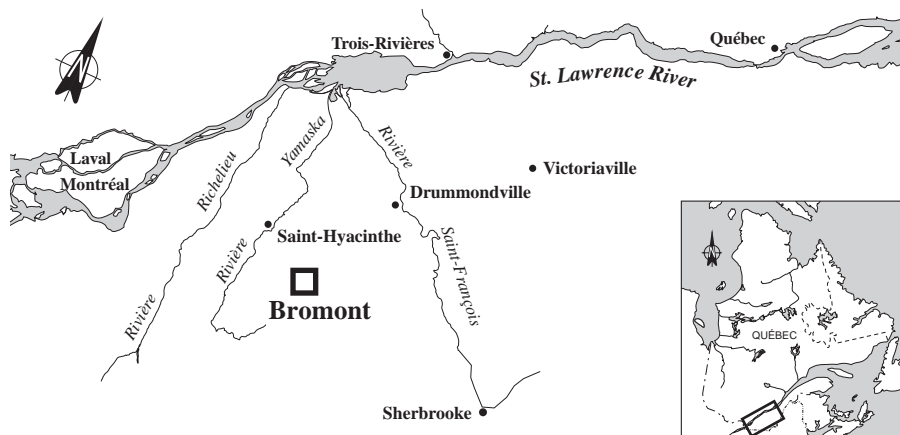


FACT SHEET 70

Hyundai Auto Canada Inc.

100 Airport Blvd.
Bromont, Quebec
J0E 1L0



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 toxic effluent and virtually eliminate discharges of persistent toxic substances.

The 106 industrial plants designated under SLV 2000 are divided into four groups, each with a specific objective. The HYUNDAI AUTO CANADA INC. mill in Bromont is part of Group 2, comprising the plants that have already implemented treatment programs, but whose effluent may contain toxic substances.

The objective for Group 2 is maximum reduction of toxic effluent of targeted plants.

INDUSTRIAL PLANT

Automobile manufacturing

The HYUNDAI AUTO CANADA INC. plant closed for an indefinite period in September 1993. Facilities include a stamping shop, an assembly shop, a paint shop, and a finishing shop. When the plant was in operation, steel sheeting was cut and formed by stamping. The various body components were assembled in the assembly plant, which had an automated production control system. Spot and arc welding was done by robots. The paint shop did pre-treatment and electroplating, applied protective coatings and surface and finishing coats. The automobile was then sent to the finishing shop where the chassis was completed and the final components (gas tank, seats, wheels, etc.) installed. Various adjustments and quality controls were performed before the car was shipped. The plant's production capacity was 100 000 vehicles per year. When it closed, production was about 20 to 25% capacity. Permanent employees numbered 845 at that time, while in 1995 there are only five employees.

PRODUCTION

BEFORE PLANT CLOSURE

PRINCIPAL RAW MATERIALS

- Steel
- Paints
- Automobile parts

FINISHED PRODUCT

- Automobiles

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Minimal loads

Based on company data, in 1993 the plant had an effluent discharge of 364 m³/d, containing notably:

- 94.8 kg/d chemical oxygen demand (COD)
- 25.4 kg/d of biochemical oxygen demand (BOD₅)
- 7.2 kg/d of suspended solids (SS)
- 2.2 kg/d of oil and grease (O&G)
- 0.376 kg/d of metals (nickel, zinc, lead, and chromium)
- 0.186 kg/d of total phosphorus

ENVIRONMENTAL DISCHARGE OBJECTIVES

Environmental protection

Environmental discharge 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. In the case of HYUNDAI AUTO CANADA INC. in Bromont, there are no water quality based objectives since the plant is closed.

EFFLUENT TREATMENT

Two treatment systems

There were two types of effluent: that containing primarily organic matter and that with mostly phosphates and metals. Effluent with large amounts of organic matter was pre-treated, then discharged into the public sewerage system. The plant performed three types of pre-treatment. In the first, suspended solids were removed from the water in two retention tanks, four forced-air flotation units and two vacuum belt filters. The second eliminated oil and grease by pH decrease, flocculation, air induction flotation, and centrifugation. The third pre-treatment process was physical and chemical. It involved pH adjustment, coagulation, flocculation, and settling operations, followed by sludge thickening in a filter press. The effluent treatment system for water containing organic matter included an equalization tank, a pH adjustment device, coagulation and flocculation units, and a sedimentation stage in a lamellar clarifier, followed by filtration through sand and sludge thickening in a filter press. Wastewater from the treatment of inorganic matter was then discharged into the Yamaska river.

Cooling water was recirculated or discharged into the river. Domestic sewage was discharged directly into the public sewerage system. Effluent containing organic matter was pre-treated and channeled to the Bromont sewage treatment plant.

PREVENTION AND CLEANUP MEASURES IMPLEMENTED

Plant closed

No changes have been made to the treatment system or process since September 1993, since the plant closed that year.

REGULATORY COMPLIANCE - WATER COMPONENT

Certificate of authorization

The HYUNDAI AUTO CANADA INC. plant in Bromont was governed by the standards associated with the certificate of authorization issued on January 30, 1989, for construction of an automobile assembly unit.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Lack of data on effluent

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

No characterization was done of the effluent of the HYUNDAI AUTO CANADA INC. plant in Bromont, since the plant suspended operations indefinitely in September 1993.

Table 1 *Chimiotox Index - Hyundai Auto Canada Inc.*

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
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Since no exhaustive characterization of effluents was carried out before closure of the HYUNDAI AUTO CANADA INC. plant in Bromont, there is not enough data to calculate the Chimiotox index.

CHIMIOTOX INDEX			N/A
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VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

One long-range objective of SLV 2000 is the virtual elimination of eleven persistent and bioaccumulative toxic substances from the effluent of the 106 targeted plants along 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 alkyls, benzo(a)pyrene and hexachlorobenzene. To reach this objective, Protection has fixed the environmental discharge objectives set for applicable substances as its target by the end of SLV 2000 in 1998, thereby ensuring that all uses of the receiving environment are protected.

The plant has discharged no effluent since September 1993.

PEEP TOXICITY REDUCTION

No bioassays

The Potential Ecotoxic Effects Probe, or PEEP, combines the results of 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. In the case of the HYUNDAI AUTO CANADA INC. plant, no bioassays had been carried out when the plant closed in September 1993.

REDUCTION IN SUBSTANCES MONITORED

No discharge

The plant has discharged no effluent since it ceased operations in September 1993.

KEY POINTS

- Plant closed in September 1993

Based on December 1995 inventory

ADDITIONAL INFORMATION

Chimiotox Index and PEEP:

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