C-MACC

Chemical Market Analysis & Consulting Company

September 20, 2020

Products Mentioned

- *Polyethylene*
- *Polypropylene, PVC*
- *Polyurethanes, Chlorine*
- *Epichlorohydrin*
- *Caustic Soda*
- *Paraxylene, Benzene*
- *Oxo-Alcohols, Ethane*
- *Naphtha, Propane*
- *Ethylene, Polystyrene*
- *EDC, Acetic Acid*
- *Methanol, Hydrogen*
- *Propylene, Butanediol*
- *Sulphuric Acid, Base Oils*
- *Crude, Natural Gas*
- *Isopropyl Alcohol*

Companies Mentioned

- *Westlake, Formosa*
- *Shintech, OxyChem, Olin*
- *LyondellBasell, Braskem*
- *CP Chem, Chemours*
- *Olin, Tronox, Venator*
- *Dow, ExxonMobil*
- *Pinnacle Polymers*
- *CITGO, Lotte Chemical*
- *OQ Chemicals, Rohm*
- *Sumitomo Chemical*
- *Tempur Sealy, Casper*
- *Covestro, BASF*
- *Huntsman, Tosoh*
- *Wanhua, Kraton, 3M*
- *Axens, Brenntag*
- *Celanese, Fluor, Hengyi*
- *Uponor, Sinochem*
- *ChemChina, GM*
- *Hyundai Motor*
- *COIM USA, Aramco*
- *TPPI, Pertamina*
- *Sinochem*
- *LG Chemical, SABIC*
- *ALPLA, Arkema*
- *Contemporary Amparex Tech.*
- *Neo Lithium, Denka, Eni*
- *Polyplastics, PPG*
- *Repsol, Ford*

C-MACC Sunday Recap

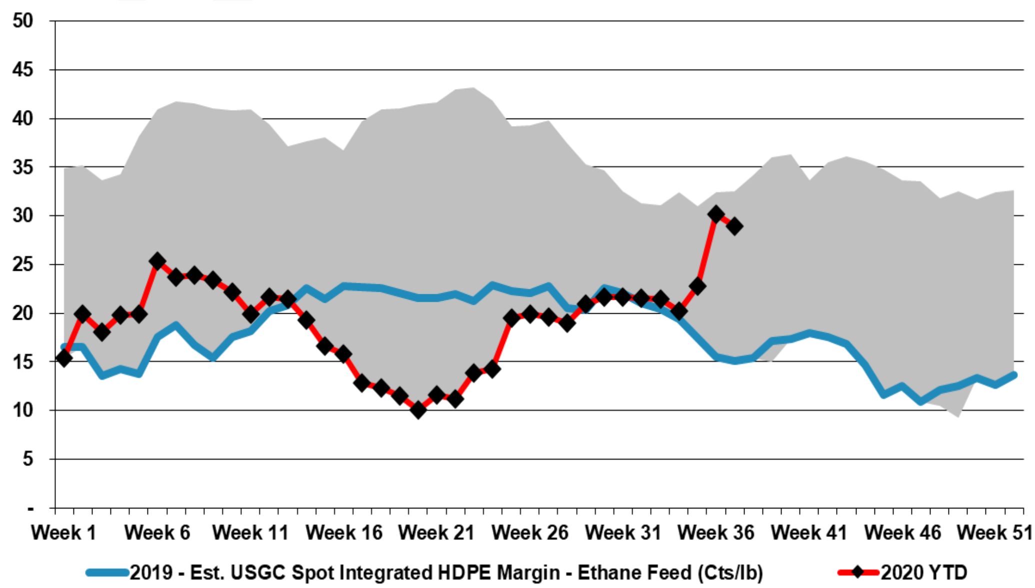
A Stormy US – Makes It Difficult To Take The Real Temperature of the Global Chemical Industry.

