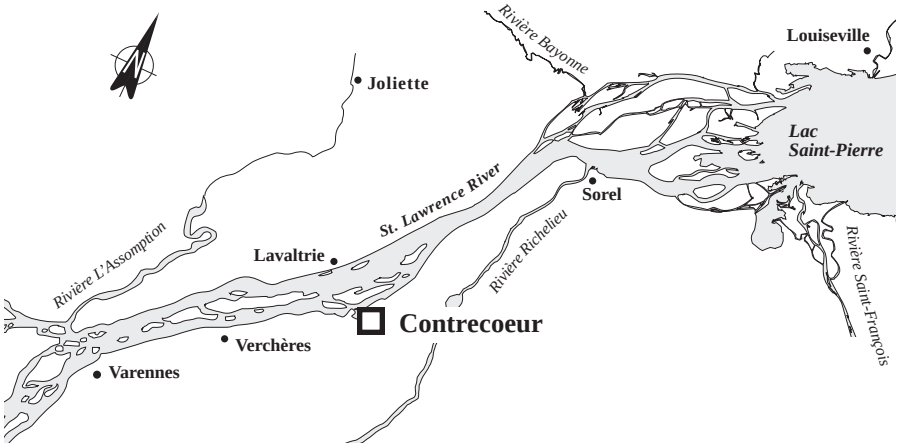
FACT SHEET 81

Stelco-McMaster Ltée

2050 route des Aciéries
Contrecoeur, Quebec
J0L 1C0



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 general 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 STELCO-MCMASTER LTÉE plant in Contrecoeur is in Group 2, which comprises 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

Manufactures steel billets and rolled steel products

The STELCO-MCMASTER LTÉE plant in Contrecoeur manufactures steel billets and rolled steel products from scrap iron and iron alloys. The scrap iron and alloys are melted in an electric-arc furnace, refined in a ladle furnace, and then continuously cast. The billets are shaped hot and then rolled before packaging. Annual production capacity of the plant is 450 000 t. In 1995, the plant operates at 92% design capacity and employs a work force of 430.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Scrap iron
- Iron alloys
- Lime

FINISHED PRODUCTS

- Steel billets
- Rolled steel products (steel reinforcing bars, special quality bars, railroad elements)
- Rolled steel products used in manufacturing spring flats for recreational vehicles and trucks

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Suspended solids and iron

According to company data, in 1993 the plant discharged 32 700 m^3/d of effluent containing notably:

- 256 kg/d of suspended solids (SS)
- 19 kg/d of iron

A substantial but variable percentage of the SS comes from the influent.

RESOURCES AND USES TO PRESERVE

Important aquatic environment

STELCO-MCMASTER LTÉE discharges its effluent to the St. Lawrence River immediately upstream of the Contrecoeur harbour (upstream of the Contrecoeur islands on the south side). The current is slow here, and the waters shallow. Many species of fish frequent the nearshore, the channels between the islands (which are a National Wildlife Sanctuary) and the waters around them. The islands are also nesting areas for waterfowl and the channels are vast still-water spawning grounds. The Contrecoeur area is popular for pleasure boating, sailing and sport fishing. Brown bullhead, northern pike and muskellunge attract fishermen to the area. In addition to private wharves and the Contrecoeur marina, there is also a federal government wharf here. Contrecoeur draws its drinking water from the river 4.4 km downstream of the plant's discharge point.

ENVIRONMENTAL DISCHARGE OBJECTIVES

Environmental protection

Environmental discharge objectives are established to preserve local resources and uses. Expressed as maximum permissible loads and concentrations for effluent released into the environment, these guidelines are used to select treatment methods which best promote environmental protection. Discharge objectives for STELCO-MCMASTER LTÉE have been calculated.

EFFLUENT TREATMENT

Clarification and settling

The industrial wastewater includes direct cooling water from the steel plant and flush water from the scale produced in the rolling plant. The wastewater goes first into settling pits, where the suspended scale is recovered, and then into a settling and cooling pond. Some of the treated water is recirculated; the rest is discharged to a ditch. Indirect cooling water, drainage and runoff water are channeled to the settling pond. Domestic sewage from the different facilities is treated in three activated sludge treatment systems and six septic tanks with tile fields.

PREVENTION AND CLEANUP MEASURES IMPLEMENTED

Reduced wastewater discharges

In 1994, a study was undertaken to find ways of reducing wastewater discharges. Work began in late 1995 to set up the plant to recirculate scale flush water; this has resulted in a 30% reduction in winter wastewater flowrate.

REGULATORY COMPLIANCE - WATER COMPONENT

No specific regulations

The STELCO-MCMASTER LTÉE plant in Contrecoeur is subject to no specific regulations governing effluents.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Characterization planned for 1996

The Chimiotox index gauges the load of all toxic substances in industrial effluent using 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.

Since no exhaustive characterization of effluent from the STELCO-MCMASTER LTÉE plant in Contrecoeur has been made for SLV 2000, there are not enough data to calculate the Chimiotox index. Effluent characterization is planned for 1996.

Table 1 ***Chimiotox Index - Stelco-McMaster Ltée***

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Since no exhaustive characterization of effluent from the STELCO-MCMASTER LTÉE plant in Contrecoeur has been made for SLV 2000, there are not enough data to calculate the Chimiotox index. Effluent characterization is planned for 1996; the results can then be used to calculate the Chimiotox index.			
CHIMIOTOX INDEX			**N/A**

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 1996 characterization should make it possible to confirm the absence of persistent and bioaccumulative toxic substances in the effluent.

PEEP TOXICITY REDUCTION

Bioassays scheduled for 1996

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 (1 to 10) of increasing toxicity and are used to monitor discharge trends over the years. A series of bioassays of effluent from the STELCO-MCMASTER LTÉE plant in Contrecoeur are to be conducted during the characterization planned for 1996. Company tests to date of rainbow trout and daphnia show no toxicity.

REDUCTION IN SUBSTANCES MONITORED

Stable discharge

According to company monthly data, in 1995 the plant discharged an estimated 32 700 m^3/d of effluent, containing notably:

- 394 kg/d of suspended solid (SS)
- 39 kg/d of iron

A substantial portion of the suspended solids and the iron comes from the influent, the amount varying as a function of time and parameter. Between 1993 and 1995, net suspended solids and iron loads increased 54% and 105% respectively. During this period, suspended solids loads in the influent increased by more than 30% and the production of the rolling plant by 14%. Effluent flowrate remained stable.

KEY POINTS

- **Winter flowrate cut by 30% by recycling rolling-plant scale flush water**

Based on December 1995 inventory

ADDITIONAL INFORMATION

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Published by authority of the Minister of the Environment

Catalogue No. En153-6/81-1996E
ISBN 0-662-23294-1
(Aussi disponible en français sous le titre *Établissements industriels : faits saillants*)