

Contaminants & Impurities in Ethylene Plants Subcommittee – May 18th, 2023 Meeting Agenda

Team Members

Robert Alvers	X	Scott Hailey	X	Ross Perchuk	X
Andre Bernard	X	Omar Hamid	X	Matt Pretz	
Joice G. Boll	X	Dwight Hines		Debby Rossana	
Jessica Burgin	X	David Hood		Yong Wang	
Mark Davis	X	Joe Lally	X	Mark Whitney	
Sherri Elder		Vinay Naik		Lisheng Xu	
Alex Fritz	X	Jennifer Nill	X		

1. Anti-trust statement

“No activity of the Committee shall involve the exchange, collection or dissemination among competitors of information or be used for the purpose of bringing about or attempting to bring about any understanding or agreement written or oral, formal or informal, express or implied, among competitors, with regard to costs, prices, or 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.”

2. Updates from Main EPC Committee

No update.

The 2023 papers have been uploaded and available on the EPC web site.

- **Review Feedback from 2023 Session**
- Review the Poll Results:
 - We got a 4.7/5 score (67% gave a 5 ranking, 33% gave a 4 ranking). A total of 6 people rated the session.
- 2 feedback comments received from slido
 - Great blend of market analytics, new technical topics and current ops advice.
 - Good subject matter
- Future topics
 - Alumina forming tubes case studies.
 - Caustic impurities
 - Safe alternatives to lead oxide for arsine removal in cracked gas and refining off gas streams – Jay Gorawara Honeywell UOP

- Interest in presenting
 - Jay Gorawara or colleagues – Lead oxide alternative for arsine from cracked gas.
- Direct in person feedback
 - Some negative feedback relative to the session competing against technology.
 - Positive feed back on the 2nd half of the session on sulfidation.

3. 2024 Session Chair & Co-Chair

Andre Bernard – Session Chair
Sherri Elder – Session Co-Chair

To be communicated to the Main EPC Committee

4. 2023/ 2024 Roster

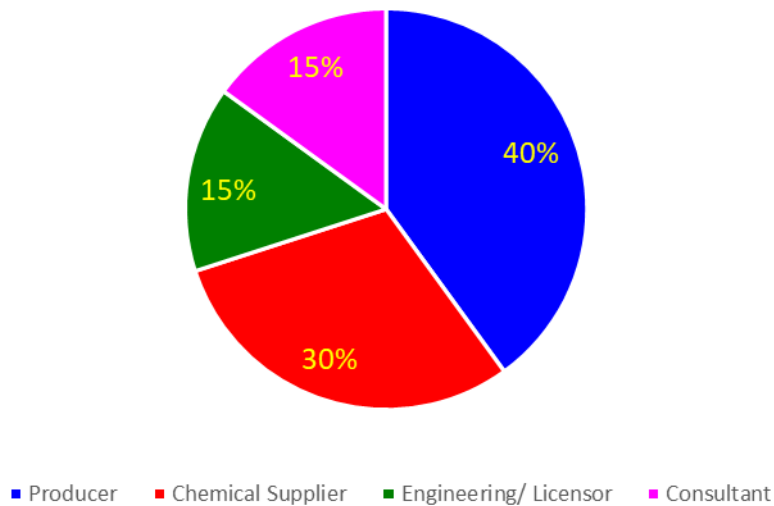
- **New Members**

- Joice G. Boll, Dorf Ketal
- Alexander Fritz, NOVA Chemicals

- **Review Roster**

- Split between Producer/ EPC's/ Vendors

Subcommittee Membership Breakdown



- We have a total of 20 members. The subcommittee roster has been updated and distributed to the subcommittee members. Please review and forward any discrepancies to Andre.

5. Brainstorm Ideas for 2024

Review/ Cleanup 2023 Standby List

Advances in Purification of Monomers for Petrochemical and Polymerization Applications

- Honeywell – UOP Abstract submitted to the 2023 session but rejected due to a filled-up session. (Scott to follow up if there is interest for 2024)

Potential Contaminant from On Purpose Propylene Catalytic De-Hydrogenation.

- Dow technology. Idea entertained for 2023 but Dow was not ready to share in the public domain. Will review if there is potential for 2024. (Mark D. and Matt to follow up).

Popcorn Polymer

- Defer to next year due to Ed Mohundro being contracted by NALCO relative to current litigations.

Feedstock CO2 Capture – Amine Technology (Omar to follow up)

Oxidative coupling of methane to ethylene (Jessica to confirmed status with Dave Smith)

Pipeline Contaminants (glycol, drag reducer etc.)

- We have been unsuccessful in the last 2 years to get involvement from gas companies. (Joe to explore if things have changed)

C3/C4's Recycle to Furnace (Confirm status/ potential with Yong)

Impact of higher volume of ethane cracking on Primary Fractionator - Industry Experience/ Impact on CGC (Joice to explore potential)

MEA & NH3 issues

- Could probably extend the idea to NOx gums. (D. Hood, Dwight, Debby to check potential paper)

Contaminants Associated with Unusual Feedstock (ex. Ethanol, waste coal, etc.)

