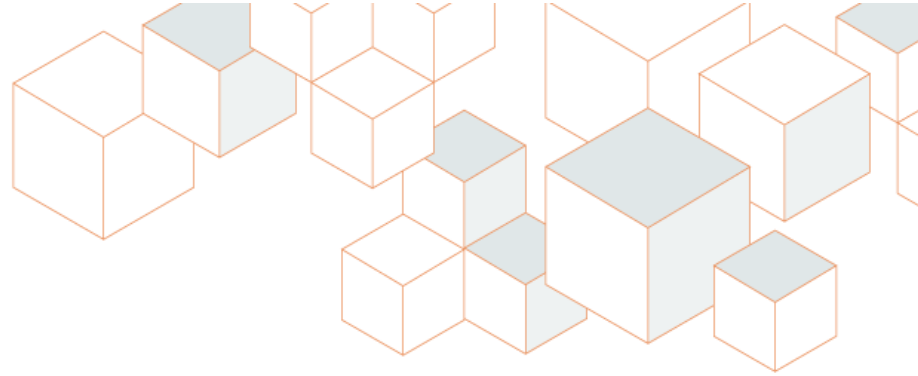


Mid-Year 2016 Chemical Industry Situation and Outlook
American Chemistry: Expanding and Poised for Continued Growth

June 2016





American chemistry will continue to grow this year. American chemistry output increased in 2015 and will further expand in 2016. Growth is happening even in the face of some serious economic challenges: weakness in key export markets, a high dollar, ongoing balancing in the oil and gas sector, and a major slump in the domestic and global manufacturing sector. Compared to producers in other parts of the world, American chemical manufacturers are greatly advantaged with access to cheaper and more abundant feedstock and energy and, as a result, there has been significant capital investment in American chemistry. Although lower costs of inputs may be translating into more muted gains in revenues and shipments, we are seeing continued growth in chemical production volumes, particularly in basic chemicals. Chemical production volumes have continued to improve in 2016 and, except for wholesalers, inventories remain fairly balanced. Thus, new production will be required to satisfy growing demand in 2016 and 2017. Over the past year, output gains have been led by agricultural chemicals, bulk petrochemicals and organics, and plastic resins, all areas aided by renewed competitiveness arising from shale gas. Advances in manufacturing and exports during 2017 and beyond will drive demand for basic chemicals, especially those segments in which the United States enjoys a renewed competitive advantage. Improving manufacturing activity will support growth for most specialty segments.

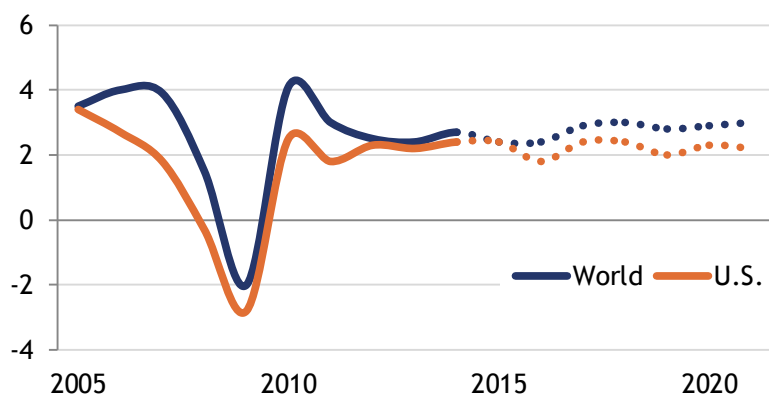
In the United States, performance in two important end-use markets for the chemical industry—housing and light vehicles—has been solid and a strong pace of sales in both markets will support economic growth this year. Looking ahead into 2017, business investment will recover and the manufacturing renaissance will regain traction, contributing to the building momentum for the American chemical industry. Eventually, a sustained global expansion will result in growing trade and increased exports of American goods.

American Chemistry is building the foundation as a growth industry and the wave of announcements to build new chemical capacity continues. These investments will capitalize on the profound and sustainable competitive advantage enabled by shale gas development. In addition, the industry is adding high-paying American jobs after years of trimming payrolls. Chemical companies in the U.S. continue to innovate, focusing on improving efficiencies as well as on new, leading-edge product development.

U.S. and World Macroeconomic Situation & Outlook

Recovering fundamentals and the sustained unconventional gas advantage support U.S. growth prospects

World GDP (market exchange basis), Real U.S. GDP
% change Y/Y



ACC's CAB signals modest growth in the United States through the end of 2016.

In the U.S., GDP will grow only 1.8% in 2016. Weak growth in business investment, combined with an inventory imbalance and a deteriorated trade position, are holding back GDP growth. We expect to see acceleration to a 2.4% pace in 2017 but growth will remain moderate in the 2nd half of the decade. Long-term growth in the economy is expected to be more muted due to demographic, policy and other factors. **The U.S. chemical industry** will be a source of strength in the economic outlook as improvement in its customer industries and emerging markets occurs, and as the effects of enhanced feedstock competitiveness bolster growth.

The ongoing balancing in the oil and gas sector and the concurrent decline in related investments is a leading factor behind weak economic growth figures. Business investment and inventories are typically to blame for variations in the business cycle and thus, we continue to monitor these measures. Business investment in the U.S. remains at relatively high levels; however, growth has scaled back recently, declining at the end of 2015 and thus far in 2016, but the latest indicators suggest a modest rebound in the 2nd quarter. The need to enhance productivity and competitiveness will foster renewed business investment in 2017. In the near term, U.S. economic growth will be led by consumer spending, as household deleveraging is largely over and consumer spending should strengthen with further improvements in the employment situation. U.S. economic growth remains below its potential as high taxes, debt, regulatory burdens and economic policy uncertainty still take a toll on both business and consumer confidence.

