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Before the
House Committee on Energy and Commerce
Subcommittee on Energy and Power
and
Subcommittee on Commerce, Manufacturing, and Trade

Hearing on "U.S. Energy Abundance: Manufacturing Competitiveness and America's Energy Advantage."
June 20, 2012

Executive Summary

- The US chemical industry is highly energy intensive. We use energy inputs, mainly natural gas and natural gas liquids, as both our major fuel source and feedstock. Our ability to compete in global markets is largely determined by the price and availability of natural gas and natural gas liquids.

- The consulting firm IHS forecasts that the US has a 30 year supply of natural gas – some 900 trillion cubic feet – that can be profitably produced at $4.00 per million BTU or less. This abundant and affordable supply of natural gas has transformed the US chemical industry from the world's high-cost producer five years ago, to among the world's lowest-cost producers today.

- As a result, the US enjoys a decisive competitive advantage in the cost of producing basic petrochemicals like ethylene, ammonia and methanol. For example, it costs less than $400 a ton to produce ethylene in the US. That compares to more than $1000 a ton in Europe and even more in Japan.

- Dozens of companies are making plans to invest in new US-based chemicals production capacity. ACC estimates that more than $72 billion in new capital expenditures will be invested in the US between 2012 and 2020. The US is emerging as "the place to manufacture chemicals now" as European and Asian companies make plans to source production in the US.

- The supply response from shale gas will directly create 46,000 jobs in the US chemical industry due to expanded chemical production. In addition to the jobs created in the US chemical industry, another 264,000 indirect jobs would be created in supplier industries, and another 226,000 payroll-induced jobs would be created elsewhere in the economy through household spending of wages, leading to a total of 537,000 new jobs

Good Morning. My name is Dean Cordle, President and CEO of AC&S Inc., a chemical manufacturing company based in Nitro, W.Va. Appearing on behalf of the American Chemistry Council,* I am pleased to comment on the critical role that abundant and affordable oil and natural gas is playing in revitalizing the US chemical industry, improving our global competitiveness, driving enormous new investments in chemical manufacturing, and creating hundreds of thousands of new jobs.

The shale gas energy boom is directly affecting our company. We use the low-cost natural gas found in shale as a fuel source to produce steam for our chemical manufacturing operations. In addition, we are manufacturing oil field chemicals for upstream drilling activities in the Appalachian Basin. West Virginia is a net energy exporting state and the shale gas revolution underway has already resulted in thousands of new jobs in West Virginia.

Shale Gas Is Game Changer for U.S. Chemicals Production

The US chemical industry is highly energy intensive. We use energy inputs, mainly natural gas and natural gas liquids, as both our major fuel source and raw material, or feedstock. About 75 percent of the cost producing petrochemicals and plastics in the US is related to the cost of energy-derived raw materials. Consequently, our ability to compete in global markets is largely determined by the price and availability of natural gas and natural gas liquids, whereas producers in other regions rely on energy feedstock derived from crude oil.

According to the Potential Gas Committee, the nation's leading group of natural gas supply experts, the US has a potential natural gas supply of 2,384 Trillion Cubic Feet, well more than a hundred years of continuous supply. What's more, the consulting firm IHS Global Insight forecasts that the US has a 30 year supply of natural gas – some 900 trillion cubic feet – that can be profitably produced at $4.00 per million BTU or less. Natural gas sold for nearly 120 percent the price of Brent crude oil a decade ago. Recently, natural gas traded for less than 20 percent of the price of crude. This abundant and affordable supply of natural gas has transformed the US chemical industry from the world's high-cost producer five years ago to among its lowest-cost producers today.

Feedstocks in Shale Gas Are Key to Competitive Advantage

As a result of low-cost natural gas, the US enjoys a decisive competitive advantage in the cost of producing basic petrochemicals like ethylene, ammonia and methanol. The key to this advantage is the incredible supply of petrochemical feedstocks found in shale formations. The chemical industry uses natural gas as a feedstock – to produce ammonia, methanol and hydrogen, for example – but we use even larger volumes of natural gas liquids (e.g., ethane, propane, butane) as our principal raw materials. Ethane supply is already growing quite rapidly and IHS projects that it will increase by more than 90 percent by 2030. Ethane is priced to sell in the US: US crackers are producing ethylene for less than $400 a ton compared to about $1,000 per ton in Europe and even more in Asia.

US natural gas based prices have been cut in half since 2008, while oil based prices have not moved. This has created a major advantage to gas-based chemical producers in the US and has put oil-based producers in Europe at a significant disadvantage. IHS notes that as recently as 2011, North American and Western European chemical firms both produced about 30 million tons of basic chemicals and plastics. But, as IHS says, "changes in global energy markets are having profound impacts on (global) petrochemicals markets." Thanks to tremendous supplies of low-cost natural gas, North American chemicals and plastics production is expected to more than double to 70 million tons by 2020, while Western European output contracts to 20 million tons.

New Capital Investment Pouring Into the U.S.

The US is emerging as "the place to manufacture chemicals now" as European and Asian companies, as well as US firms, make plans to source production in the US. Dozens of companies are making plans to invest in new US-based chemicals production capacity. ACC has identified more than 100 potential chemical industry investment projects, valued at nearly $72 billion, announced as of March 2013 and are expected to come online between now and 2020. Roughly half of the U.S. chemical industry investments announced to date is by firms based abroad. The fact that such large numbers of foreign-owned companies are choosing to source their chemistry in the United States is unprecedented in recent history, and a testament to the value and affordability of America's shale gas and ethane supplies.

