement representative for JMP Engineering, **AJ Smith**.

Elizabeth Horner is the Majority Senior Counsel for the Senate Environment and Public Works Committee. The Committee Chair (Sen. Barrasso of Wyoming) has been supportive of more certainty in the regulatory area for business.

Pending nominees for approval are the Deputy Administrator of EPA and several Nuclear Agency positions. Legislative priorities are highway infrastructure funding, water infrastructure, and other public works. Funding is one of the key issues and the source of funds will be an important task in making these projects viable. There is some bipartisan support for these issues.

Environmental issues are another matter. There does not appear to be much interest in cooperation. Water issues are being "weaponized" to try to stop projects going forward. Relative to climate change, the chairman is not a big fan of a carbon tax or cap and trade. He prefers innovation and technology as the right approach to resolve climate issues. The chairman is more in favor of a "common sense" approach.

On the oversight process, the key position is to make sure that whatever regulations are proposed, they will stand up in court. There is no rush to issue new regulations, especially without the full range of considerations. Relative to an energy bill, the Senate version did not pass cloture this week. The House does not have a bill yet. With this being an election year, it is likely that there will not be a bill.

Paul Cicio is President of the Industrial Energy Consumers of America (IECA), which represents industrial companies that consume energy. Committees include natural gas, electricity, CHP, and renewables.

In Senate Bill 52657 "The American Energy Innovation Act of 2020" there is a subpart B in the energy bill, which proposes support for CHP, sustainable manufacturing, and renewable energy. Energy storage is getting more attention. Energy storage is of interest for reliability as well as the issue of intermittent generation. Subtitle D covers carbon capture and storage. Subtitle E covers nuclear energy. Small, modular reactors (SMRs) are being looked at. More nuclear R&D would be proposed. Industrial technologies for efficiency improvements in many industries are being proposed. Smart manufacturing is being supported. In particular, manufacturing support for small and medium size firms is included. Cyber security and grid security in particular are being supported. Grid modernization, including grid storage and micro grids, is included in the bill and is considered to be a priority.

Energy Committee

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

Bob Bessette, CIBO, gave a brief update on the natural gas situation. Some contracts have been let at $1.75/MMBTU for more than 3 years. With that price level, other fuels cannot compete. There is an excess supply of natural gas. The gas developers are being pressured not to flare the excess gas. This situation is expected to last for 3 – 5 years. As long as there are pipelines to carry the gas,

the gas will be available. This low price puts pressure on alternative fuels as well as recycle type projects.

Ruth McCormick of the Business Council for Sustainable Energy reported on sustainable energy in America. The 2020 fact book is now out. The Council advocates for policies at state, national, and international levels. The fact book contains information on the deployment of clean energy in the US.

The report is produced by Bloomberg New Energy Finance. The productivity of the economy has improved in that the GDP since 1990 has increased by 25%, while the consumption of primary energy increased by 6%. The electric generation mix has moved from coal driven to natural gas driven.

Nuclear has remained relatively constant at 20%. Renewables have increased to about 14% (including hydro and wood). Coal plants are being retired as they age and as natural gas is now low in price. The transportation sector is now the largest GHG emissions sector. Battery storage prices have been dropping as well. Electric vehicle models have increased to 79 different options (models) from zero in the 90s.

Rich Kalin of the Gas Technology Institute reported on some of the R&D that is underway. The price level of gas at its peak was about $12 – 14/MMBTU in 2008 and is now down to around $2/MMBTU. This fact combined with improvements in gas turbine technology drove the generation cost of gas fired combined cycle plants to less than coal fired plants. Demand for gas has increased, but efficiency improvements have led to fairly steady consumption. Industrial use of gas has also increased. Burner developments are looking at low NOx firing (potentially a 50% reduction).

Conversion of carbon based fuels to hydrogen, or hydrogen blends, can serve to take more carbon out of the fuel markets.

Rick Murphy of the American Gas Association pointed out that the AGA looks across all customer segments, including residential customers. In the residential market, there has been an increase in the number of customers, but the use of gas has remained relatively flat, as homes have become more efficient (by roughly 50%). For gas consumption to increase, pipelines are needed. As power generation demand for natural gas increases, more pipelines are needed. Today we have 2.6 million miles of pipeline.