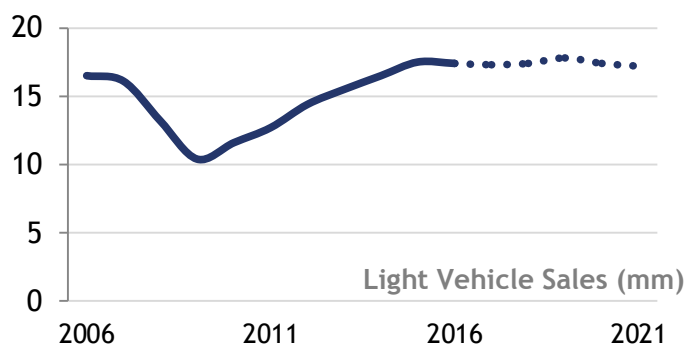
Overall, modest growth in the U.S. economy will continue through year-end 2016, which can be seen by examining the trends in **ACC's Chemical Activity Barometer (CAB)**. The CAB is a composite index of economic indicators that track the activity of the chemical industry. Due to its early position in the supply chain, chemical industry activity leads that of the broader economy and thus, the CAB can be used to anticipate potential turning points in the overall economy. The CAB is currently signaling continued slow but steady growth in the U.S. economy through the end of 2016 and into 2017. Long-term growth in the economy, however, will be muted due to factors such as demographics and policy.

Outside of the U.S., world trade is expected to revive in 2017 after lagging world GDP in 2015. Global manufacturing, which softened during 2015, is also anticipated to strengthen in 2017. We are relatively optimistic about Europe, but Asia and Latin America remain problematic. India will continue to grow at a stronger pace than China, which is suffering from problems such as overcapacity in manufacturing. Brazil and Russia are mired in two-year recessions. Overall, long-term global growth potential will likely not be reached until 2018.

End-Use Markets

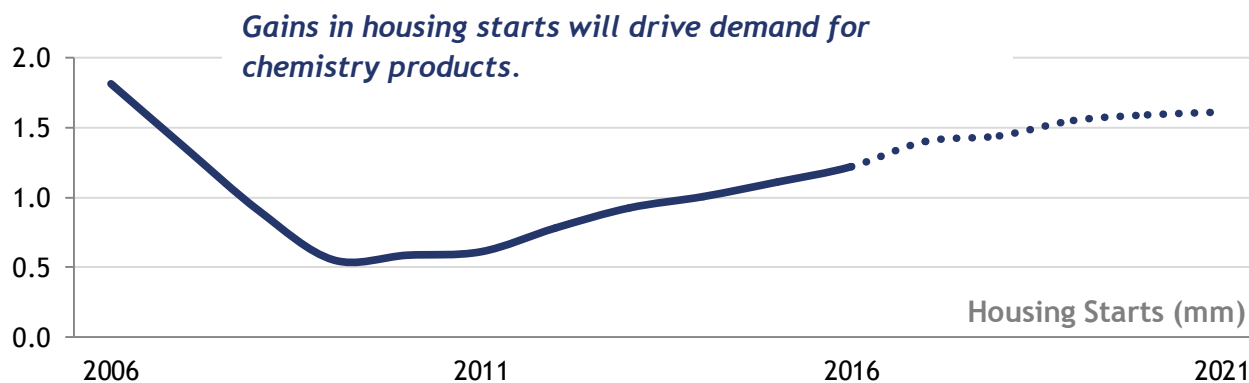
Housing and automotive remain strong while manufacturing struggles with lower investment and a high dollar

While many key end-use markets for chemistry have recovered, output in U.S. manufacturing has continued to struggle due to lower business investment by many major industries and by export markets dampened by a high dollar. The downturn in the oil and gas sector has deepened, adversely affecting industries that supply goods and services to that sector and along their supply chains. In addition, the buildup to the election in November is generating economic and policy uncertainty. Industrial production will decline by 0.5% this year before accelerating in 2017 and 2018. Manufacturing growth will be strongest in those segments tied to construction, automotive and investment goods.



Light vehicles represent an important market for chemistry (nearly \$3,500 in chemistry per vehicle) and production continues to improve. U.S. light vehicle sales are expected to remain near record levels in 2016, and then ease slightly in 2017. Rising replacement demand, continued labor market improvement, and availability of credit have enabled growth in this market.

Housing is also a large consumer of chemistry (about \$15,000 in chemistry per start) and the outlook is for continued progress. Inventories are low, as are interest rates, and employment and wage gains will lead to improved household formations, the prime long-term driver for housing. Housing activity will improve to 1.22 million in 2016 and 1.40 million in 2017 and return to its long-term underlying demand pace of 1.5 million units per year by 2019.



Gains in housing starts will drive demand for chemistry products.