- **As we try to assess the underlying health of the industry in 2020, we have been frequently distracted by abnormal events. COVID is clearly the major distraction this year, but another potential tropical storm/hurricane stalling over the Texas coast and dropping Harvey like rain is another confusing/complicating factor.**
- **The investment wave in the US from 2016 to 2020 (and lack of investment elsewhere) has created dependence on US supply – especially for ethylene and derivatives. While there is enough global capacity to meet global demand – have we hit a peak in 2020 of the World's reliance on a region that is prone to extreme weather for 3 months of the year? This dependence ebbs from Q4 2020.**
- **We also discuss the excessive apparent demand in China and preview our late September price forecast which should be published early this week (although we reserve the right to delay if the current storm washes out more US capacity).**

This week we discussed 26 Chemical and related products and a record 57 Companies

It is tempting to liken the underlying health of the chemical industry with the broader global COVD problems. Waves of uncontrolled and unpredicted issues have caused confusion, caution and are not going away. Our base view is unchanged and only fortified by the resurgence of COVID today – with Europe already back to prior peak infection rates and the US rates turning back up again following return to college and school attempts. We are biased by our decades of cyclical experience and see the macro outlook undermining commodities globally once some level of economic stability is reached (likely at a much lower level than currently hoped). Yet we see peaks in US polymer profitability in September – Exhibit 1

Exhibit 1: The slight decline in profitability last week will likely reverse if the storm hits the major manufacturing areas in Texas.



Source: Bloomberg and C-MACC Analysis

Tropical Storm Beta is moving towards us as we publish. The risk is rain and lots of it. Harvey was not a destructive Hurricane because of high winds – it was destructive because of flooding. The level of flooding shutdown almost everything chemical related in its path. While Beta does not have the Hurricane strength of Harvey – weather experts completely underestimated the rainfall of Harvey as it stalled. The risk with Beta is that it also stalls – stay tuned.

If you run through the Headlines sections of our Dailies you will see a dramatic growing trend towards announcements around Sustainability and Carbon. We would direct you back to the piece that we wrote last week on ESG and climate change and while that sets the tone, it will be stale quite quickly in our view. 2020 would have been a year of meaningful developments in terms of climate action and plastic waste regardless of COVD. What has happened is that with the COVID distractions of the first half of the year – all the action and all the noise is being condensed into the last 5 months of the year – aided by stimulus plans and proposals (especially in Europe) which focus on renewable energy and sustainability/circular economy. In addition, the flames of public pressure have been fanned by possible examples of climate change (such as the West Coast fires and glacier destruction), which when added to the pictures of the lack of pollution associated with the shutdowns earlier in the year, add to a stack of potential empirical evidence to help the activists and inform the public. ***Of course, it might just get cooler and the science might be wrong***.

The risk of corporate and investor over-reaction and what will inevitably be disappointment is very high. ESG funds continue to attract more investment dollars and continue to outperform – the S&P500 ESG index is 200 basis points higher than the base S&P500 index so far in 2020 (for context, the S&P500 is only up 3%).

This is a broad generalization, but the only thing Industrial and Energy companies are talking about in September – outside of COVID – is sustainability and climate change goals.

- We picked up 29 headlines in our 4 dailies alone this week
- Two virtual chemical investor conferences this week did not include a presentation or commentary lacking content on sustainability and climate
- Air Products put the most impressive stake in the ground – planning to reduce its carbon footprint by 30% by 2030 – as a large global producer of hydrogen and with equity ownership in a number of gasification projects – operational and under construction – Air Products has a very large global CO2 footprint.
- Dow has indicated a 15% reduction in its CO2 footprint by 2030
- Shell will invest (a lot) in replacing all of the furnaces at its Moerdijk (Netherlands) ethylene unit with more efficient units that can create the temperatures needed with lower fuel consumption.

These are just a few examples.

The other big change is happening in finance. If you are in clean energy and energy transition you can borrow for next to nothing. If you are in old energy you may not be able to borrow at all! Financial institutions are also under pressure to "green" up their lending portfolios and to not support fossil fuel investment.