There are differences across the country in the demand for gas. Heat pumps are coming into use in more parts of the country. Climate goals tend to rely on electrification of the economy with, eventually, 100% renewable electric generation. There are policies which look to ban natural gas in new build residential sectors.

Peter Thompson of the American Biogas Council reported on the use of bioenergy in the US. There are 2,200 operational biogas systems in the US, with a potential for another 14,000 systems. Landfill gas is the primary source. EPA has a renewable fuel standard for autos that can drive some use of renewable gas for vehicles.

Stuart Saulters of the American Public Gas Association is the newest member of the coalition. They focus on municipal use of gas. This includes municipal utilities that use natural gas. They are looking at how to use existing infrastructure to promote the use of gas.

Environmental Committee Session

Tom Webster, DuPont, *Environmental Committee Chairman*
TBD, *Environmental Committee Vice-Chairman*

Ann McIver, Citizens Thermal, reported on Waters of the US (WOTUS). The proposed rule was withdrawn and a new rule has been proposed. The new rule is called the Navigable Waters Protection rule. The regulations divide protected waters into categories. They start with the oceans, then move upstream to navigable rivers and lakes that flow into the oceans, then continue farther upstream to non-navigable tributaries, and eventually reach impoundments, smaller lakes and ponds, and ultimately wetlands, some of which are directly connected to a downstream tributary network, and others that aren't but have some other type of ecological relationship. These are wetlands with significant nexus. These waters include most of the things we would normally assume to be navigable waters. Groundwater is specifically excluded. Also included are perennial streams and dry wash streams. The agency defined a "typical year". If water always occurs in this stream at a certain time in the year, then the flow would be characterized as jurisdictional water. The agency will take a look at 30 years of data and determine if water could be in the stream in a "typical year". If so, the stream would be jurisdictional if it flowed into a traditional navigable river. The rule has been public for a while and will be published in the federal register at some point. The environmental groups are already preparing their legal response to the rule and will litigate. Since this is a water issue, they do not have to go to the DC Circuit Court. This rule was signed off by both the EPA and the Corps of Engineers. There are a dozen water body types that have been designated as exempt, including ground water and storm water control features.

Steve Gossett, Eastman Chemical Company, reported on the Regional Haze 2cd Planning Period. If your plant is east of the Mississippi and emits SO2, this rule applies. The rule addresses Class I areas, which includes national parks and wilderness areas. The goal is to eliminate man made haze from these areas by 2064. The rule applies Best Available Retrofit Technology (BART) to a certain class of units.

In the East, the problem has been attributed to SO2 emissions. In the West, both SO2 and NOx are considered important. The second period runs from 2019 – 2028. SIPs are due by July, 2021. A "glide slope" approach has been required, which is supposed to demonstrate progress towards the overall goal. The sources for analysis have to be prioritized.

There are four factors involved: cost of compliance, time for compliance, energy and non-air impacts, and remaining life. There are Five Regional Planning Offices that look at the regional impacts. In the Great Smoky Mountains, the background level has been determined to be 10 deciviews. A Glide Slope was established to go from 30 deciviews down to 10 deciviews. The actual path turned out to be much faster as a number of rules came into play (Title IV, Boiler MACT, MATS, CAIR, CSAPR, NAAQS, and low gas prices). Even lower sulfur in diesel fuels used by trucks have contributed to the more rapid reduction in haze.

For those areas that are below the glide slope, EPA has stated that this is not a "safe harbor". They will likely look at the highest emitters to determine what is "reasonable". The glide slope will remain

the same. One metric is $/ton. Another is $/deciview. States have the biggest role to play. One rough target level is $5,000/ton.

In round 2, nearly all units that emit will be looked at. A table that stacks up the emission levels is created to look at the impact of these units.

Leslie Witherspoon, Solar Turbines Incorporated, reported on the Turbine MACT rule. The rule was first issued in 2004. The Gas Turbine industry objected to the rule because the gas turbine got a standard of 91 ppB of formaldehyde while the diesel engine got 12 ppM of formaldehyde, both burning natural gas. The industry was successful in getting a stay of the rule. EPA did an RTR and decided to reissue the rule with the 91 ppb. EPA did pull in startup and shut down (3 hours for combined cycle and 1 hour for simple cycle). The stay is still in place.