U.S. Chemistry Situation & Outlook

Growth ahead as domestic demand firms and feedstock advantage improves competitiveness

Chemistry volumes continue to rise in the U.S., despite the slowdown in manufacturing and volatile oil price dynamics. Projections for chemical industry growth in the near term, however, have been downgraded since the end of 2015, as headwinds from the high dollar, and weakness in the economy and in manufacturing, combined with an inventory correction, have softened the outlook for chemistry demand. U.S. chemical production—excluding production of the pharmaceuticals segment, which is expected to contract this year—will expand 2.7% this year, 4.1% in 2017 and 5.0% in 2018. Including pharmaceuticals, the chemical industry will expand this year at a slightly lower 1.6%. Growth in production volumes will accelerate and the industry will expand 3.7% in 2017 and by another 4.5% in 2018. Capacity utilization is expected to tighten to 73.5% in 2016 and further to 73.3% in 2017.

In the long term, the American chemical industry will continue gathering strength. The economics of shale gas in the U.S. has fostered new investment and new capacity in the chemical industry which is now starting to come online. As the U.S. economy strengthens and key customer industries improve, the American chemical industry will be poised for growth due to a competitive position with regard to feedstock costs.

Chemical production will continue to grow across all regions of the U.S. during 2016. Over the next five years, the most dynamic growth will occur in the Gulf Coast region, followed by the Ohio Valley. **American chemistry revenues will exceed \$1.0 trillion by 2020.**

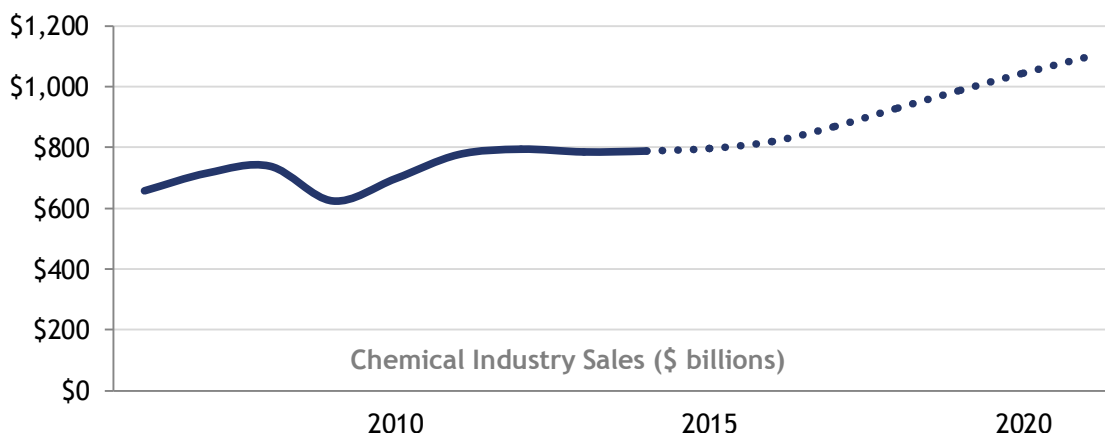
U.S. chemistry output is expected to rise 1.6% in 2016 and 3.7% in 2017.

IN THE LONG TERM, the U.S. chemical industry will grow faster than the overall U.S. economy.

\$1 TRILLION

In U.S. chemical industry sales by 2020

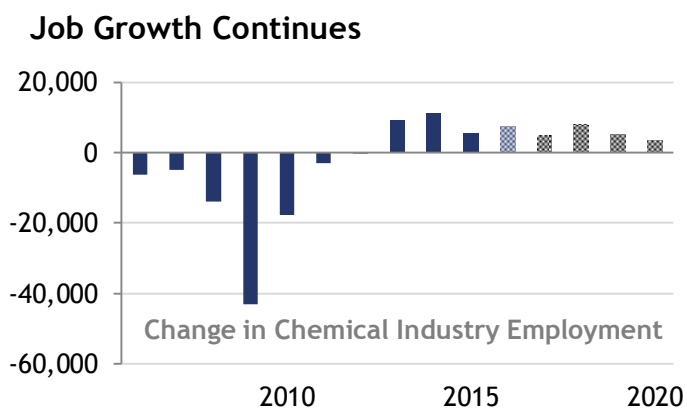
American Chemistry revenues projected to accelerate



U.S. **basic chemicals** (inorganic chemicals, petrochemicals, plastic resins, synthetic rubber, and manufactured fibers) are already experiencing the effects of renewed competitiveness from shale gas. Basic chemicals production is anticipated to grow 3.1% in 2016 and 4.9% in 2017. With new capacity coming on stream, production volume growth will exceed 5.0% per year during 2018 and 2019, followed by smaller gains in 2020 and 2021. Basic chemicals exports will play a large role in expanding production, led by bulk petrochemicals and organics as well as plastic resins. There will be strength in the production of inorganic chemicals, synthetic rubbers and manufactured fibers as well.

The softness in oil prices that began mid-2014 has led to weaker revenue growth. Although oil prices and competing naphtha-based production costs have moderated, there has been a decline in natural gas and ethane prices as well, which is helping to sustain U.S. competitiveness. Lower cost of inputs for producers is showing up in the shipments figures but **real output is on the rise**.

In the **specialties chemicals** segment, production will pick up by 1.5% in 2016, after contracting last year, and grow further by 3.4% in 2017. Performance in specialty chemicals has been limited by weakness in key end-use sectors: oilfield and mining chemistry has been especially affected as investment in the oil and gas sector has dropped off. As supply and demand find balance in the oil and gas sector, and the manufacturing renaissance in the U.S. regains traction, demand for specialty chemicals will grow. In the longer term, gains in specialty chemicals will continue to exceed the overall growth rate for the U.S. economy.



Chemical industry adding jobs

The industry's expansion continues to reverse a falling trend in employment. Employment in the chemical industry is expected to grow by 0.8% in 2016, with new jobs added through 2021. This trend is in contrast to a continuous decline in employment from 1999 to 2011. Because chemical industry workers are among the highest paid in the manufacturing sector, growing payrolls will strengthen local economies.