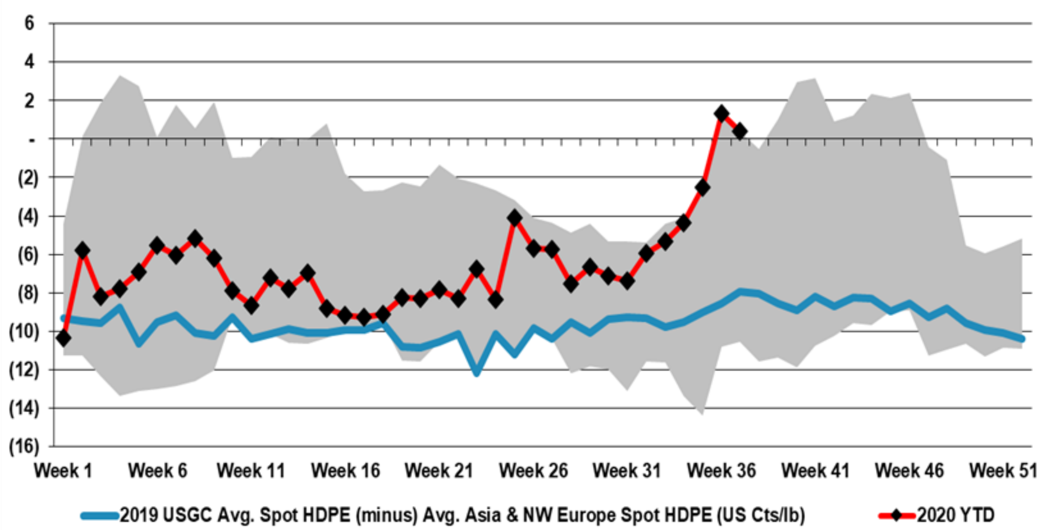
There about 5 Perspectives Pieces imbedded in what is summarized above – and we will get to them – including what we believe will be a bright future for hydrogen. For the moment, expect the news flow around climate and sustainability intent to continue – promises will be made, and targets will be set. The interesting part will be how to invest to capitalize on the promises that can be met and on those that cannot – more to come.

Otherwise last week…

We focused on the strength in pricing caused by Laura. Laura was not one of the most devastating Hurricanes that we have seen in the Gulf, it did not take that much capacity off line, but what has been taken off line has mostly been caused by the failure of power grids and the failure of some logistic assets. As we push more and more for renewable power in the US we are closing older traditional power plants and as has been seen clearly in California over the last few weeks we have taken redundancy out of the system – which is something that needs to be addressed as the transition to renewables continues. Chemical companies on the US Gulf with their own co-gen facilities have relied on the grid for back-up and for large portions of their base electrical need. As companies like Dow and others sign renewable power contracts to meet sustainability goals they would be wise to keep any idled co-gen facilities on stand-by and be sure that they do not write contracts with customers around low carbon or "blue" products that do not allow for the occasional use of traditional power in the event of a power grid failure.

Exhibit 1 showed the profitability of US HDPE. Exhibit 2 shows that US spot polyethylene prices are now higher than Asia prices. This is completely upside down given the need to export from the US and the need to import in Asia. For this time of year, we are at a 5-year high and a high that existed before the US added all of its polyethylene export capacity.

Exhibit 2: Current US PE premium price points and general market conditions are not sustainable given reliance on export demand for more than 30% of production and also considering that overseas integrated PE production assets reflect a profit – in our view, a supply response is ahead of us on a global scale and this sets up to lure in new Asia additions faster than planned – we approach the market with caution – September could be a peak – but then we have Tropical Storm Beta!