The industry filed a new request for a delisting of the gas turbine. EPA has said they will consider the request. There was a measurement issue with the accuracy and reliability of the formaldehyde detection level. In the last 18 months, there has been an improved measurement system that can detect down to 10 ppb. With this system, the industry was able to show that emissions were down in the range of 20 – 30 ppb, which is below the 91 ppb. Further, the industry showed in their delist petition, that the risk levels were below EPA requirements. No doubt, the eNGOs will object, but the industry plans to continue to pursue the delisting.

Kevin Culligan, US EPA, provided an update on their activities, particularly with respect to PFAS/PFOS and NSR. Relative to boilers, the revision to the Industrial Boiler MACT is over at OMB. Industry has supported getting that out of OMB soon.

Residual risk rules are also at OMB and hopefully those will also be done soon. The residual technology risk (RTR) requirements are every 8 years for MACT rules. The ones that are being acted on are under court ordered schedules. They are hoping to get those done on schedule.

The NSR reform issues are being considered with some of the distinct issues being handled by guidance. The Affordable Clean Energy rule (ACE) required energy efficiency for GHG reductions. There was supposed to be some NSR adjustments or exemptions to get those efficiency gains. These are still separated. It was pointed out that industrial boilers are not subject to economic dispatch. Therefore, an efficiency improvement does not trigger more use, such as it would for an electric generating unit.

The NAAQS for PM and ozone are also a priority. Ethylene oxide has a focus as an RTR is due. EPA revised their risk factors for ethylene oxide. Sterilization of medical devices is a major use and this group objected. Then the chemical industry also weighed in.

Another chemical with heightened sensitivity is the PFAS/PFOS. The agency is focused on the first steps such as how much is out there and how to measure and monitor the material. Again these materials have been around for some time. However, some incident or activity can trigger heightened interest, which may drive the agency to take some action. There are 5 items that have to be reported to the TRI for 2020.

Mary Neumayr, Chair of the Council on Environmental Quality (CEQ), spoke about the National Environmental Policy Act (NEPA). The CEQ was established in 1970 under the NEPA. It reports to the White House and advises on environmental issues.

This administration has recognized the need for modernizing the infrastructure and the processes for applying NEPA. The goal is to streamline the processes and reduce some of the red tape involved. In particular, permitting issues are often time consuming. The act applies broadly to all sectors of the economy. The procedures have not been reviewed and updated since the basic regulations were issued in 1978. At the time, the review process was not expected to take more than 1 year.

Today, a highway project can take over 7 years and some projects take more than a decade. The environmental impact statement (EIS) was intended to be not more than 150 pages. Now, several thousand pages are typical and are not very readable. An executive order was issued to establish schedules that are no more than 2 years and to use a common sense approach to the permitting.

The CEQ has developed a proposed set of changes to NEPA to achieve the original objectives. Revisions included joint schedules, page limits, time limits, and single EIS (150 pages) and EIA (75 pages) reports. A single decision would be required across government agencies involved in the process. The terminology of "direct, indirect, and cumulative" effects has been eliminated in favor of "reasonably foreseeable" effects. Comments have been taken and two public hearings were held. The comment period has just closed.

The US infrastructure is in great need of repair. Infrastructure projects need proper and timely decisions. Since these proposals are changes to the regulations, they will be submitted to OMB as a final rule for interagency review.

Jay Hofmann, Trinity Consultants, Inc., provided a Boiler MACT update. **Bob Bessette**, CIBO, attended an OMB meeting last week concerning the proposed response to the remand on the rule. For the most part, we are supportive of the revisions. OMB was asked to move forward and only have a 30 day comment period. It is likely that we will get 45 days to allow for a public hearing on day 15 and then 30 days to take comments.

In the various considerations and remands, EPA maintained the 130 ppm CO standard for most types of boilers. The applicability of using CO as a surrogate was also under pressure. The court did not rule specifically on that issue under Boiler MACT. Subsequent cases rejected environmentalist claims that CO was not a surrogate. The existing database of 2010 had no units that had oxidizing catalysts. The courts have commented that EPA did not consider "alternative technologies". However, EPA had to use the information from that database, as that represents the data that EPA collected from their ICR.

A key chart shows a lot of data with essentially zero formaldehyde below 100 ppm CO, with a little data scatter showing a few points at 1 ppm formaldehyde. There were some additional "corrections" to the standards to address some of the court issues about how certain units were classified. A major concern is that the proposed rule gets delayed and then gets wrapped up in a potential 60 day Congressional review, particularly if there is a new administration.