Inventories are well balanced

Effective inventory management since the end of the Great Recession has resulted in fairly well balanced inventories relative to shipments. For chemical manufacturers, inventory-to-shipment ratios have ranged between 1.01 and 1.08 and are still within these historical norms.

Along the value chain downstream, however, it has been wholesalers who have seen some inventory imbalances arise in the first quarter. These imbalances remain modest and downstream customers remain reluctant to add to inventories and will continue to optimize inventories.

Capital/Infrastructure

The U.S. is the destination for chemical investment

The U.S. needs tax policies that will drive innovation, increase productivity and promote manufacturing competitiveness.

Over 260 new chemical production projects (valued at over \$161 billion) have been announced; the dynamics for sustained capital investment are in place.

Average annual gains of over 8% per year in U.S. chemical industry capital spending are expected through 2018 with only a minor slowdown in subsequent growth expected.

\$65 BILLION

In U.S. Chemical Industry Capital Spending by 2021

The United States is being favorably re-evaluated as an investment location and petrochemical producers have announced significant expansions of capacity in the U.S., reversing a decade-long decline. In fact, the gains to basic olefins capacity are estimated to range from 35% to 40%. Indeed, over 260 new chemical production projects, valued at over \$161 billion altogether, have been announced through late-May 2016; 61% of these are foreign direct investment. The dynamics for sustained capital investment are in place and ACC continues to track the wave of new investment from shale gas.

A new capital spending cycle began in 2010 as chemical manufacturers recovered from the financial crisis. Initially, it was sustaining capital that drove investment in the U.S., with expenditures allocated towards equipment upgrades and other efficiency investments. However, the trend in capital investment has rapidly accelerated and changed as significant expansions of existing petrochemical capacity—due to new supplies of natural gas—has become the driver. As a result, chemical industry capital spending in the U.S. surged 12.1% in 2014 and gained 21.0% in 2015, reaching \$43.58 billion. During 2015, chemistry accounted for one-half of total construction spending by the manufacturing sector. Despite the hindrance of slow global growth, uncertainty and U.S. tax policies that discourage business investment, these strong gains in capital spending for American chemistry are expected to continue. U.S. chemical industry capital spending will increase by 10.4% this year; 7.8% in 2017; 7.2% in 2017; and the year-over-year gains will remain above 6.0% until 2020. Expansions will continue and investments to improve operating efficiencies will play a role as well. By 2021, U.S. capital spending by the chemical industry will reach \$65 billion—more than triple the level of spending at the start of this prolonged cycle in 2010.

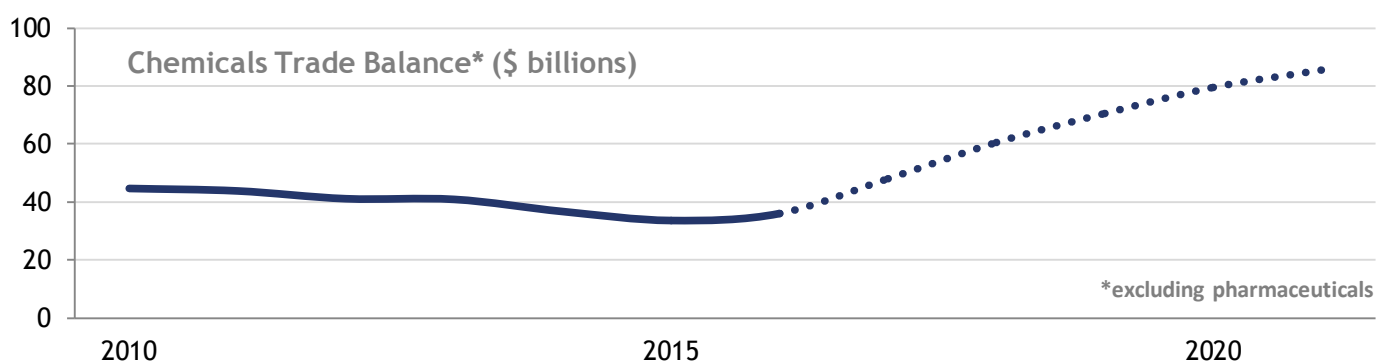
Access to plentiful and affordable natural gas supplies is allowing the United States to capture an increasing share of global chemical industry investment. This trend will continue as **the United States remains the destination for chemical industry investment.**

During this cycle, capital spending for bulk petrochemical and for organic intermediates, along with spending for plastic resins, will advance from less than 29% of the total to 52% in 2021. Spending for buildings and structures will present strong opportunities during this period, beginning with spending for site preparation and utilities and then building and installation taking over. Table 5 presents details on industry capital spending by segment and by asset type.

Trade

U.S. feedstock advantage will grow chemical exports in the years ahead

The trade surplus in chemicals (excluding pharmaceuticals) will grow to \$36 billion this year as exports rise by 2% to \$132 billion and imports hold steady at \$96 billion. Two-way trade between the U.S. and its foreign partners will reach \$227 billion this year and will grow steadily over the coming years. A testament to the competitiveness of the U.S. chemical industry, exports are expanding despite a very challenging economic environment: the world economy is moving slowly, world trade has scaled back, the high U.S. dollar has made U.S. exports relatively more expensive, and manufacturing sectors in trading partner nations across the globe are struggling. We expect to see an uptick in the growth trend for U.S. chemicals exports in the near term when much of the new industry investment comes online and the demand from trading partners increases with the improvement of their economies.



