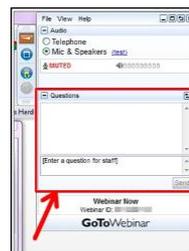


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“Why am I muted?”

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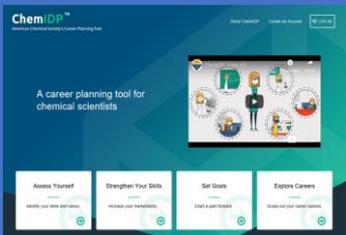
- Daily keynote speakers
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Chemistry & the Economy Series



Every 6 months we are joined by our resident expert economist, Paul Hodges for a survey of the chemical industry. Take a look back at the rises and falls in the economy and gain an understanding of what underlying forces are driving the market.

Featuring



Paul Hodges
Chairman,
International eChem



Chemistry and the Economy: 2019 Mid-Year Update

Paul Hodges of International eChem and Bill Carroll of Carroll Applied Science share an update of what has been affecting the chemical market and what companies can do to adapt to this changing world in 2019.



Chemistry & the Economy: 2019 Outlook

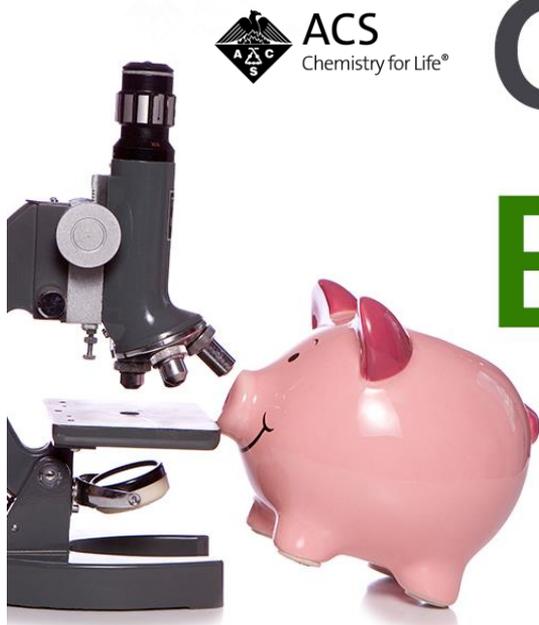
Paul Hodges of International eChem and Bill Carroll of Carroll Applied Sciences will provide an update of what has been affecting the chemical market and what companies can do to adapt to this changing world in 2019.

Blog Posts by Paul on Industry Voices

- What are the best renewable, green solutions for our industry? Let me hear from you!
- Would a Pfizer-Allergan deal spell bad news for the industry?
- Staying Warm through the "China Chill": Threat of Winter allows petrochemical industry to Spring forth new business models
- Commodities Bubble, Oil in Trouble: China's Economic Slowdown Could Mean a "Crude" Awakening for the Petrochem Industry

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Chemistry and the Economy

Co-produced with ACS Industry Member Programs

2020 Mid-Year Update

THIS ACS WEBINAR WILL BEGIN SHORTLY...

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Chemistry and the Economy: 2020 Mid-Year Update



Paul Hodges
Chairman, International eChem



William Carroll
Founder, Carroll Applied Science

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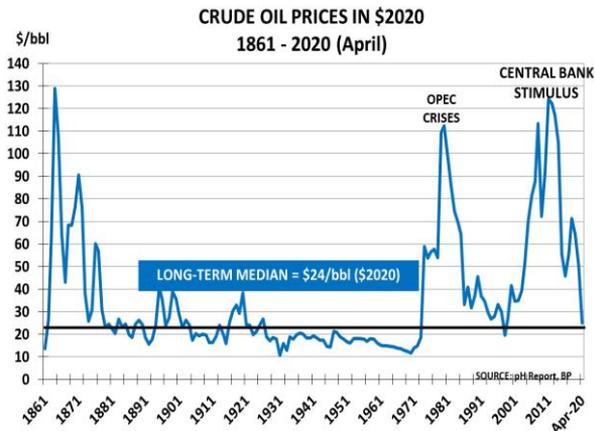
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The Impact of Coronavirus