Ann McIver, Citizens Thermal, provided an update on the MOG activities. The MOG looks at the NAAQS standards and provides comments based upon the data and analysis that they provide. Modeling efforts on ground level ozone are being used by the states that have members. One of the issues is international contributions. Another source is wild fires. However, states have to ask for such considerations. Of great concern to CIBO members are the 126 petitions, particularly one from New York State. EPA denied the NY petition and NY has sued EPA. The MOG results are being used to support the EPA denial.

Lisa Jaeger,Bracewell LLP, provided the litigation update. The NEPA update rule was issued Jan. 10. Hearings were held on Feb. 20. The definition of "scope" and "impacts" are clarified. In particular, cumulative effects have been deleted. This step would be of great concern to eNGOs, as this would avoid a lot of climate change impacts by projects.

EPA restricted the potential membership on the Science Advisory Committee by stating that grants are automatic conflicts of interest. There were 3 law suits, all of which are being appealed. A new memo on the engagement process for the advisory board to promote more openness and transparency was issued. This action puts EPA back in charge and allows EPA to set the agenda for activities.

The ozone NAAQS issue is ongoing. EPA did an Independent Science Assessment. The CASAC did not support the ISA, but did agree that the current standards should be adequate. The PM NAAQS is over at OMB. While we do not know what is in the rule, the background work would seem to indicate that the standards will not be changed.

New Source Review reform includes the PAL guidance. The MATS startup/shutdown case is awaiting a court decision. The Pulp & Paper RTR is also awaiting a court decision. The 126 petition case from NY has gotten an expedited schedule. The state of Kentucky has filed an excellent amicus brief, pointing out that NY did not take into account any data that KY had shown through 3 years of working with EPA. There is a related case that has already gone to oral argument.

For Section 126, the law puts forth a 4 step process that requires the identification of downwind areas with air quality problems, the identification of linked upwind sources, which upwind sources significantly contribute to the problem, and the implementation of necessary emission reductions within the upwind area. The major point is that the burden of proof is on the state of New York. The EPA case is that New York did not bring forth any such proof or justification. New York claims that the invalidation of the CSAPR close out rule or the remand of the update rule invalidates EPAs decision making process.

The EPA has issued the revised risk management plan rule (RMP). The new rule is now consistent with the OSHA rules, which was a problem with the original rule issued in 2017. Some onerous provisions were removed. A law suit has already been initiated. The CERCLA Financial Assurance rule is out. The Atlantic pipeline case had oral argument in November. The Cooling Water Intake case is now at the Supreme Court. The issue is whether the Fish & Wildlife Service has to release documents under the Freedom of Information Act on water intake activities.

Tom Webster, DuPont, reported on the 2020 US EPA Civil Penalties. On Jan. 13, the EPA increased the penalties for violations by around 2%. The 2015 rule requires annual adjustment of

penalties to reflect inflation. The penalties are assessed per violation per day. The penalties have increased substantially since the mid 2000s. Clean Air Act violations are now over $100 K per violation per day. They used to be $25 K.

Tom also reported on some of the regulatory updates. The refrigerant management regulations for substitute refrigerants (HFCs) was published in the federal register today. Certain repair and inspection requirements have been eliminated. The rest of the refrigerant requirements remain. However, most sites have continued to follow the requirements as only the HFCs were covered by these changes. All of the rest of the refrigerants still have the requirements. Good record keeping is always a good practice.

Tom noted that there are a substantial number of monthly and quarterly reports that have to be prepared, some of which have to be submitted. For the reports that do not have to be submitted, in most cases, they have to be available if there is an inspection. It is a good idea to have a calendar type set up with a listing that includes the report required from a permit, the working group responsible, the person responsible, and the backup procedures and personnel.

For RICE units, a survey of units on site is needed. A check list of the requirements is recommended so that the appropriate records and actions are obvious and carried out. Similarly with refrigeration equipment, good record keeping is required. Documentation on units that had leaks must submit information on March 1st of each year to CEDRI.

Operating permits should be reviewed to make sure all of the requirements are being considered. There are maintenance, calibrations, testing, fuel analysis, and report requirements in the permit that should be reviewed on a regular basis. There are also personnel change requirements. Things that change during the reporting period should be documented.

There are software packages that are available to help facilities to organize and maintain the required information. There has also been a trend towards some kind of sustainability data and tracking that produces a summary for management.

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