Conclusion

At the midway point in 2016, the business of chemistry continues to expand, setting the stage for significant growth in output as new production capacity comes online and demand firms in key end-use markets in the U.S. and abroad. Inventories remain largely balanced, thus increasing demand for chemistry will be met by new production rather than stock drawdowns. We expect to see above-trend growth in basic chemicals over the forecast horizon, in addition to solid output growth in other segments.

The U.S. continues to enjoy a competitive advantage from shale gas and abundant new supplies of natural gas liquids: more than one-third of the investment announced since 2010 has been completed or is currently under construction. As new production expands to meet growing global demand, employment in the business of chemistry will further accelerate. The industry is expected to continue adding high-paying jobs through the end of the decade. U.S. chemical exports (excluding pharmaceuticals) are growing and, as external demand becomes more robust, we expect to see this trend take off.

TABLE 1
U.S. Macroeconomic Outlook

% Change Year-over-Year unless otherwise noted	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average 2022-26
Global Macroeconomic Indicators										
GDP (Market Exchange Rate basis)	2.4	2.7	2.4	2.4	2.9	3.0	2.8	2.9	3.0	3.0
World Trade	3.4	3.5	2.8	2.7	4.3	4.6	4.5	4.5	4.4	4.3
Industrial Production	2.3	3.3	1.8	1.6	2.5	2.7	2.7	2.8	2.8	2.7
Consumer Prices	3.7	3.2	2.8	3.0	3.4	3.4	3.2	3.1	3.2	3.0
U.S. Macroeconomic Indicators										
GDP	1.5	2.4	2.4	1.8	2.4	2.4	2.0	2.3	2.2	2.3
Consumer Spending	1.7	2.7	3.1	2.6	2.7	2.4	2.0	2.3	2.4	2.2
Business Investment	3.0	6.2	2.8	0.1	3.9	4.6	3.4	2.7	2.9	3.2
Industrial Production	1.9	2.9	0.3	-0.5	2.4	2.9	2.2	1.9	2.1	2.2
Light Vehicle Sales (mm)	15.5	16.5	17.5	17.4	17.3	17.4	17.8	17.4	17.2	17.1
Housing Starts (mm)	0.93	1.01	1.11	1.22	1.40	1.44	1.55	1.59	1.61	1.61
Consumer Prices	1.5	1.6	0.1	1.2	2.2	2.4	2.2	2.3	2.2	2.2
10-Year Treasury Notes (%)	2.35	2.54	2.14	2.11	2.65	3.21	3.49	3.58	3.83	3.97
Unemployment Rate (%)	7.4	6.2	5.3	4.8	4.6	4.8	5.2	5.2	5.0	5.0
Exchange Rate (\$U.S./euro)	1.33	1.33	1.11	1.08	1.09	1.14	1.20	1.23	1.25	1.27
U.S. End-Use Market Output										
Construction	4.6	4.2	4.3	6.7	8.1	4.5	2.9	2.4	3.1	2.1
Food, Beverages & Tobacco	3.0	3.7	1.5	7.3	7.9	5.7	4.5	4.1	3.5	3.3
Textile Mill Products	1.7	-0.4	1.0	1.0	2.1	2.0	1.6	1.5	1.4	1.1
Apparel	2.7	3.9	-0.3	1.9	-1.5	-1.7	-2.4	-2.4	-2.6	-2.7
Structural Panels	-7.4	-1.8	0.1	-6.8	-1.9	-2.0	-2.8	-2.7	-2.4	-2.5
Paper	7.1	4.8	0.6	3.8	4.9	4.3	2.3	2.6	1.9	1.4
Printing	0.2	-1.0	-1.5	-1.6	-0.2	0.1	0.3	0.6	0.6	0.4
Petroleum Refining	0.2	0.1	1.8	-0.5	-0.5	-0.7	-0.6	-0.4	-0.4	-0.5
Rubber & Plastic Products	5.1	-3.6	4.5	2.8	2.7	1.5	1.0	0.7	0.6	0.2
Iron & Steel	1.2	3.1	3.1	0.9	3.0	3.6	3.2	2.6	2.3	2.2
Fabricated Metal Products	2.1	-1.9	-11.7	-3.5	-0.4	1.0	1.3	1.2	1.3	1.0
Computers	1.8	2.3	-1.4	-1.1	2.1	2.5	2.3	2.2	2.2	1.9
Semiconductors & Electronic Components	3.1	5.2	2.8	-1.3	3.0	3.5	2.5	2.6	2.8	2.5
Appliances	10.9	18.6	3.7	2.4	6.3	7.1	5.4	5.3	5.5	4.7
Motor Vehicles & Parts	-0.9	5.8	4.0	4.2	2.6	2.2	1.5	1.2	1.2	1.1
Aerospace	7.2	7.8	6.1	2.6	-1.5	-1.0	2.4	0.6	0.3	1.8
Furniture	2.6	5.1	0.0	0.5	4.3	4.9	5.1	6.8	5.3	3.2
Furniture	0.8	0.4	3.5	2.8	3.0	2.9	2.0	1.8	1.8	1.5

