

FINAL Minutes of October 11, 2018 Ethylene Producers' Environmental Sub-Committee Meeting
(October 11, 2018, Rev. 1)

Following are the minutes of the October 11, 2018 Ethylene Producers' Environmental Sub-Committee Meeting, held at Linde Engineering office in Houston and via teleconference with Mark Ulrich, Linde Engineering North America as host. Thank you, Mark, for hosting! Walter Postula captured the minutes.

Present: Rick Beleutz, LyondellBasell [in person]
David Elam, TRC Solutions [on phone]
Ted Heron, The Catalyst Group [on phone]
Brandon Lithgoe, NOVA Chemicals [in person]
Jennifer Port, ExxonMobil Chemicals [in person]
Walter Postula, Shell Global Solutions (US) Inc. [in person]
Mark Schmidt, DuPont [on phone]
Edward Soliz Jr., SASOL North America [on phone]
Mark Ulrich, Linde Engineering North America [in person]
Gary Wojnowski, BASF [on phone]

Absent: Benjamin Burns, SASOL North America
Jacob Hilbrich, ChevronPhillips
Brad Hopper, BASF
Patti Long, Eastman
Dan Lutz, Ineos
Arijit Pakrasi, APTIM
Gerardo Ruiz-Mercado, US EPA (AIChE Environmental Division Chair)
Jeffrey Seay, University of Kentucky (AIChE Environmental Division)
Debalina Sengupta, Texas A&M (AIChE Environmental Division)
Dick Siegel, R&B Consulting Services (AIChE Environmental Division)
Russell Wozniak, Dow

The meeting began at 9:00am with Walter Postula reading the Ethylene Producers' Committee (EPC) anti-trust statement:

No activity of the committee shall involve the exchange, collection, or dissemination of information among competitors for the purpose of bringing about or attempting to bring about an understanding or agreement, written or oral, formal or informal, express or implied, among competitors, with regard to costs, prices, pricing methods, terms or conditions of sale, distribution, production quotas or other limitations on either the timing or volume of production or sales, or allocation of territories or customers.

The meeting agenda was published in advance and is included below:

- 1) Reading of Anti-Trust Statement [9:02 AM]
- 2) Introductions of new subcommittee members [9:04 AM]
- 3) Update on Potential Presenters for Environmental Session [9:08 AM]
 - a. Matthew Martin – Honeywell UOP – “Smokeless Operation of Flares”
 - b. Colin Deller – Honeywell UOP – “Practical Low NOx Burner Retrofit”
 - c. Brian Duck – Zeeco – “Direct Flame Monitoring”

- d. Emissions measurements when decoking to firebox – ACC? Kari Enqvist?
- e. RTR/EMACT, General Update – Steve Smith
- f. Ethylene RTR/MACT Testing Methods – David Elam
- g. Water Conservation – KBR/Linde?
- h. Wet Air Oxidation – Mark Clark – Siemens Energy
- 4) Other Potential Topics for Environmental Session [9:28 AM]
 - a. Identifying process leaks to cooling water
 - b. Impact of E-MACT on metals emissions from furnaces
- 5) Decision on Abstracts to Include in Environmental Session [9:35 AM]
- 6) Review of Action Items [9:55 AM]
- 7) Important Date Reminders
 - June 29, 2018 – Call for abstracts opens
 - November 12, 2018 – Call for abstracts closes
 - December 14, 2018 – Papers accepted or rejected
 - January 18, 2019 – Program goes live
 - March 8, 2019 – Paper submission closes
 - April 1–4, 2019 – Spring Meeting – New Orleans, LA
- 8) Adjourn [10:00 AM]

Introductions of New Subcommittee Members: Mark Ulrich asked that everyone in the room and on the phone briefly introduce themselves, with focus on our two newest members: David Elam from TRC Solutions and Jennifer Port from ExxonMobil Chemicals. Welcome David and Jennifer!