Here is one recent example of how chemical companies are capitalizing on the shale gas revolution in the United States: Last month, the BASF TOTAL Petrochemicals LLC (BTP) joint venture (40% Total, 60% BASF) announced it had revamped the Port Arthur steam cracker in Texas to process ethane, found in abundance in U.S. shale gas. BASF is a German company. Total is based in France. Commented Patrick Pouyanné, President of Total Refining & Chemicals:

> *Our strategy in the United States consists of consolidating our production base by taking advantage of market trends. The Port Arthur steam cracker is one of the biggest in the world, with a capacity of 1 million tons of ethylene per year. It was commissioned in 2001 to process naphtha, distilled from petroleum. In response to petroleum product price hike and the emergence of*

abundant gas resources, we adapted the steam cracker to give it flexibility and maintain its competitiveness. It can now use as a feedstock ethane, which costs around $30 per barrel of oil equivalent (boe)— versus around $100/boe for naphtha — and liquefied petroleum gases such as butane and propane, which are also cheaper.

In addition to this project, the BASF-Total Petrochemicals joint venture has also begun building a tenth ethane cracking furnace, scheduled to come on stream in the second quarter of 2014. The new furnace will improve the steam cracker's availability and increase its cracking capacity by nearly 15%.

The US feedstock cost advantage in petrochemicals is creating an export boom for ethylene derivatives. North American net exports of polypropylene, vinyls and polyethylene will increase from less than 15 percent of production today to more than 30 percent of production by 2025. NE Asia will remain a large market for US made ethylene derivatives for a long time to come.

Chemical Industry Investments Will Yield Economic Benefits for the U.S.

The $71.7 billion in announced US chemical capacity-expansion investments will create an additional $66.8 billion in chemical industry output, providing a 9% gain above what output would be otherwise in 2020. In turn, this will create new chemical industry jobs and additional output in supplier (or indirect) industries. Combined, the added output of these supplier sectors of the economy will lead to an additional $100 billion in indirect economic output. On top of the

direct and indirect effects, household spending as a result of the new jobs created (i.e., payroll-induced effects) will lead to an additional gains of $34 billion gain elsewhere in the economy.

Looking at employment, the supply response from shale gas will directly create 46,000 jobs in the US chemical industry due to expanded chemical production. These are high-paying jobs, the type of manufacturing jobs that policy-makers would welcome in this economy. In addition to the jobs created in the US chemical industry, another 264,000 indirect jobs would be created in supplier industries, and another 226,000 payroll-induced jobs would be created elsewhere in the economy through household spending of wages, leading to a total of 537,000 new jobs. The jobs created and expanded output from the increase in chemical industry production would lead to a gain in federal, state and local tax collections, totaling nearly $14 billion in 2020.

Policies Will Influence Our Ability to Realize the Shale Gas Opportunity

A successful national energy policy is vital to optimizing the competitiveness of the US chemical industry and realizing the shale gas opportunity. Energy policy must embrace the development of ALL viable energy sources, including coal and nuclear (in addition to oil, gas and renewables). It must allow the markets to function as freely as possible and create the most level playing field possible, which will mean putting energy efficiency on an equal footing with other energy sources. It must be aligned with tax and trade policies, and, it should be designed to avoid excessive price volatility by balancing supply and demand. At a time when gas demand is poised to grow in several sectors, federal policies on access to gas on federal lands are not aligned with demand forecasts.

On the subject of LNG exports, in February ACC's Board reaffirmed its support for free trade principles in the context of energy policy. ACC supports the application of existing trade rules (including WTO commitments and bilateral Free Trade Agreements). We support exports of American-made products, including Liquefied Natural Gas, and we oppose imposition of any new LNG export bans or restrictions.

Government policies will play a key role in ensuring that we optimize our competitive advantage. Important policies include:

- Implementing a true all-of-the-above energy policy that enables all energy sources (including energy efficiency) to fairly compete in the market.
- Aligning federal supply policies with demand policies (streamlining production permits onshore, expanding access to energy resources offshore)
- Keeping oversight of unconventional oil and gas production in the hands of the states
- Expediting permitting and construction of infrastructure needed to move gas and gas liquids to market.
- Maintaining accelerated depreciation tax schedules to advance chemical projects.
- Maintaining access to emerging export markets.

ACC thanks the subcommittees for the opportunity to explain how abundant and affordable supplies of natural gas and natural gas liquids are creating a manufacturing renaissance in the US chemical industry. In a few short years, the US chemical industry has moved from an industry in contraction to an industry facing an era of unprecedented expansion.

* The American Chemistry Council (ACC) represents the leading companies engaged in the business of chemistry. ACC members apply the science of chemistry to make innovative products and services that make people's lives better, healthier and safer. ACC is committed to improved environmental, health and safety performance through Responsible Care®, common sense advocacy designed to address major public policy issues, and health and environmental research and product testing. The business of chemistry is a $760 billion enterprise and a key element of the nation's economy. It is the largest exporting sector in the US, accounting for 12 percent of US exports. Chemistry companies are among the largest investors in research and development. Safety and security have always been primary concerns of ACC members, and they have intensified their efforts, working closely with government agencies to improve security and to defend against any threat to the nation’s critical infrastructure.