TABLE 2
U.S. Chemistry Outlook: Production Volumes

% Change Year-over-Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average 2022-26
Total Chemicals Production Volume	-3.4	-0.8	2.3	1.6	3.7	4.5	4.0	3.3	2.7	2.7
Production Volume by Segment										
Pharmaceuticals	-8.1	-0.3	2.9	-0.2	3.1	3.6	3.2	3.2	3.3	3.2
Chemicals, exc. Pharmaceuticals	-0.5	-1.1	1.9	2.7	4.1	5.0	4.5	3.4	2.4	2.4
Agricultural Chemicals	16.1	-5.6	2.8	2.9	5.8	6.3	3.8	2.0	1.7	1.0
Fertilizers	6.0	-1.1	-1.0	2.7	7.9	8.7	5.2	2.8	2.4	1.2
Crop Protection	12.4	4.6	-1.1	3.1	4.3	4.6	2.8	1.4	1.1	0.9
Consumer Products	-10.7	-0.3	3.6	2.6	2.0	2.1	2.2	2.3	2.3	2.2
Basic Chemicals	0.2	-1.5	2.5	3.1	4.9	6.3	5.8	4.2	2.5	2.6
Inorganic Chemicals	-7.3	-0.6	0.3	1.2	3.3	3.4	2.7	2.3	1.7	2.1
Bulk Petrochemicals & Organics	3.0	-1.6	3.6	4.1	5.7	7.6	7.0	4.9	2.9	3.0
Plastic Resins	0.4	-1.8	2.2	3.3	5.4	7.2	7.4	5.0	2.9	2.7
Synthetic Rubber	5.0	-7.5	6.4	2.5	4.7	5.3	4.7	3.8	2.7	2.4
Manufactured Fibers	-2.2	-1.3	-1.0	2.1	0.8	1.9	2.0	0.9	-0.1	-0.4
Specialties	0.4	2.2	-2.5	1.5	3.4	3.7	3.2	2.9	2.7	2.6
Coatings	4.7	4.7	-5.2	1.6	3.0	3.1	2.8	2.1	2.3	2.5
Other Specialties	-1.5	1.0	-1.2	1.5	3.5	4.0	3.4	3.2	2.8	2.7
Production Volume by Region										
Gulf Coast	-3.4	-0.8	2.3	1.6	3.7	4.5	4.0	3.3	2.7	2.7
Midwest	0.9	1.1	3.2	2.9	4.7	5.8	5.3	3.8	0.4	2.5
Ohio Valley	1.2	1.9	3.1	1.4	3.7	4.4	4.0	3.3	1.9	2.7
Mid-Atlantic	3.0	2.6	4.2	2.6	4.0	4.9	4.4	3.3	1.1	2.4
Southeast	0.6	2.0	3.0	1.0	3.4	4.0	3.6	3.2	2.4	2.9
Northeast	1.7	1.9	3.1	1.7	3.9	4.6	4.0	3.2	1.8	2.5
West Coast	1.4	2.4	3.6	1.0	3.2	3.8	3.4	3.1	2.6	2.8

TABLE 3
U.S. Chemistry Outlook: Trade

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Exports (billions)	\$189.2	\$191.3	\$183.8	\$188.5	\$207.5	\$221.0	\$235.0	\$249.5	\$262.5
Imports (billions)	\$185.7	\$196.6	\$205.0	\$215.5	\$228.0	\$235.5	\$244.0	\$253.5	\$264.0
Trade Balance (billions)	\$3.5	-\$5.2	-\$21.2	-\$27.0	-\$20.5	-\$14.5	-\$9.0	-\$4.0	-\$1.5
Of which:									
Pharmaceuticals	-\$37.4	-\$41.9	-\$54.8	-\$63.0	-\$68.5	-\$75.0	-\$79.5	-\$83.5	-\$87.0
Chemicals, exc. Pharmaceuticals	\$40.9	\$36.7	\$33.6	\$36.0	\$48.0	\$60.5	\$70.5	\$79.5	\$85.5

TABLE 4
U.S. Chemistry Outlook: Other Indicators

	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average 2022-26
Capacity	0.1	-2.5	0.0	0.5	4.0	4.5	4.8	4.3	1.5	3.3
Capacity Utilization (%)	69.8%	71.0%	72.6%	73.5%	73.3%	73.3%	72.7%	72.0%	72.9%	74.9%
Shipments (billions)	\$785.6	\$788.7	\$797.1	\$819.9	\$869.5	\$930.0	\$988.5	\$1,044.8	\$1,097.0	n/a
% Change Year-over-Year	-1.1	0.4	1.1	2.9	6.1	7.0	6.3	5.7	5.0	n/a
Capital Spending (billions)	\$32.15	\$36.03	\$43.58	\$48.11	\$51.87	\$55.59	\$59.01	\$62.15	\$64.95	n/a
% Change Year-over-Year	11.6	12.1	21.0	10.4	7.8	7.2	6.1	5.3	4.5	n/a
Employment (thousands)	792.7	803.9	809.5	816.0	821.8	829.7	835.0	838.5	841.3	n/a
% Change Year-over-Year	1.2	1.4	0.7	0.8	0.7	1.0	0.6	0.4	0.3	n/a