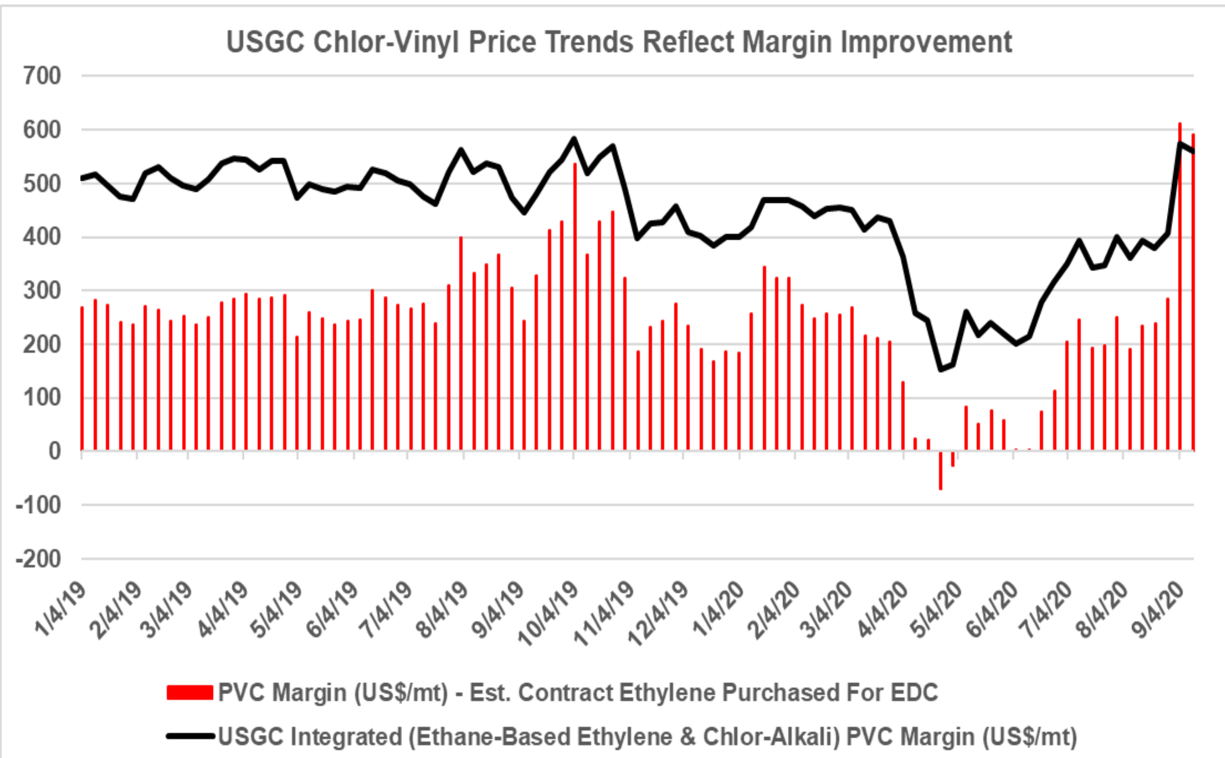


Source: Bloomberg and C-MACC Analysis

In case we have not said this enough already, we like PVC over the other polymers, despite the current rally in polyethylene and polypropylene pricing that has been largely caused by outages as well as above trend demand for polyethylene and some PPE polypropylene applications because of COVID-19. While it is clear that we are a long way from the end of COVID and that increased packaging and PPE demand will linger well into 2021 and possibly longer if eating habits change more permanently (more eating at home and more delivered food), eventually the recycling and single use initiatives will hurt polyethylene and new supply will hurt both polyethylene and polypropylene.

PVC on the other hand will play a large part in infrastructure and home building growth that will probably last for several years as countries push for job growth and try to restimulate post COVID. In addition, PVC does not have a meaningful wave of new capacity on the horizon. While PVC may not have seen the spikes in pricing that polyethylene has seen over then last couple of months, it is showing steady, and we believe more sustainable progress.

