FACT SHEET 80

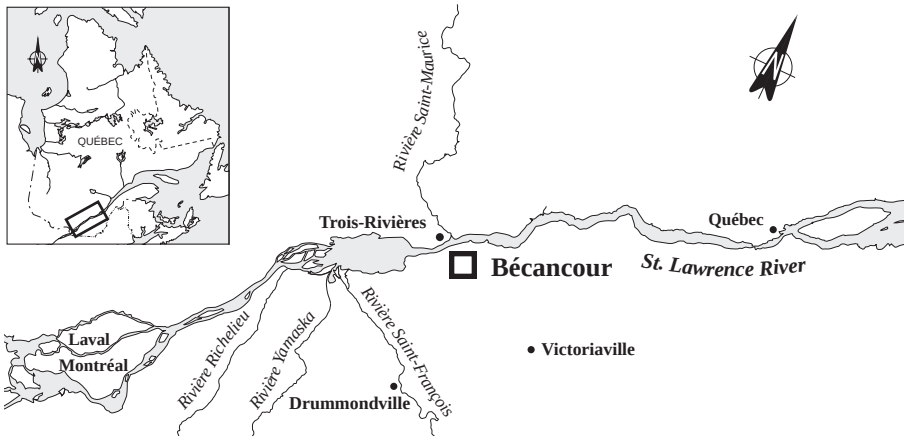
Société Canadienne de Métaux Reynolds, div. Usine de tige Reynolds

6900 Raoul-Duchesne Blvd.
Bécancour, Quebec
G0X 1B0

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 SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant in Bécancour 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 the toxic effluent of targeted plants.



INDUSTRIAL PLANT

Manufactures aluminum rods

The SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant in Bécancour manufactures aluminum rods. Aluminum is smelted in natural gas furnaces, continuously cast and then water cooled. The bars obtained are then crushed in a series of rollers to produce round rods 3/8 to 11/16 in. in diameter. The rods are then reeled and sold for manufacture of electric wire or for steel stripping. Aluminum is also sold in remelt ingots. Annual production capacity of the plant is 82 000 t. In 1995, the plant operates at 80% design capacity and employs a work force of 50.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Aluminum
- Magnesium
- Iron
- Titanium
- Boron
- Chromium
- Silicon
- Copper

FINISHED PRODUCTS

- Aluminum rods
- Remelt ingots

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Low flowrate, small loads

According to company data, in 1993 the plant discharged 24.0 m^3/d of effluent containing notably:

- 2.76 kg/d of suspended solids (SS)
- 0.87 kg/d of total oil and grease (O&G)
- 0.126 kg/d of aluminum
- 0.06 kg/d of iron

RESOURCES AND USES TO PRESERVE

A wide variety of habitats

The SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant is located in the Bécancour industrial park on the shores of the St. Lawrence River. The plant discharges industrial waste to a ditch (considered an industrial sewer under municipal bylaw) more than 1.7 km from the river. The complex, natural morphology of the river in the area promotes a wide diversity of wildlife habitats. Water plant communities grow in the sublittoral zone in front of the park. Immediately downstream of the Bécancour wharf, there is a large flat in the middle of the river. The water plant communities are attractive spawning and rearing areas for northern pike, perch, brown bullhead, and smallmouth bass. The local wildlife includes more than 70 species of fish and at least 26 bird species. The Bécancour area attracts hunters and fishermen; sport fishing and muskrat trapping are particularly popular at the mouth of the Gentilly River. In addition, the nuclear power station draws drinking water and industrial water from the river just downstream of the Bécancour wharf.

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 the SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant have been calculated and are available on request.

EFFLUENT TREATMENT

Two filtration units

Industrial wastewater is treated in an ultrafiltration unit that removes oil and then in a water softener. By March 1997, it will be treated instead by two filtration units installed in series and then aerated in cooling towers to lower oxygen demand. The treated water will then be discharged to the industrial ditch that empties into the St. Lawrence. Domestic sewage will be channeled to the industrial park's sewerage system.

PREVENTION AND CLEANUP MEASURES IMPLEMENTED

Less sewage

A major effort has been made to reduce the amount of industrial water used in the process. Also effluent from the mechanical broom is now stored in a tank and then shipped to an authorized site for treatment. This last measure has reduced the amount of wastewater discharged to the sewerage system by 0.6 to 0.8 m^3/d.

REGULATORY COMPLIANCE - WATER COMPONENT

Negotiations in progress

The SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant must comply with standards stipulated in its certificate of authorization for effluent discharge. These standards are stricter than those for discharges to municipal systems. The company is currently negotiating with the Ministère de l'Environnement et de la Faune du Québec (MEF) to establish new standards and obtain a new certificate of authorization.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Very low Chimiotox index

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 (Figure 1) and determine the toxic contribution of each pollutant (Table 1).

