



# talk about petrochemicals

February 2011

## Facts on Petrochemicals

### 2009 Statistics

Production capacity:	8.6 billion pounds per year*
Value:	\$9.2 billion in products shipped
Exports:	\$5.4 billion
Employment:	over 7,800 direct jobs
Investment:	over \$10 billion from 1974 to 2009

\* The petrochemical industry is international and uses Imperial measures .

### History of Petrochemicals in Alberta

**1950s and 1960s** Chemical operations began in Edmonton and Fort Saskatchewan including the production of formaldehyde, acetic acid, anhydride, solvents, cellulosic acetate, urea, phenolic resins, hydrochloric acid, ammonia, ammonium nitrate, phosphate, and fire-fighting chemicals.

**1970s** There was a major leap forward in the area of petrochemicals and value-added processing of energy resources with significant investment in Fort Saskatchewan, Red Deer and Medicine Hat regions (including electricity co-generation facilities). Industry development focused on methanol, urea, ammonia, Styrofoam®, ethylene glycol, vinyl chloride monomer, chlorine, and polyvinyl chloride.

**1980s and 1990s** There occurred more significant investment in expansions and new products including vinyl acetate, oxygen, nitrogen, methanol, urea, sulphuric acid, phosphoric acid, ethylene glycol, ethylene, styrene, linear low-density polyethylene, carbon dioxide, and ammonia.

**2001** Alberta achieved world-class petrochemical status with the world's largest ethane-based ethylene facility built at Joffre and other major investments in new products such as monoethylene glycol, alpha olefins, and low-density polyethylene and air separation.

**2002** Alberta's first propylene facility became operational in Redwater.

**2007** Government announced the Incremental Ethane Extraction Program, a 10-year initiative designed to encourage increased ethane extraction by providing royalty credits for increased ethane consumption by petrochemical facilities in Alberta this program is reflected in the *Incremental Ethane Extraction Regulation*.

**2010** The Competitiveness Council was launched during Spring Session, 2010 as Bill 1: *The Alberta Competitiveness Act*. It was passed to strengthen Alberta's economy by identifying and addressing issues affecting the province's ability to compete in the global economy. Four sectors were selected including the petrochemical sector. The sectors were chosen based on their importance to the province's economy, opportunities for competitive improvements and related initiatives already underway by government.

### Major Petrochemical Sites in Alberta

**Fort Saskatchewan** Dow Chemicals: ethylene, ethylene glycol, ethylene oxide, foam polyethylene, vinyl chloride monomer and electricity co-generation

**Joffre** BP Chemicals: linear alpha olefins Dow/NOVA joint venture: ethylene NOVA Chemicals: ethylene, polyethylene and electricity co-generation (with Atco/EPCOR)

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## **Alberta – Canada’s petrochemical leader**

Alberta is Canada’s leading producer of petrochemicals. Located primarily in Joffre and Fort Saskatchewan, petrochemical production is one of the largest manufacturing industries in the province. It features four ethane-cracking plants, including two of the world’s largest, with combined annual capacity to produce 8.6 billion pounds of ethylene.

Petrochemicals are a valuable industry from Alberta’s primarily resource-based economy. Petrochemicals are a refined product, taking natural resources and moving them up the value chain before exporting them. Annual petrochemical production is valued at approximately \$15 billion.

Alberta is committed to the ongoing success of the petrochemical industry as it is a model for value-added industry in the province, allowing Albertans to get the most out of the province’s resources – whether in investment capital, exported products or jobs.

As a result of approximately \$10 billion in capital investment since the 1970s, Alberta’s petrochemical industry has substantially increased its production capacity for ethylene, polyethylene, ethylene glycol and linear olefins.

The viability of the Alberta petrochemical industry is built on access to a long term secure supply of competitively priced natural gas feedstock and an ability to access global markets with competitively priced products.

Ethylene comprises the bulk of Alberta’s petrochemical production, with up to 245,000 barrels of ethane feedstock being extracted from the province’s natural gas supply daily.

As natural gas production continues to decrease in the province, there will be a corresponding drop in ethane and other natural gas liquids. To offset this decrease, there are plans to extract ethane from off gases from bitumen upgrading.

It is estimated that with new refining capacity up to 150,000 barrels of ethane could be produced from bitumen upgrading and used for petrochemical feedstock.

## **New opportunities**

As Alberta moves forward, more and more emphasis is placed on developing value-added opportunities in the province. The petrochemical industry makes valuable products used directly in the manufacture of thousands of consumer products.

To help increase petrochemical activity in the province, the government of Alberta introduced *the Incremental Ethane Extraction Regulation*. The regulation provides credits to petrochemical facilities that exceed baseline production levels.

With the program in place, it is anticipated that new dollars will be invested by the petrochemical sector with expansions to current facilities and construction of new straddle plants for greater ethane extraction.

Opportunities are arising for a new feedstock for petrochemicals apart from natural gas. Innovative technologies have explored the option of integrating petrochemical facilities with bitumen upgraders, using off-gases as petrochemical feedstock.

For more information about Alberta’s petrochemical industry, please visit [www.energy.alberta.ca](http://www.energy.alberta.ca).