

B.4 PETROLEUM REFINING

B.4.1 Canadian Petroleum Refineries

Location: There are 33 operating refineries located across Canada, with 4 in the Maritimes, 7 in Quebec, 8 in Ontario, 1 in the Northwest Territories and 13 in Western Canada.

B.4.1.1 Production Processes

Refineries differ in their processing layout, depending on their capacity, type of crude oil processed, complexity of the processes involved, product specifications, and product requirements. Generally, the following processes are used in petroleum refining after washing crude oil with water for salt removal (desalting).

B.4.1.2 Separation

- (a) Atmospheric distillation, to separate light and/or heavy oil fractions
- (b) Vacuum distillation, to separate heavy oil fraction into gas-oil, lube-oil, and residue

B.4.1.3 Conversion

- (a) Catalytic cracking
- (b) Catalytic naphtha reforming
- (c) Light hydrocarbon processing
 - (i) polymerization
 - (ii) alkylation
- (d) Isomerization
- (e) Coking
 - (i) Delayed
 - (ii) Fluid-bed
- (g) Desulphurization of fuel oils
- (h) Sulphur recovery by Claus Process

B.4.1.4 Treating: removal of H₂S and mercaptans from light hydrocarbons by amine and chemical treatment (sodium plumbite or copper chloride).

B.4.1.5 Blending: Blending of base stock to meet the applicable specifications.

B.4.1.6 Emissions: Annual emissions for this industry sector are 263 000 tonnes/year SO₂ (92 000 from refining processes; 171 000 from combustion