Exhibit 3: We continue to take a positive view of the PVC market and its recovering economics, as we find that it has occurred based in part on tight supply/strength in demand abroad and there are fewer new capacity additions set to arrive in 2021/22 relative to PE and PP that could rattle export economics



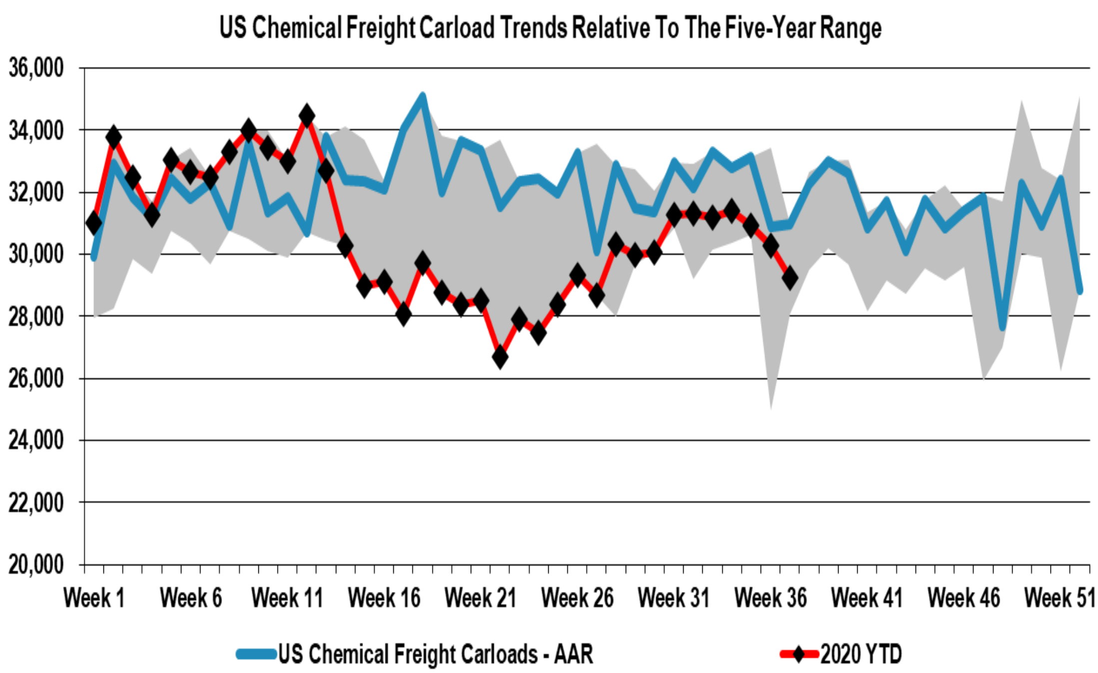
Source: Bloomberg & C-MACC Analysis, September 2020

What is equally interesting is that while we are focused on production shortfalls logistical constraints in the US, demand for all products in China seems to be riding high. The county has seen its reliance on imports rise over the last few years as the low gas price (relative to oil) in the US gave the competitive baton clearly to the US for a long enough period for China to abandon its coastal integrated ethylene build out, based on imported naphtha, and instead chase coal gasification based project that looked good when oil was above $100, but in theory make little sense with oil where it is today.

Since the restrictions eased in China post COVID, demand growth for chemicals appears to have accelerated. Imports are rising and prices are high enough to run the methanol to olefins units, even with imported methanol. All of the economic indicators suggest that China is incentivized to run every chemical plant that it has and yet its thirst for ethylene and derivatives remains very high. We have questioned already this year whether there is some sort of inventory build going on, but it does not look like it. We explore one possible longer-term thesis in the price forecast that we will publish shortly.

One of the reasons why the US markets are showing pricing strength is logistics. The decline in US Chemical Railcar movements in the most recent data is likely more a function of storm-based production outages and rail network constraints than COVID driven demand declines. Spot price strength for a number of products is likely a function of immediate needs and delivery delays. Hurricanes are unpredictable and can create significant damage, but part of what has happened in Louisiana over the last few weeks adds a voice to the idea that we need additional infrastructure spending in the US.

Exhibit 4: US Chemical railcar traffic fell WoW, and we also find declines in Canada and Mexico – see AAR chart in LINK. We link this to USGC production outages and some derivative production issues.



