

# Contaminants & Impurities in Ethylene Plants Subcommittee – March 5<sup>th</sup>, 2024, Dry Run Minutes

## Team Members

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

### 1. Anti-trust statement – 8:00 AM

*“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. Anti-Trust Statement & Welcome – 8:00 AM

- Presentation to target 20 minutes with 5 minutes allocated for questions (total: 25 minutes)

### 3. Detailed Characterization of Plastic Pyrolysis Oils and Their Contaminants By FT-ICR MS and GCxGC (Presenter: Y. Ureel) – 8:10 AM

Time: 19 minutes 45 seconds (good)

Comments:

- Good presentation
- Why 2 different methods – explain why.
- NO – any Nitrogen/ oxygen bond – some NO have been identified but detailed structure not identified. Interest in NO driven by the potential NO to NOx gum downstream the olefins unit.

- Lot of chart/ lot of information. Suggest focusing on 1 or 2 (Virgin and PE) instead of 4. Just mention that there is more in the paper.

**4. Impact of  $\alpha$ -Olefins and Diolefins from Polyolefin Pyrolysis Oil to the Catalytic Cracking Mechanistic Pathways (Presenter: B. Goshayeshi) – 8:40 AM**

Time: 20 minutes 52 seconds (Good)

Comments:

- Couple of typos
- Good Intro
- Nice slide
- Why did you pick the 2 olefins – Why the C10's – Pyoil high C number, use C10 as a representative model compound.
- A lot of data – Charts difficult to read – One slide for the chart & more focus on coke formation.
- Change on one plot to show temperature impact.
- Guidance to the industry relative to olefins & di-olefins ? blending & Hydrotreating in the conclusion.
- Suggest use a different color coding for temperature.

**5. Effect of Feedstock Composition and Operational Temperature on Coke Formation during Steam Cracking Reactions (Presenter: H. M. Shirazi) – 9:10 AM**

Time: 28 minutes 7 seconds (Need to shorter the presentation to 20 minutes)

Comments:

- To save time – maybe focus only on radiant section, results and maybe skip some analytical methods discussion.
- Benzene Typo – slide Naphtha – Benzene Online coking
- Slides – large titles & little words. Suggest more consistency.
- Jumping from analytical methods to results – could focus more on results (would save time).
- Slide 12 – confusing, which components influence coking.
- Confusion around comparing on line & off line coke measurements. Not clear on the objective.

- Cross over temp low, stm/HC ratio in range for naphtha
- Function of N2 – internal standard for quantifying the product analysis
- He – purge gas for the balance.
- Slide 18 – Horizontal vs vertical reading not intuitive – suggest different color

## 6. Break – 9:40

## 7. Advances in Dechlorination of Plastic Pyrolysis Oil (Presenter: D. Miskin) – 10:00 AM

Time: 26 minutes 21 seconds (need to shorter the presentation to 20 minutes)

### Comments:

- Good topic – but try to be less salesy (especially last slide). Mention Evonick too much.
- Some slides can be taken off.
- Slide 2 a bit blurry. Slide 5 – text small relative to oil picture
- Slide 12 – Suggest just to put the ASTM #, method title & method applicability.
- Rocket unit – lacking description/ more explanation
- Slide 9 – color vs impurities what was removed.... High level description what would drive a color change.
- Suggest introducing data earlier.
- Slide 10 Bauxite 1<sup>st</sup> & Zeolite 2<sup>nd</sup>, - refer to the tutorial on adsorbents in the afternoon.
- Question around the effectiveness reported on Zeolite & Bauxite – not clear that they are not effective. Need to support with data.
- Regeneration on site or off site. Bauxite on site, not clear that others are regen offsite.
- Adsorbents results still show high level of chlorine (dilution ?)
- Adsorbents & Hydro processing – possibility/ customer specific.
- What is a cracker typical chlorine spec.

**8. Ammonia: Sources, Impacts, Monitoring, and Solution. (Presenter: D. Hines) – 10:30 AM**

Time: 38 minutes 38 seconds (exceeds the allocated 20 minutes, considering moving the paper last on the agenda but should remain below 30 minutes)

Comments:

- Great presentation
- War story about COS not NH<sub>3</sub>. Reason it wasn't about ammonia, is because of the mitigation used.
- Slide 19 – suggest showing 2 equations.
- Suggest having Dwight as last presentation – Potential issues with deviating from the program.
- Andre will check if we can get the program change (having Dwight last presenter).
- Slide 5 – Elaborate more about the problem.
- Mole sieve – check with UOP, refer to tutorial.
- Save the war story for next year – Potential problem with BASF, not an option.
- Suggest doing the war story at the end.
- Slide 15 – what would be a target pH (QW close to neutral or a bit below – Process Water stripper down to 6 on an ammonia event)
- Need Dwight Bio. (done)

**9. Tar in Quench Systems: Causes, Consequences, & Care Solutions. (Presenter: B. Crom) – 11:00 AM**

Time: 20 minutes 22 seconds (good)

Comments:

- Paper – written by different people/ feels like there is some discontinuity between the topics.
- Slide 5 – Hard to read
- Slide 8 – Suggest adding a radical / chemistry looks like light ends
- Slide 10 – hard to read
- Does not see coke as precursor of tar.
- Slide 20 & 21 – hard to see. Mention to caustic in the paper. Picture on 21 on not pretty.

## **10. Closing Remarks – 11:30 AM**

Bio's & Questions – Missing Dwight (done)

Consider meeting for 5 – 10 minutes – Andre to schedule a 10 -15 minutes face to face meeting at the conference

Need the final presentations by March 15<sup>th</sup>, to allow time for setting up the paper in box, paper shall be provided to Andre and Sherri by Wednesday March 13<sup>th</sup>.

Thanks to all the speaker for an effective and useful dry run session.