5 June 2020



*“30 years from now, there will be a huge amount of oil – and no buyers. 30 years from now, there is no problem with oil. **The Stone Age did not end because the world ran out of stones, and the Oil Age will not end because we run out of oil.** I am a Saudi and I know we will have serious economic difficulties ahead of us.”*

“As King Faisal said in 1974, ‘In one generation we went from riding camels to riding Cadillacs. The way we are wasting money, I fear the next generation will be riding camels again.’

Sheikh Zaki Yamani, Saudi Oil Minister, 1962 – 1986
‘The Telegraph’, 25 June 2000

International eChem (IeC) is a London-based strategy consultancy advising Fortune 500 and FTSE 100 companies, investment banks and fund managers.

Our value proposition is based on viewing the economy through the lens of the chemical industry, the best leading indicator for the global economy. Our approach is data-driven, and we focus on areas where we have long-term expertise:

- ❖ The key value chains in petrochemicals/plastics – C2, C3, C4, C6, C7, C8
- ❖ Their key end-uses – autos, housing, consumer products, electronics
- ❖ Upstream developments in oil/energy markets and geopolitics
- ❖ Impact of the US-China trade war and Brexit on supply chains
- ❖ Challenges and opportunities created by moves to the circular economy

Notable successes include timely forewarnings of the 2008 Global Financial Crisis, and the oil market collapse in 2014.



Paul Hodges is a trusted adviser to major companies and investors. He publishes The pH Report and serves as a Global Expert with the [World Economic Forum](#). He is a regular speaker at international conferences, and writes regularly for the Financial Times and other leading media.

The Impact of Coronavirus

❖ The Grief Cycle

❖ Areas of Impact

- ❖ Energy, Power and Chemicals
- ❖ Reshoring pharmaceuticals
- ❖ The recovery of consumption
- ❖ Deflation
- ❖ Human Behaviour Changes

❖ Conclusions



Audience Challenge Question

ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT



Who was Elisabeth Kübler Ross?

- Swiss-American psychiatrist
- Pioneer in near-death studies
- Author of the internationally best-selling book, On Death and Dying
- Inductee into the National Women's Hall of Fame
- Time Magazine's one of the "100 Most Important Thinkers" of the 20th Century



** If your answer differs greatly from the choices above tell us in the chat!*

Elisabeth Kübler Ross' Paradigm of Loss model in relation to the COVID-19 pandemic and ensuing economic crisis

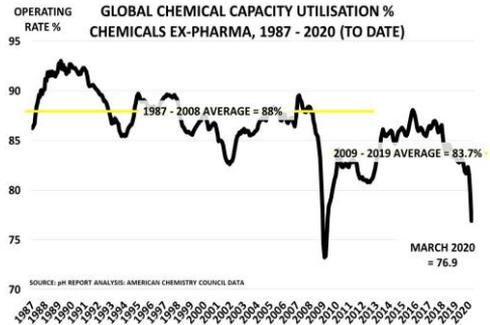


Areas of Impact : Energy, Power and Chemicals



- The collapse of demand is filling storage for oil, gas & oil products
- This overhang will affect markets for months to come
- Physical disruptions will increase as storages, ships and pipelines get clogged

- **We expect:**
 - Oil prices in the \$20s and lower
 - Refiners to push aromatics towards chemicals
 - Gas producers to push ethane to ethylene and PE
 - Ethylene and benzene to fall to roll-through economics
 - Unusual inter-product price relationships to occur



Global supply chains have proved fragile, and need to be localized –but with modern continuous technology

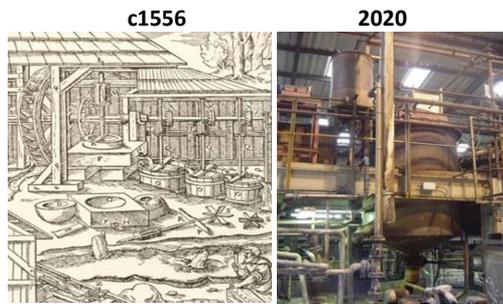
After 30 years of offshoring, India/China now supply 80% of APIs used in the USA.