Source: AAR, Bloomberg & C-MACC Analysis, September 2020

Headline Summary

Making More Money – we think we should title this section "It's All Good"

- Dow boosts Q3 profit outlook on packaging, durables, personal care
- LyondellBasell seeks October price increase on US polypropylene (PP)
- China's imports of propane/butane and ethane to feed new plants will growth in 2021-22 – see LINK to article discussing this pull (which we have also been noting) but also shows a chart that aligns with our data from earlier this week showing virtually **all major China light olefin production processes (MTO, Naphtha cracking & PDH) reflect notable profit improvement relative to the start of 2020 and are generally at levels seen at this point last year. Indeed, this is positive for an Asian production/supply**

response (new units and increased production at current ones) that we've been noting during the past few weeks.

- 3M Reports Sales Information for Month of August 2020. Sales grew 2% YoY in August 2020, and the month includes one less business day relative to August 2019. Two items stood out to us: a) Business mix - Organic local-currency sales grew 6% in Health Care, 5% in Safety and Industrial, and 2% in Consumer, while Transportation and Electronics fell 11%; and b) Geographic mix - Organic local-currency sales were flat in both the Americas (including the U.S. up 1%) and EMEA, while Asia Pacific fell 5% (including China up 6% and Japan down 15%).
- Brenntag updates its outlook for 2020 after suspending its guidance in April 2020 amid COVID-19 uncertainty – see LINKS 1 and 2. Management notes that operating EBITDA in July and August 2020 were slightly above the prior-year figure on a constant currency basis, and Mgmt. now predicts 2020 EBITDA between €1-1.04bn that compares to 2019 at €1.0015bn and slightly higher than Street expectations at the mid-point per our view.
- Uponor reinstates its guidance for 2020 and expects comparable operating profit growth YoY. Also, see LINK.
- OQ Chemicals raises prices for oxo intermediates, carboxylic acids
- China PE demand good so far in 2020 but beware of risks ahead
- Propylene oxide (PO) prices in China hit a new high today, continuing their bullish run for the 10th consecutive week, driven by rebounding demand in the domestic polyether flexible foam sector – see LINK.
- Tempur Sealy provides update noting improved business trends. Its management estimates sales up 30% in 3Q and notes that it "continues to experience capacity constraints for US Sealy products, including supply chain limitations outside its control.

ESG/Climate Change – "all is changing"

A lot to think about

- ALPLA to build €15-million HDPE recycling plant in Mexico
- China's Contemporary Amparex Technology (CATL) to invest in Canada's Neo Lithium
- Denka to invest about $35 million to reduce emissions at Chiba site
- Eni has proposed building bio-refineries in Abu Dhabi: CEO
- Repsol CEO sees green targets as key to growth
- EU green push 'hugely challenging' for chemicals, emissions burden should be shared - Cefic
- Ford announces plans to build electric F-150 pickup truck. Also, see LINK.
- Styrolution, Trinseo progress plans for polystyrene (PS) recycling plant in France.
- Australia plans $1.4bn in low emission energy projects
- EU parliament votes to allow some gas projects to get green transition money
- Hydrogen study in Texas aims at showing cost-effectiveness of fuel
- Hydrogen offers 'significant' opportunities to gas grid players
- China continues to dominate global EV supply chain: BNEF
- EC wants EU to cut CO2 emissions 'at least 55%' by 2030, use more hydrogen

- EU proposes tougher 2030 emissions target, will impact chemicals
- Asia's oil giants are planning for a future with less crude, more hydrogen
- Pandemic hastens crude's demise but hydrocarbons to play a role for decades - BP
- Recycled feedstock to fuel up to 60% of global plastics in 30 years - OMV
- GM to manufacture own "family" of EV drive systems, motors
- South Korean automotive manufacturer Hyundai Motor has started exporting its proprietary fuel cell systems to non-automotive companies in Europe – see LINK
- Chemicals demand for crude to fall as energy transition takes hold
- Enterprise Products Partners cancels Permian to USGC crude pipeline
- Fossil fuel demand to take historic knock amid COVID-19 scars
- Why 'peak oil' may coincide with 'peak plastic'
- Recycling plastics as important as ever in new normal, consumers' awareness intact
- French strategy boasts largest 2030 electrolyser hydrogen capacity
- Groups propose 0.5% global fee on basic chemicals
- US Plastic Pact sets more aggressive recyclability timescale than resin producers

