

FACT SHEET No. 5

Coastal Petrochemical of Canada

3500 Broadway Street
Montreal East, Quebec
H1B 5B4



A list of 106 industrial plants has been established under St. Lawrence Vision 2000 (SLV 2000), the second phase of the St. Lawrence Action Plan, launched in 1988. The overall objective is to reduce liquid toxic waste and virtually eliminate discharges of persistent toxic substances.

The 106 industrial plants designated under SLV 2000 are divided into four groups, each of which has been given a specific objective. The COASTAL PETROCHEMICAL OF CANADA complex, located in Montreal East, is part of Group 4, comprising the 50 plants targeted under the St. Lawrence Action Plan.

The objective set for Group 4 is to pursue cleanup efforts and perform environmental monitoring to achieve a 90% reduction in liquid toxic waste. Between 1988 and 1995, the 50 plants reduced their toxic effluent discharges by 96%.

INDUSTRIAL PLANT

Petrochemical complex reopened

The COASTAL PETROCHEMICAL OF CANADA complex in Montreal East was formerly owned by KEMTEC PETROCHEMICAL INC., which shut down the facility in September 1991. It was reopened in October 1994 by COASTAL PETROCHEMICAL OF CANADA. The complex used to desulphurize and reform naphtha to produce paraxylene, phenols and acetone. In October 1994, U.S.-based Coastal Group reactivated paraxylene production, and the raw materials have since been imported. In 1995, the complex had an annual production capacity of 250 000 t of paraxylene. It operated at 100% of capacity and employed a work force of 116.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Hydrogen
- Xylene

FINISHED PRODUCTS

- Paraxylene
- Benzene
- Heavy hydrocarbons and fuel gases
- Toluene

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

ss and o&g

According to monthly company data produced by former owner KEMTEC PETROCHEMICAL, in 1988 the complex had an effluent discharge of 13 900 m³/d, containing:

- 531 kg/d of suspended solids (ss)
- 70 kg/d of oil and grease (o&g)
- 2 kg/d of phenols

RESOURCES AND USES TO PRESERVE

Industrial and residential uses

The COASTAL PETROCHEMICAL OF CANADA complex in Montreal East empties its wastewater into the Montreal Urban Community (MUC) sewer system. After treatment, that effluent is channelled to the outfall at Aux Vaches Island. There are numerous cottaging activities downstream from the MUC outfall. The presence of cottages, campgrounds, marinas and numerous wharves are conducive to the practice of water sports. Furthermore, the string of islands below Aux Vaches Island features interesting wildlife habitats. Some local fish spawning grounds are diversified, being used by several different species, such as pike, bass and sucker. Waterfowl nesting areas and semiaquatic mammal habitats attract large numbers of hunters, trappers and fishermen to the area. Lavaltrie, the first municipality downstream from the MUC outfall, draws its drinking water from the St. Lawrence.

WATER QUALITY BASED OBJECTIVES

Environmental protection

Water quality based objectives are established to preserve local resources and uses. These guidelines, expressed as maximum permissible loads and concentrations for effluent released into the environment, are used in choosing treatment methods which best promote environmental protection.

EFFLUENT TREATMENT

Settling basins

Industrial wastewater flows into a special collecting basin. It is circulated through an API separator and then an equalization tank to regulate the flow. Next, the wastewater is aerated, then circulated to settling basins. Since 1994, rainwater from the phenol plant site, south of Sherbrooke Street, has been sent directly to the biological basin for treatment. The treated water is channelled to the MUC wastewater treatment plant through the Durocher main sewer.

Rainwater from the plant site north of Sherbrooke Street is pre-treated, then emptied into the sewer system together with treated effluent and sanitary sewage. Pre-treatment consists of removing oil, grease and suspended solids by circulating the water through the API separator into a rainwater basin.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

Preventive measures

The preventive measures introduced in fall 1994 included installed barriers around the basins and a low wall around the para-xylene plant to contain overflows and leaks and facilitate recovery. In 1995, the zinc chromate used in the cooling towers was replaced by phosphate-based products, a measure designed to reduce zinc and chromium contamination.

REGULATORY COMPLIANCE-WATER COMPONENT

Compliance with regulations

The facility is subject to Montreal Urban Community by-law 87 respecting discharges to the sewers. It is in compliance with all requirements.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Characterization forth coming

The Chimiotox index gauges the load of all toxic substances present in industrial effluent using the toxicity factor assigned to each one. It is used, among other things, to monitor discharge trends over the years and determine the proportion of each pollutant.

An exhaustive Action Plan effluent characterization for the KEMTEC PETROCHEMICAL complex was conducted in 1991. However, the industrial process and thus the nature of the effluent have changed since COASTAL PETROCHEMICAL OF CANADA reopened the facility. The 1991 characterization data do not reflect current conditions and therefore cannot be used.

Given the lack of a comprehensive effluent characterization for present plant discharges, the information available is insufficient to estimate a Chimiotox index. An index will be established from a future characterization.

Table 1 Chimiotox Index - Coastal Petrochemical of Canada

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
<i>Given that no effluent characterization study has been conducted for the COASTAL PETROCHEMICAL OF CANADA complex, available information is insufficient to estimate a Chimiotox index. A forth coming effluent characterization will yield results from which an index can be established.</i>			
CHIMIOTOX INDEX			N/A

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

No persistent toxic substances detected in 1991

One long-range objective of SLV 2000 is the virtual elimination of 11 persistent bioaccumulative toxic substances from the St. Lawrence and its tributaries. The targeted substances are those designated by the International Joint Commission in August 1993: PCBs, DDT, dieldrin, toxaphene, dioxins, furans, Mirex, mercury, lead alkyl, benzo(a)pyrene and hexachlorobenzene.

None of the targeted substances was detected during the exhaustive characterization for the KEMTEC PETROCHEMICAL COMPLEX (1991).

PEEP TOXICITY REDUCTION

Low toxicity

The Potential Ecotoxic Effects Probe, or PEEP, combines results from six standardized bioassays measuring the toxic effects of effluent. The results are expressed on a logarithmic scale of increasing toxicity ranging from 1 to 10 and are used to monitor discharge trends over the years. Only one series of bioassays was conducted for the KEMTEC PETROCHEMICAL plant, at the time of the 1991 study. The PEEP index was estimated at 3.4 then. It was among the lowest of the PEEP indices found for the 50 plants.

REDUCTION IN SUBSTANCES MONITORED

Reduction in phenols and ss

According to company data, in 1995 the plant had an average effluent discharge of 12 301 m³/d containing:

- 138.4 kg/d of suspended solids (ss)
- 12.14 kg/d of oil and grease (O&G)
- 1.04 kg/d of ammonia
- 0.33 kg/d of phenols
- 0.027 kg/d of sulphides

Only one unit (paraxylene) was on stream in 1994, as opposed to two units (phenols and para-xylene) in 1991. Although production has changed, a comparison of plant discharges at the start of the program in 1988 against 1995 discharges shows phenols reduced by 83% and ss by 74%. O&G dropped about 83% during the same period.

KEY POINTS

- Plant closed in September 1991 and reopened in October 1994
- Biological treatment of effluent
- Phenols reduced 83% and ss 74% between 1988 and 1995; o&g reduced about 83% during the same period

Based on December 1995 inventory.
Information reviewed by Gilles Legault, SLV 2000.

ADDITIONAL INFORMATION

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