They also supply the majority of generic drugs – which are 90% of the medicines taken by Americans.*

Lockdowns in both countries have now underlined the fragility of these supply chains – which need to be reshored.

But it makes no sense to reshore based on centuries-old technology.

Continuous technology is proven to be safer, **greener**, faster and cheaper

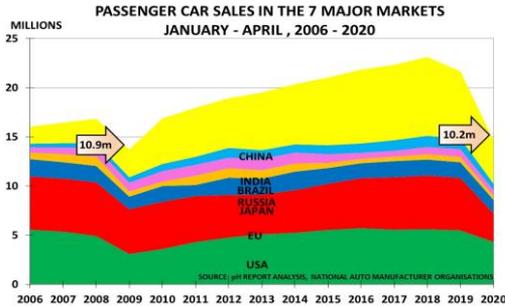


Sanofi continuous plant, UK
(NiTech technology)

*SOURCE: COUNCIL ON FOREIGN RELATIONS, MARCH 5, 2020
APIs = Advanced Pharmaceutical Intermediates

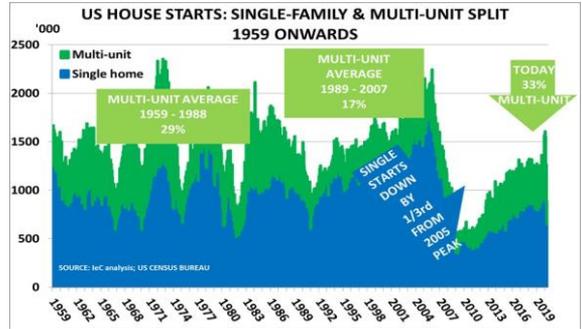


Areas of Impact : The Recovery of Consumption

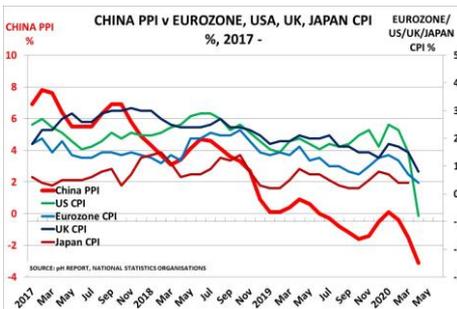


- Major sectors (autos, construction, smartphones etc.) have taken significant reductions in consumption
- Key issue is the speed of recovery and the regional differences

- **We expect significant delays to restarts:**
 - Customers financially stretched
 - Companies financially stretched
 - Ballooning government debt
 - Significant difficulties in restarting industries
 - Rolling local shutdowns for waves 2 and 3
 - Need to work off stocks built up



Areas of Impact : Deflation



- Most commentary in recent weeks has focused on the potential for a major inflationary surge as a result of the bailouts and cash grants now being organised by governments.
- We believe this analysis is profoundly misleading. For us, the key issue is that this is “replacement money”, not “new money”. At best, therefore, it will only maintain demand at previous levels.

- **We expect:**
 - An extended period of deflation will reinforce the economic downturn.
 - Just as inflation makes it cheaper to buy ahead on credit, so deflation encourages purchases to be deferred as prices will be lower in the future.



Areas of Impact : Changes in Human Behaviour

HIERARCHY OF NEEDS



"What I like doing best is Nothing," said Christopher Robin.
 "How do you do Nothing?" asked Pooh.
 "Well, it's when people call out at you, 'What are you going to do, Christopher Robin?' and you say 'Oh, nothing,' and then you go and do it." ~A.A.Milne



People are already refocusing on more basic needs –
Security and Safety

Some – perhaps many – of the current behavioural changes will continue?