Table 1 lists SLV 2000 characterization data collected in May 1995 and the Chimiotox values estimated from them assuming an effluent flowrate of 48 m^3/d. Three substances were detected in testing for more than 120. According to this data, Chimiotox index for the three substances detected is very low.

Figure 1 is based on company monthly data for 1993 and 1995, adjusted for the 1995 SLV 2000 copper characterization. The extrapolations for 1994 are based on company monthly data for 1993, adjusted for the 1995 SLV 2000 copper characterization. The projections for 1996 to 1998 are based on company monthly data for 1995, adjusted for the 1995 SLV 2000 copper characterization. The Chimiotox index of the SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant is among the lowest of those of the SLV 2000 plants.

Table 1 ***Chimiotox Index (1995) - Société Canadienne de Métaux Reynolds, div. Usine de tige Reynolds****

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Total oil and grease	0.038	100	4
Total copper	0.006	451	3
Total phosphorous	0.015	50	1
CHIMIOTOX INDEX			**8**

* Assuming an effluent flowrate of 48 m^3/d (3 substances detected in testing for more than 120)

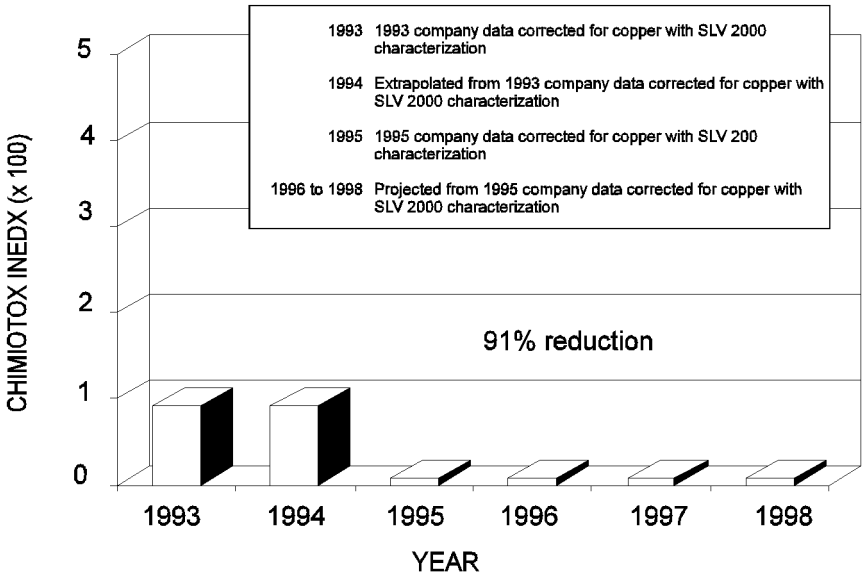


Figure 1 ***Chimiotox Index trends (1993 to 1998) Société Canadienne de Métaux Reynolds, div. Usine de tige Reynolds***

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 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.

None of the eleven targeted persistent and bioaccumulative toxic substances were detected in effluent from the SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant during the SLV 2000 characterization of May 1995.

PEEP TOXICITY REDUCTION

Low PEEP

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 SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS plant was conducted in 1995. A PEEP value of 1.9 was obtained, which is low.

REDUCTION IN SUBSTANCES MONITORED

Smaller loads

According to company data, in 1995 the plant discharged 46.9 m^3/d of effluent containing notably:

- 0.61 kg/d of suspended solid (SS)
- 0.081 kg/d of iron
- 0.038 kg/d of total oil and grease (O&G)
- 0.024 kg/d of aluminum

Between 1993 and 1995, aluminum loads dropped 81%, oil and grease loads dropped 96%, suspended solids loads dropped 78% and iron loads increased 35%. The decline in loads is due to cutbacks in chemical use and the installation of an ultrafiltration unit.

KEY POINTS

- **One of the lowest Chimiotox indexes among SLV 2000 plants**
- **A more than 90% drop in Chimiotox index**

Based on December 1995 inventory

ADDITIONAL INFORMATION

Chimiotox Index and PEEP:
Gilles Legault, Environment Canada
(514) 283-3452

Environmental discharge objectives:
Francine Richard, MEF (418) 521-3820

Records officer at the Ministère de l'Environnement et de la Faune du Québec (MEF):
Fadila Matejek (819) 373-4444

Environment officer at the SOCIÉTÉ CANADIENNE DE MÉTAUX REYNOLDS, DIV. USINE DE TIGE REYNOLDS:
François Demers (819) 294-2900, ext. 222

Production team:
Environment Canada
Isabelle Bouchard Thérèse Drapeau
Gilles Legault Lucie Olivier
Sylvie Roberge Marc Villeneuve

Ministère de l'Environnement et de la Faune du Québec
Francine Richard
François Rocheleau

Somer
François Thériault

Published by authority of the Minister of the Environment
© Minister of Supply and Services Canada 1996
Catalogue No. En153-6/80-1996E
ISBN 0-662-23289-5
(Aussi disponible en français sous le titre *Établissements industriels : faits saillants*)