TABLE 5
U.S. Chemistry Capital Spending Outlook

Millions of Dollars	2013	2014	2015	2016	2017	2018	2019	2020	2021
Capital Spending	32,147	36,026	43,582	48,105	51,865	55,590	59,005	62,145	64,945
% Change	11.6	12.1	21.0	10.4	7.8	7.2	6.1	5.3	4.5
Capital Spending by Segment:									
- Pharmaceuticals	7,210	7,386	7,555	7,945	8,265	8,646	8,995	9,435	9,917
Chemicals, exc. Pharmaceuticals	24,937	28,640	36,027	40,160	43,600	46,944	50,010	52,710	55,028
Agricultural Chemicals	2,678	2,833	3,239	3,405	3,701	4,036	4,300	4,494	4,666
All Other Chemicals	22,259	25,807	32,788	36,755	39,899	42,908	45,710	48,216	50,362
Basic Chemicals	17,550	20,341	25,797	29,449	32,302	34,916	37,307	39,417	41,196
Specialties	2,326	2,735	3,393	3,501	3,647	3,834	4,036	4,240	4,424
Consumer Products	2,383	2,731	3,598	3,805	3,950	4,158	4,367	4,559	4,742
Basic Chemicals:									
Inorganic Chemicals	4,427	4,606	4,728	5,028	5,364	5,635	5,881	6,144	6,429
Bulk Petrochemicals & Intermediates	8,151	10,087	14,566	17,505	19,605	21,306	22,745	23,997	24,996
Plastic Resins	4,231	4,836	5,687	6,070	6,457	7,068	7,749	8,319	8,786
Synthetic Rubber	298	336	360	367	371	377	380	383	386
Manufactured Fibers	443	476	456	479	505	530	552	574	599
Specialties:									
Coatings	414	463	570	581	607	638	662	688	708
Other Specialties	1,912	2,272	2,823	2,920	3,040	3,196	3,374	3,552	3,716
Capital Spending by Asset:									
Computers & Related	1,292	1,257	1,363	1,413	1,455	1,493	1,520	1,547	1,569
Communications Equipment	867	890	970	1,041	1,102	1,141	1,178	1,210	1,228
Instrumentation	4,203	4,792	4,731	4,991	5,366	5,668	5,905	6,129	6,330
Pressure Vessels & Other Fabricated Equipment	2,428	2,538	2,760	2,934	3,124	3,281	3,458	3,615	3,738
Special Industrial Machinery	4,801	5,547	6,106	6,477	6,870	7,281	7,697	8,123	8,522
General Industrial Equipment	11,287	12,860	13,979	15,074	16,237	17,451	18,458	19,351	20,075
Electric Transmission & Distribution	94	97	105	113	121	129	136	143	150
Motor Vehicles	281	330	379	436	467	474	478	481	483
Other Transportation Equipment	19	22	25	27	29	31	33	35	37
Furniture	298	298	199	215	229	238	246	253	257
Other Machinery & Equipment	<u>1,702</u>	<u>1,755</u>	<u>2,776</u>	<u>3,022</u>	<u>3,229</u>	<u>3,408</u>	<u>3,558</u>	<u>3,701</u>	<u>3,839</u>
Total Equipment	27,272	30,386	33,393	35,743	38,229	40,595	42,667	44,588	46,228
Manufacturing									
Office Buildings	84	108	132	152	166	178	189	200	209
Other	<u>146</u>	<u>175</u>	<u>202</u>	<u>226</u>	<u>238</u>	<u>251</u>	<u>259</u>	<u>268</u>	<u>273</u>
Total Structures	4,875	5,639	10,189	12,362	13,636	14,995	16,338	17,557	18,717

TABLE 6
Global Economic Environment: Real GDP

% Change Year-over-Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average 2022-26
Real GDP										
United States	2.2	2.4	2.4	1.8	2.4	2.4	2.0	2.3	2.2	2.3
Canada	2.2	2.5	1.2	1.6	2.1	2.2	1.9	2.0	2.0	2.0
Mexico	1.3	2.3	2.5	2.6	2.9	2.8	3.0	3.3	3.4	3.4
Brazil	3.0	0.1	-3.8	-3.8	0.5	2.0	2.6	2.7	2.7	2.9
United Kingdom	2.2	2.9	2.2	2.0	2.2	2.2	2.0	2.1	2.1	2.1
Eurozone	-0.3	0.9	1.6	1.6	1.7	1.7	1.6	1.6	1.5	1.5
France	0.7	0.2	1.1	1.3	1.5	1.4	1.4	1.4	1.3	1.5
Germany	0.4	1.6	1.5	1.6	1.7	1.6	1.4	1.4	1.4	1.2
Italy	-1.7	-0.3	0.8	1.0	1.2	1.1	1.0	1.0	1.0	0.9
Spain	-1.7	1.4	3.2	2.7	2.3	2.1	2.0	2.0	1.8	1.6
Russia	1.3	0.7	-3.7	-1.3	1.3	1.8	2.2	2.7	2.6	2.6
Japan	1.4	0.0	0.5	0.5	0.5	0.7	0.8	0.9	0.9	0.7
China	7.7	7.3	6.9	6.5	6.2	6.0	5.8	5.8	5.7	5.4
India	6.6	7.2	7.3	7.5	7.4	7.4	7.4	7.3	7.2	6.9
South Korea	2.9	3.3	2.6	2.8	3.2	3.2	3.0	2.9	2.8	2.7
World GDP (Market Exchange)	2.4	2.7	2.4	2.4	2.9	3.0	2.8	2.9	3.0	3.0
World Trade	3.4	3.5	2.8	2.7	4.3	4.6	4.5	4.5	4.4	4.3