- ? Lower-paid service workers valued more than financial whizz-kids
- ? Regional/national concerns rise at expense of international issues
- ? Individuals increase savings, pay down debt (especially with deflation)
- ? Pollution becomes less acceptable
- ? Leisure more focused on friends/family that eating out, City Breaks, cruises
- ? Cash no longer trash for companies
- ? Global supply chains replaced by local
- ? Circular economy becomes cost-effective
- ? Video conferencing to replace work travel

Summary – Agility, Resilience and Sustainability are key

- ✓ Auto, consumer goods, electronics demand will focus on durability/sustainability
- ✓ Supply chains will be localised and reshoring accelerated in the western world
- ✓ Speed of response will be key, with inventory eliminated wherever possible
- ✓ Lower incomes/spending concerns will further encourage second-hand markets
- ✓ The bursting of financial/housing market bubbles will impact personal wealth
- ✓ Deflation will encourage saving instead of borrowing
- ✓ We could see an extended period of civil instability in many countries
- ✓ Lockdowns will lead people to focus on the home, rather than luxuries and travel
- ✓ Mass international/internal travel opportunities will reduce



Audience Challenge Question

ANSWER THE QUESTION ON BLUE SCREEN IN ONE MOMENT



How has the coronavirus pandemic affected your career?

- I have experienced extreme negative impacts (unemployment)
- I have experienced some negative impact (under employment)
- It has not affected me at all
- I have experienced positive impact (more employment)
- Not applicable concerning employment



** If your answer differs greatly from the choices above tell us in the chat!*

Six key questions for clients and your own company in 2020

How will you ensure your business will survive and prosper?

MANAGING RISKS

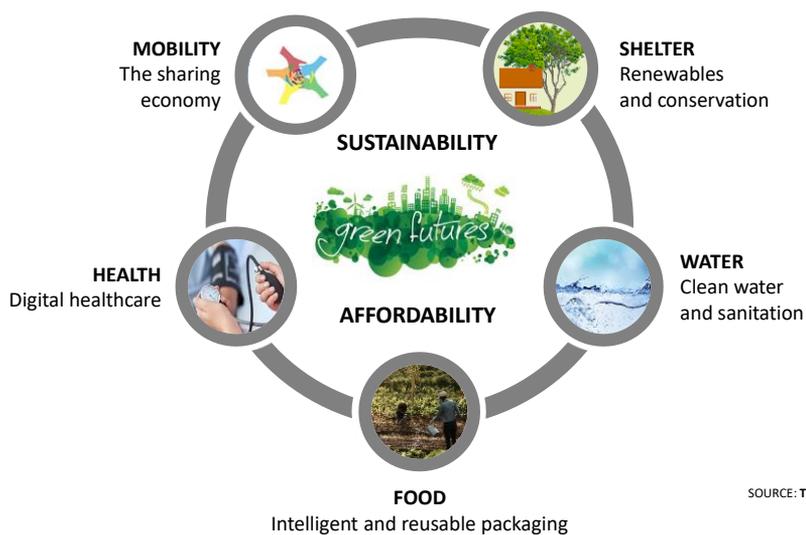
1. How will your P&L be impacted by a sustained period of negative global GDP growth?
2. How might lockdowns and deflation impact key customers/supply chains?
3. What is your contingency plan for today's major oil/interest rate volatility?

INVESTING TO BUILD THE BUSINESS

4. How will you compete profitably as sustainability rises up the agenda?
5. Can you create new service-led offerings to meet emerging market needs?
6. Can you gain first-mover advantage whilst others hope for "business as usual"?



Globalisation provided “stuff” for babyboomers: Sustainability is service-led and provides “solutions”



SOURCE: THE PH REPORT



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