tankers have stimulated the construction of large refineries in the Atlantic provinces, specifically at Saint John, NB, and Point Tupper, NS. These are located in areas of relatively low population density so that a major proportion of their output is either shipped inland or re-exported. Changes in international markets had a major impact on the "export" refineries in 1975, resulting in a marked decrease in product exports.

In 1975 Canadian refineries yielded an average 35% of motor gasoline, 33% of middle distillates including light heating oil, diesel oil and jet fuel and about 20% of heavy fuel oil. Other products included liquefied petroleum gas, petrochemical feedstocks, aviation gasoline, asphalt, coke and lubricating oil. To meet the high yields of light products most refineries are equipped with a catalytic cracker and total installed cracking capacity in 1975 was equivalent to about 21% of the crude distillation capacity. Catalytic reforming amounted to about 18% of crude capacity. This process upgrades gasoline quality and also delivers aromatic petroleum chemical feedstocks. To meet the need for high quality low-sulphur distillates, hydrogen-treating plants have been installed totalling 36% of crude feed and it is common practice to hydrosulphurize most or all of the gas, oil and light distillates. Six hydrocracking units have been installed in Canada capable of treating 4% of crude feed. This new process is of value in upgrading heavy fuels to motor gasoline and middle distillates.

Canada's petrochemical complex will be significantly enlarged by the construction of the country's first "petrochemical refinery" at Sarnia, Ont. Scheduled to start production in 1978, the refinery will manufacture both fuel products and petrochemicals. New petrochemical plants will be built in the area for further processing of the chemical products.

At Sarnia, three refineries are integrated with nine petrochemical companies. The oil refineries supply petroleum gases, naphtha and aromatics. The chemical companies convert them to a large number of intermediate and final products. Western Canadian natural gas is also piped into this complex. The intermediate products include ethylene, propylene, butadiene, aromatics and ethylene oxide. Final products include carbon black, synthetic rubbers, detergent alkylates, polyethylene, polystyrene, polyvinylchloride, ammonia, fertilizers, petroleum additives and many others. Many products are sold back to the refineries for blending into fuel products. Fuels are piped directly to the petrochemical plants for process heat and power requirements. Montreal and Edmonton are major petrochemical centres but plants are distributed widely across Canada.

Canadian refineries are investing in environmental control and conservation equipment to meet new standards. Process cooling water has been minimized or abandoned entirely in favour of air cooling. Water effluent undergoes gravity separation and secondary processes such as air flotation, biological oxidation or filtration. Low sulphur fuels and dispersion from tall smoke stacks minimize the discharge of sulphur dioxide from process heaters. Increased emphasis on products designed to reduce pollution by the consumer has resulted in sulphur-free fuels and motor gasolines with reduced harmful emission levels.

The pioneer Athabasca oil sands plant of Great Canadian Oil Sands Ltd. at Fort McMurray includes refining equipment to process the recovered bitumen to a synthetic crude oil. A second oil sands plant is now under construction by Syncrude Canada Ltd., whose participants include the federal, Alberta and Ontario governments. Research programs are being staffed to develop improved techniques for the extraction and processing of this resource.

Natural gas. Processing capacity at the end of 1975 was 16.5 MMMcf (467.2 million m^3) a day, an increase of only 0.3 MMMcf (8.5 million m^3) over 1974. This small increase reflects the fact that no new fields were discovered during 1975. No major plant has been commissioned since 1972. Plant output includes pipeline gas, propane, butanes, pentanes plus and sulphur.