TABLE 7
Global Economic Environment: Industrial Production

% Change Year-over-Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average 2022-26
Industrial Production										
United States	1.9	2.9	0.3	-0.5	2.4	2.9	2.2	1.9	2.1	2.2
Canada	2.2	4.0	-1.3	0.0	2.4	2.3	2.3	1.9	1.8	1.7
Mexico	-0.5	1.8	1.2	2.6	3.5	3.6	3.5	3.5	3.5	3.5
Brazil	1.6	-2.9	-7.8	-4.1	2.3	2.8	2.8	2.8	3.0	3.1
United Kingdom	-0.2	1.3	1.0	0.2	1.5	1.5	1.2	1.3	1.2	1.4
Eurozone	-0.6	0.9	1.5	1.4	1.7	1.7	1.7	1.5	1.4	1.4
France	-0.7	-0.7	1.9	1.7	2.0	1.4	1.2	1.1	0.9	1.2
Germany	0.1	1.5	0.5	1.0	1.5	1.6	1.4	1.3	1.4	1.3
Italy	-3.2	-0.6	1.0	1.3	1.3	1.2	1.1	1.2	1.1	1.0
Spain	-1.7	1.5	3.2	2.8	2.4	2.4	2.4	2.4	2.0	1.8
Russia	0.4	1.5	-3.1	-0.6	1.8	2.4	2.4	2.3	2.6	2.6
Japan	-0.6	2.1	-0.9	-0.2	0.7	0.9	1.3	1.1	0.7	0.4
China	9.7	7.1	5.2	5.5	5.2	4.9	4.6	4.7	5.4	5.4
India	0.6	1.8	4.6	5.7	6.6	6.8	6.9	6.6	6.6	6.6
South Korea	0.4	0.5	-0.8	2.4	3.3	3.0	2.8	2.8	3.2	3.1
World Industrial Production	2.3	3.3	1.8	1.6	2.5	2.7	2.7	2.8	2.8	2.7

TABLE 8
Global Economic Environment: Inflation (Consumer)

% Change Year-over-Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	Average 2022-26
Inflation (Consumer)										
United States	1.5	1.6	0.1	1.2	2.2	2.4	2.2	2.3	2.2	2.2
Canada	0.9	1.9	1.1	1.6	2.1	2.1	2.0	2.0	2.0	2.0
Mexico	3.8	4.0	2.7	3.2	3.3	3.3	3.3	3.3	3.4	3.4
Brazil	6.2	6.3	9.0	8.0	5.7	5.2	4.9	4.7	4.5	4.3
United Kingdom	2.6	1.5	0.1	0.7	1.7	1.8	1.9	1.9	1.9	1.9
Eurozone	1.3	0.4	0.0	0.5	1.3	1.5	1.7	1.7	1.8	1.8
France	1.0	0.6	0.1	0.2	1.2	1.2	1.4	1.5	1.6	1.9
Germany	1.6	0.8	0.1	0.6	1.6	1.7	1.8	1.7	1.7	1.7
Italy	1.2	0.2	0.1	0.3	1.1	1.3	1.5	1.6	1.7	1.8
Spain	1.4	-0.1	-0.5	0.0	1.2	1.4	1.6	1.7	1.8	1.9
Russia	6.8	7.8	15.5	7.8	6.0	5.0	4.6	4.4	4.4	4.3
Japan	0.4	2.7	0.8	0.2	1.4	1.2	1.3	1.2	1.4	1.5
China	2.6	2.0	1.4	2.1	2.2	2.5	2.6	2.8	2.9	3.0
India	9.4	5.9	4.9	5.3	5.3	5.3	5.1	5.0	5.1	5.2
South Korea	1.3	1.3	0.7	1.5	2.2	2.4	2.4	2.3	2.3	2.3
World Inflation	3.7	3.2	2.8	3.0	3.4	3.4	3.2	3.1	3.2	3.0

Methodology

This report presents an assessment of current conditions and expectations for the global business of chemistry, with particular emphasis on the U.S. The analysis uses economic data and publicly available information through mid-May 2016.

In looking ahead, several models of global output, trade, etc. for the business of chemistry are employed. In addition, we take into account forecasts made by economists at the national chemical associations in Europe (whose expertise ACC gratefully acknowledges) and from economic forecasting consultants and other institutions. ACC also gratefully acknowledges the macroeconomic and chemical industry expertise of IHS Global Insight and Oxford Economics, two of the leading providers of economic advice and consultancy services. The macroeconomic forecasts of the Economist Intelligence Unit (EIU), supplemented by forecasts provided by the IMF, OECD, the WTO, and various banks, were also important to our thinking.

For More Information

More details, historical data (back to 1994) and annual projections (to 2021 and beyond) for the tables in the report are available in spreadsheet format. For more information or to access the detailed data, contact ACC's Economics Department: ACC_EconomicsDepartment@americanchemistry.com

Economics & Statistics Department Contacts

Dr. Thomas Kevin Swift

Chief Economist & Managing Director

202 249-6180

kevin_swift@americanchemistry.com**Martha Gilchrist Moore**

Senior Director- Policy Analysis and Economics

202 249-6182

martha_moore@americanchemistry.com**Zahra Saifi**

Executive Assistant - Office of CFO and CAO

202 249-6162

zahra_saifi@americanchemistry.com**Heather R. Rose-Glowacki**

Director - Chemical & Industry Dynamics

202 249-6184

heather_rose@americanchemistry.com**Emily Sanchez**

Director- Surveys & Statistics

202 249-6183

emily_sanchez@americanchemistry.com

Reasonable effort has been made in the preparation of this publication to provide the best available information. However, neither the American Chemistry Council, nor any of its employees, agents or other assigns makes any warranty, expressed or implied, or assumes any liability or responsibility for any use, or the results of such use, of any information or data disclosed in this material.