Update on Potential Presenters for Environmental Session: The Excel file that Mark U. and Brandon prepared, and Walter Postula forwarded prior to the telecon was used as the basis to briefly update the subcommittee on status of each of the potential presenters. Please see spreadsheet for full details.

- Matthew Martin – Honeywell UOP – “Smokeless Operation of Flares”
Indicated interest, but has made no commitment at this time.
- Colin Deller – Honeywell UOP – “Practical Low NOx Burner Retrofit”
Indicated interest, but has made no commitment at this time.
- Brian Duck – Zeeco – “Flare VISR”
Has provided updated abstract. Still interested in presenting.
- ~~Emissions measurements when decoking to firebox – ACC? Kari Enqvist?~~
Kari Enqvist now on EEPC Decoking Emission Work Group. Not able to keep EPC deadlines, and perhaps not allowed to publish for EPC.
- RTR/EMACT General Update – Steve Smith – LyondellBasell
Steve confirmed to present, likely 1 ½ to 2 “slots” needed.
- RTR/EMACT Testing Methods – David Elam – TRC
Abstract provided, interested in discussing emission testing methods
- Olefin Plant Water Usage Reduction – Bill Celenza – KBR
Provided abstract, interested in presenting.
- ~~Identification of Process Leaks to Cooling Water~~
~~KBR asked about this topic as well. No specific response.~~
- Wet Air Oxidation – Mark Clark – Siemens Energy
Abstract provided, still interested in presenting.

The two Honeywell UOP (Callidus) papers are not part of our session currently as we are full, with five papers (2X length for RTR/EMACT general update). Feedback to them is that they can choose one as a “stand-by” for the environmental session, or they can submit one/both to another session at the

Spring Meeting. Rick Beleutz will forward Steve Smith's contact information to David Elam, so David can avoid significant overlap with Steve.

The Environmental session is scheduled for Wednesday morning, April 3, 2019. The Big Data session was scheduled opposite Environmental, but at the Main Committee meeting Thursday night the Big Data session was moved to Tuesday opposite Operations and a new session on Coil Metallurgy is now opposite Environmental.

Other Potential Topics for Environmental Session: Still may be interest on the topic of metal emissions from furnaces and how the new E-MACT will impact. Walter Postula mentioned an e-mail sent to the general EPC address (from an ExxonMobil employee on the ACC workgroup) regarding use of prior EPC paper data to support a Whitepaper to the EPA on procedures to minimize metals emissions. Walter will forward contact information to Jennifer Port for discussion internally in ExxonMobil. Walter will also forward NOVA Chemicals paper from 2018 EPC on Chrome (VI) to Brandon.

Decision on Abstracts to Include in Environmental Session: Above discussion shows five abstracts we wish to include in our session. Request is made for all on subcommittee to review Excel sheet and provide feedback to Mark U./Brandon by October 19th. Mark U. and Brandon will then send out e-mail to notify presenters of acceptance and provide them with author guidelines. Necessity of providing paper along with presentation will be emphasized. David Elam will send Mark U./Brandon short "instructions" on how to upload abstracts to Confex.

Review of Action Items: Rick Beleutz to send Steve Smith's contact information to David Elam. Walter Postula will forward contact information of ExxonMobil employee who contacted the main EPC e-mail to Jennifer Port for discussion internally in ExxonMobil. Walter will also forward NOVA Chemicals paper from 2018 EPC on Chrome (VI) to Brandon. ALL provide feedback (if any) to Mark U./Brandon on abstracts in Excel sheet by October 19th. David Elam to provide Mark U./Brandon instructions to enter abstracts into Confex. Mark U./Brandon to provide "acceptance" notices to authors and instructions for uploading abstracts into Confex the week of October 22nd.

Important Date Reminders: The dates provided in the agenda were reviewed.

Adjourn: The meeting/teleconference was closed at 10:02 am.