- Suggested to frame the idea around oxygenate content from unusual feedstock. Could make this a subcommittee paper based on literature review. (Ross & Omar to further develop the idea)

New Ideas

Pyro Oil from Plastic Waste

- Potential follow up paper from University of Ghent (Yong to follow up)
- Potential Paper on Silicon Removal. Silicon as a contaminant in plastic waste recycling. CPChem working with other companies (Axens, and others). (Jennifer to follow up)
- Naphtha blending with Pyoil from plastic waste – any issues (Joe to follow up)
- Industry experience in processing Pyoil from plastic waste (Jennifer/ Robert will check if plant experience can be share)
- **Lead oxide arsine alternative for arsine from cracked Gas** (Scott H to follow up with Jay Gorawara or others)
- **Manganese oxide alternative for arsine from cracked gas or share refining streams** (Ross to follow up)
- **Tutorial on Removal of Contaminants**

Currently working on the idea of a tutorial session on contaminants/ impurities removal. The tutorial would be divided in 3 parts.

- Adsorption/ Molecular Sieve (Jay Gorawara)
- Filtration (Pall ?)
- Chemical Route – Inhibitors/ Dispersants (Debby Rossana/ Sherri Elder)

Debby Rossana would be the tutorial session Chair.
Jessica Burgin would be Co-Chair

6. Technical Discussion

Contaminants Database 2023 Update Review

- The database has been updated and provided to the EPC for upload on the EPC website.

Contaminants Database Procedure (Ensure Continuity)

- We need to develop a procedure for the database update to ensure long term continuity. We are looking for volunteers in developing the procedure, learning, and becoming part of a database owner group. Email Andre if interested.

7. Other Business

None

8. Schedule Next Meeting

Next Meeting June 22nd, 2023 at 15h00 CST

2024 Ethylene Producer Conference

Paper Idea List and Status

Number	Idea	Title	Sponsor	Authors	Status
1	Follow up paper on Pyoil from plastic waste - University of Ghent		Yong Wang		Potential
2	Silicon as a contaminant in plastic waste recycling - CPChem & Other Companies		Jennifer Nill		Potential
3	Naphtha/ Pyoil blending - potential incompatibility (ex: asphaltene)		Joe Lally		Exploratory
4		Advances in Purification of Monomers for Petrochemical and Polymerization Applications	Scott Hailey	S. Caskey, J. Gorawara, and A. Hatami	Abstract submitted in 2023 but rejected due to filled-up session
5	Lead oxide arsine alternative for arsine from cracked gas		Scott Hailey	TBD	Idea submitted in the 2023 EPC SLIDO Poll
6	Manganese oxide arsine alternative for arsine from cracked gas or share refining streams		Ross Perchuk		
7	Potential Contaminant from On Purpose Propylene Catalytic De-Hydrogenation		Matt Pretz		Potential for 2024 - Mark will follow up with Matt
8	Feedstock CO2 Capture - Amine Technology		Omar		Looking for potential author
9	Pipeline Contaminants (glycol, drag reducer etc.)		Joe (with Gas Co.)		Exploratory
10	Oxydative coupling of methane to ethylene		Jessica		Exploratory
11	C3/C4's Recycle to Furnace	To be determined	Yong Wang		Exploratory
12	Impact of higher volume of ethane cracking on Primary Fractionator - Industry Experience/ Impact on CGC	TBD	Joice Boll		Exploratory
13	MEA & NH3 issues/ NOx	TBD	David Hood/ Dwight Hines Debby Rossana		Exploratory
14	Unusual Feedstock vs oxygenate	TBD	Ross Perchuk/ Omar Hamid		Exploratory
Paper Idea on stanby list for future EPC					
1	Poporn Polymer - TCP Incident (Check with CSB)	TBD	Andre Bernard/ Debby Rossana	Ed Mohundro	Defer to 2024 due to timing on CSB report release
2	Popcorn Polymer Issues at NOVA cracker	TBD	Andre Bernard	Georgia Auger	Potential - Defer to 2024. To be part of half session on popcorn polymer
3	N2O & NO Removal from Steam Cracker Feedstock	TBD	Mark Whitney	Mark Whitney (Linde)	Client Commitments Issues - Confirm Status
4	Contaminants vs ODH technology		Mark Whitney		Linde not ready to share in the public domain - Will keep idea on the standby list
5	Membrane to Cleanup Natural Gas - Paper would have to be stronger on the Chemistry Side.	To be determined	Sherri Elder	TBD	Idea will remain on the stanby list

6	Follow up paper on Debutanizer recycle	To be determined	Andre Bernard		No Progress
7	Contaminants associated with unusual feedstock (ex. ethanol, waste, coal, etc). Base on literature review	TBD	Andre Bernard	Subcommittee	Exploratory/ modified idea focusing on oxygenate put on the main list
8	Feedstock Contaminants Database & Specific contaminant	Chlorides & Acetaldehydes / Sulfur Species Overview through the Feedstock Contaminants Database	Andre Bernard	Subcommittee	Standby idea to be use as contingency if needed