The Impact of Chemicals on China and its Development

- China’s chemicals contribute to 15-20% of global industry turnover
- China’s chemicals production: 2nd largest in Asia
- Chemical’s industry accounts for 10% of China’s GDP (its 3rd largest sector)

When we upgrade to the latest mobile phone what we look for is a better screen and faster processor, but implicitly we are choosing better chemicals; the building blocks for many common applications. Chemicals play a big part in our daily lives, from garments to food to iPhones, yet we are not aware of it. The same holds for China’s economy. It is the world’s factory, but behind this the local supply of chemicals as raw materials for manufacturing is key to fuelling such production. Below are some examples of the implicit role of chemicals in everyday goods.

Food – Fertilisers
Nitrogen, Phosphorus and Potassium are major chemicals used to fertilise crops. As China’s own resources are not enough to satisfy its huge agricultural industry, large amounts of phosphorus and potassium have to be imported from abroad.

High-Tech Products – Rare Earths
Rare Earths are essential raw materials for most of the latest technology, including mobile phones, laptops, defence missiles, radar systems and also green technology such as turbines and hybrid vehicles. China currently controls 97% supply of Rare Earths in the world.

Paint & Coating – Fine/Specialty Chemicals
Paints and water-proof coating require fine chemicals as ingredients. China now produces more than 30,000 different kinds of fine chemicals, however in most cases the technology and equipment used in China are the same as those developed countries were using a decade ago.

Plastics – Petrochemicals
A main component of plastic is Ethylene which originates from chemicals derived from Petroleum, or namely petrochemicals. Although petrochemicals now have a solid base in China, there is a deficit as the amount of Ethylene consumed is nearly twice the amount produced.

Textiles – Synthetic Fibres
Synthetic fibres have developed very quickly in the last decade, with polyester and nylon (Polyamide) accounting for most of China’s output in this area; it is now one of the world’s largest producers. Although China does not produce a wide enough range of special/high-quality fibres, it is leading the growth of certain fibres. For instance, the special elastic fibre Spandex is used to make swimsuits, leggings and tights. As a key garment export country, the demand for Spandex from manufacturers in China grew 20% annually in the past five years, fuelling a national output of more than 200 kilo-tonnes (kt) in 2010.

Vitamins – Organic Chemicals
Vitamins and foodstuff processing (e.g. dying) are two of the key sectors demanding organic chemicals. The chemicals have to be imported on a large scale as factories in China are often too small to compete on the world market. A plant that produces Methyl Alcohol, for example, would have to produce at least 300kt per year to be competitive, while Chinese plants regularly produce only 10kt per year.

China’s Chemical Reaction
China demonstrated the strongest growth in chemicals turnover in the past decade, ranking second only to the US and ahead of Japan and Germany. After the financial downturn, a notable number of chemical factories closed down in the West. Production base shifted to Asia and among the developing hotspots, India and China, the latter one is often preferred by
chemical companies. This view is supported by the expansion of upstream supply. Ethylene (used for plastic) is projected to demonstrate an annual growth rate of 20%, meaning that China could surpass the US to become the largest chemical producer by 2015. At the same time, rising domestic consumption power has a tremendous impact. For example the demand for better labelling and colouring in outdoor advertisement drives the demand for specialty chemicals. Additionally, other notable areas of growth that drive the chemicals industry’s expansion include increased construction (urbanisation), automotive production, and shipbuilding – in the last ten years the number of newly built ships in China was up by 20% each year compared with a mere 7% growth from the rest of the world.

Government Intervention
Some key subsectors are highly supported by the state in order to seek import independence:

Upstream: Coal Gasification Plants
For bulk chemicals, Petroleum cracking is the main source of production, yet coal can also be processed into basic chemicals by gasification. There is substantial support from government in approval of licences to build gasification plants. Around 10 plants are currently under construction, some on-going projects include:

<table>
<thead>
<tr>
<th>Chemical processed from coal</th>
<th>Timeframe</th>
<th>Investment (RMB)</th>
<th>Developer</th>
</tr>
</thead>
<tbody>
<tr>
<td>300kt Synthetic Ammonia</td>
<td>2009-2011</td>
<td>1.2 billion</td>
<td>Henan Junhua Development</td>
</tr>
<tr>
<td>600kt Synthetic Ammonia</td>
<td>2010-2013</td>
<td>3.3 billion</td>
<td>Henan Jinkai Chemical</td>
</tr>
<tr>
<td>1200kt Methanol, 800kt DME</td>
<td>2010-2013</td>
<td>4.5 billion</td>
<td>Xinjiang Guanghui New Energy</td>
</tr>
</tbody>
</table>

Midstream: Basic/Bulk Chemicals Plants
The bulk chemicals business still dominates the sector with a share of 60%. In aiming to secure China’s international competitiveness and to bring down costs considerably, the government plans to subsidise large-scale Ethylene plants with an annual capacity of at least 800kt (current plants have a maximum capacity of 500kt). For Propylene output (also part of plastic production), projects in the order of an additional 7,200kt are being planned between 2008 and 2011. In comparison, Germany’s current capacity is 4,000kt.

Downstream: Fine/Specialty Chemicals Plants
The government is proactively reshaping the chemicals industry to be more value-added and environmental friendly. The introduction of China’s RoHS (Restriction of Hazardous Substances in electrical and electronic equipment) in 2007 is a vivid illustration of forcing chemical producers away from halogen and heavy metal production. Some of the local specialty chemicals manufacturers, such as China National BlueStar Corporation, Transfar Group and Shanghai Chemspec Corporation will undergo accelerated growth in the next ten years as production of specialty chemicals increases, partly driven by the improving living quality in China, which requires for instance more dyestuff for textiles, scents for cosmetics and chemicals for pharmaceuticals.

Limited production scale and low technology know-how are still the present hurdles for domestic players to tackle. In addition, pressure for better environmental treatment may drive up production costs. However, with state support for plant construction and desire from large foreign companies to set up base, these hurdles can be overcome. Taking BASF as a snapshot, through joint ventures with SOEs and cooperation with local governments, the chemicals behemoth intends to open sizable world-class plants in Chongqing, Tianjin and Huizhou to address the strongly growing domestic consumption from those areas. The future for chemicals in China is promising, particularly in this post-crisis period coupled with surging local demand.

This article was first published in Fiducia Management Consultants’ monthly newsletter China Focus and was reprinted with kind permission from Fiducia Management Consultants. For further information please visit www.fiducia-china.com and contact Fiducia Management Consultants at contact@fiducia-china.com. The photo and chart are credited to: Fiducia Management Consultants.