The week of September 14th – click on the day or the report title for a link to the full report on our website

Monday – Weekly Margin and Pricing Analysis

Global Chemical Update – Lay Down Sally

- **USGC storm Sally is targeting East Louisiana/West Mississippi this week, and we see notable production risk in chlor-vinyls. Given offline capacity at Westlake in Lake Charles after Laura, an open US vinyl-chain export window to Asia (Ex. 1, 43) and healthy demand, we foresee price strength in US PVC.**
- **We reiterate our view that recent windfall profits following Hurricane Laura will only work to spur global production of both PE and PP – we flag that US PE and PP values reflect spot premiums relative to Asia currently.**
- **Other items of note range from the global decline in naphtha values WoW, to the modest fall in US spot ethylene relative to an uptick in propylene WoW, to USGC natural gas weakness outpacing US spot methanol declines WoW.**

Tuesday

Riders On The Storm – Sept. US Polymer Price Hikes Find Support, Mattress Sales Spring

- **We discuss US chemical production assets in Mississippi/Alabama that are in the path of Hurricane Sally and findings that suggest more storm activity ahead which we view as a plus for September US polymer contract price hikes. We continue to see more lasting support in PVC values relative to PE and PP, but there is clearly potential support for PE and PP for a bit longer.**

- **We note recent updates from mattress and home product producers, such as Temper Sealy and Casper, that ring positive for urethane producers, such as Covestro, BASF, Dow, Tosoh, Huntsman and Wanhua.**
- **Other items worth note today range from more corporate items (e.g. Dow, Lanxess, OQ Chemicals, Sumitomo Chemical, etc.), to several global chemical capacity/project updates, to notable rail logistic constraints in the western US.**

Wednesday

Supply Chains Easing Back To Normal – Still A Glimmer, But Signs Of Reset Emerge

- **We find initial evidence that recent global polymer price upticks in part as a result of US disruptions is spurring production abroad – we think Asia spot trends relative to US values and Asia integrated margins support our case.**
- **We now see a limited chemical sector impact from Hurricane Sally, discuss the 3M update and re-issuance of 2020 profit views at Brenntag and Uponor, and highlight the Celanese acetyl intermediate price hikes issued overnight.**
- **Other items worth note today include additional costs for Braskem chlor-alkali ahead of a planned late 2020 restart, views on refinery investments to spur chemical production, and thoughts on more global chemical projects.**

Thursday

A Dragon Pulls The Vinyl Wagon, Propylene Views & US Chemical Rail Traffic Faces Bumpy Tracks

- **China polyvinyl chloride (PVC) prices move higher this week both on an absolute basis and relative to other major polymer values – we highlight a few items supporting our view that Asia demand is pulling PVC values higher.**
- **USGC refinery operating rates bounced higher WoW, USGC PDH units reflect a profit and USGC propane co-product integrated cracker feedstock costs reflect a similar level to ethane – with these items consider, we continue to see PGP support near-term (relative to ethylene) and discuss our case.**
- **Other items worth note today range from price increases in US polyester polyols, to USGC naphtha and propane setting sail to Asia, to mounting global news surrounding the Hydrogen market as a clean energy resource.**

Friday

Evaluating The Relatives – Ex-US PE Spot Prices Question The Durability Of Domestic Premiums

- **We compare spot polyethylene (PE) price developments in the US with overseas markets and show integrated profit margins between regions – we model US tightness dissipating on a relative basis as production returns.**

- **Dow highlights that 3Q20 conditions are better than expected (this aligns with others and our view), LyondellBasell pushes PP price hikes for October and we note several other corporate items (e.g. Repsol, Polyplastics, PPG, Eni, Arkema)**
- **Other items worth note today include industry comments noting increasing Asia petrochemical supply ahead in 4Q20, US container rates hitting record highs and Ford announcing plans for its F150 electric pick-up truck.**

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