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DRAFT PAPER

# US SHALE GAS, A GAMER CHANGER FOR THE PETROCHEMICAL WORLD

**Expert Insights for your industries**

# CONTENT

<b>Purpose of this paper</b>	<b>3</b>
<b>The Shale gas and Shale oil revolution</b>	<b>4</b>
<b>US Ethane Cracker Boom</b>	<b>7</b>
<b>Impact on other Petrochemical products</b>	<b>9</b>
<b>Ethane Exports</b>	<b>10</b>
<b>Propane/Propylene Exports</b>	<b>11</b>

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**Creation period: March 2020**

## Chapter 1

# PURPOSE OF THIS PAPER

In this paper the US shale revolution and its effect on the petrochemical industry worldwide will be reviewed and analyzed. Besides the impact on markets also the consequences for new petrochemical projects will be given and the current structural changes will be highlighted.

## Chapter 2

# THE SHALE GAS AND SHALE OIL REVOLUTION

The development of horizontal drilling in combination with the long-known hydraulic fracturing “fracking”, a method that has been applied to gas fields since 1949 to improve the production of a gas field, was the starting point for the so called shale gas revolution in the United States. The technology was first applied in 1998 and reached mature status in 2011. Since this time, the US has seen a tsunami of oil and gas from this technique and made the US the world’s biggest producer of oil and gas and energy independent, as well as changing the energy market worldwide.

Fig. 1 shows the principle of fracking, the combination of horizontal drilling and hydraulic injection of a mixture of water, sand and chemicals under high pressure to create fissures in the shale

formation in order to improve the permeability of the shale to release the trapped gas and oil. This hydraulic cracking of the structures is repeated frequently to allow a constant production.

The technology has been applied to many oil and gas fields and within a period of 10 years made the US from importer to energy exporter, creating numerous jobs in various sectors.

However, as the heating value of ethane is much higher than the one of specified Natural gas, ethane must be separated from Natural gas in order to achieve the specified heating value. This is the reason why the US ethane production increased sharply as shown in Fig. 4 in the last 10 years. Part of the ethane is reinjected for Enhanced Oil Recovery or to keep the pressures of a

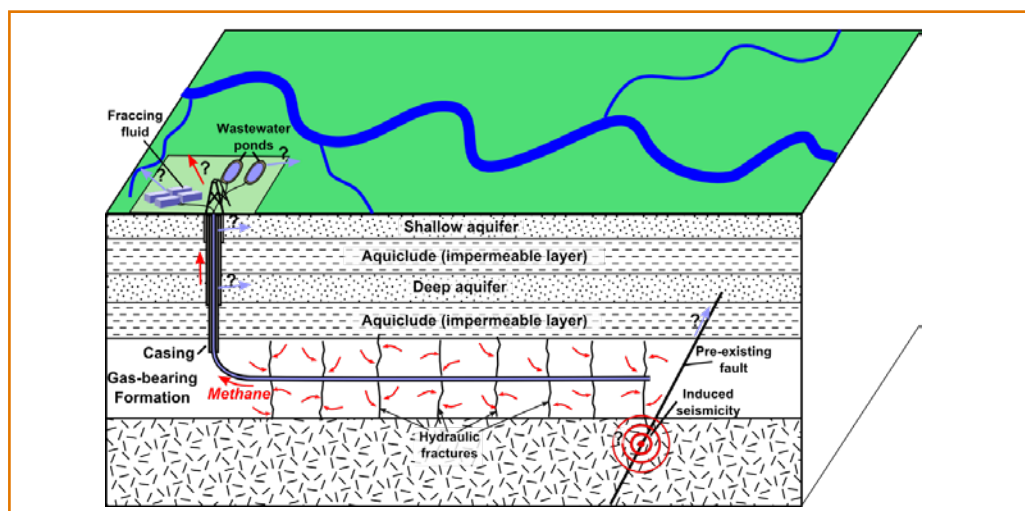


Figure 1:  
Principle of Hydraulic Fracturing “Fracking” (Source: Mikenorton - CC BY-SA 3.0)