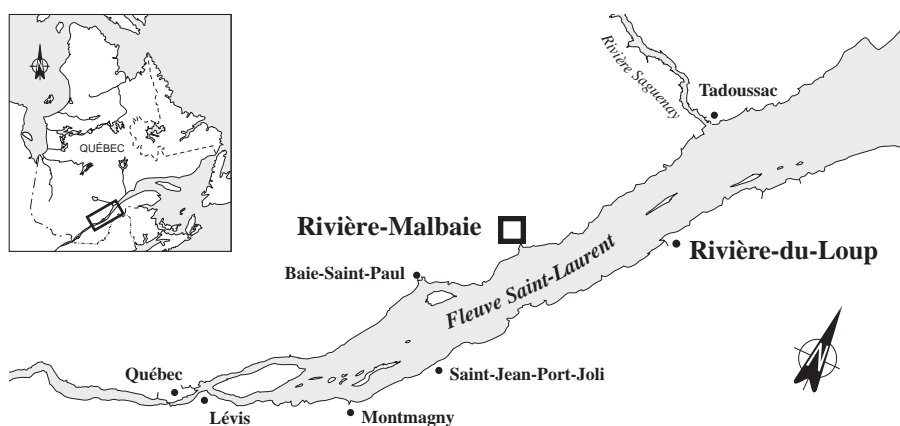
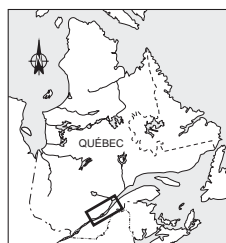


FACT SHEET 51

BICC Phillips Inc.

500 Mailloux Boulevard
Rivière-Malbaie, Quebec
G5A 1N4



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 (SLAP), 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 BICC PHILLIPS INC. plant in Rivière-Malbaie is in Group 1, comprising plants that discharge inadequately treated effluent.

The objective for Group 1 is to reduce toxic effluent discharges in targeted plants by 90%.

INDUSTRIAL PLANT

Manufactures aluminum and steel cable

The BICC PHILLIPS INC. plant in Rivière-Malbaie manufactures cable and metal strip from steel wire and aluminum rods. Steel cable is made by twisting steel wire together to make stranded wire. Aluminum cable is manufactured in two stages: aluminum wire is drawn to the desired thickness and then the strands are twisted together. The drawing takes place in an oil-lubricated tungsten carbide die. The cable is then cleaned with solvent. Aluminum strip, manufactured from rods, is first rolled to the desired diameter and then flat rolled to produce a rectangular strip. Cutting oil is used for the rod rolling and flat rolling. Annual production capacity of the plant is 16 363 t of cable and metal strip. In 1995, the plant operates at 70% design capacity and employs a work force of 70.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Aluminum rods
- Steel wire
- Lubricating oils
- Solvents

FINISHED PRODUCTS

- Steel cable
- Aluminum electrical cable (with or without steel reinforcement)
- Aluminum strip

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Low charges

Based on company data, in 1993 the plant discharged 54 m³/d of effluent containing notably:

- 5.43 kg/d of suspended solids (ss)
- 2.75 kg/d of chemical oxygen demand (COD)
- 0.45 kg/d of oil and grease (O&G)
- 0.3 kg/d of biochemical oxygen demand (BOD₅)
- 0.1 kg/d of aluminum
- 0.02 kg/d of iron

RESOURCES AND USES TO PRESERVE

Salmon restocked

The BICC PHILLIPS INC. plant in Rivière-Malbaie empties effluent into the Malbaie River, home to eight species of fish. The most abundant species are longnose dace, brook trout, white sucker and longnose sucker. The rest of the fish population is composed of threespine stickleback, sculpin, lamprey and recently, Atlantic salmon. Atlantic salmon once spawned in the Malbaie River but was driven away by poor water quality. In addition, until 1986, Donohue ran logs on the river; these backed up behind a dam built above Clermont Falls, posing another obstacle to the salmon run. For the last two years, however, the Ministère de l'Environnement et de la Faune du Québec (MEF) has released parrs into the river; it should, therefore, be possible to resume salmon fishing in a few years. The coastal waters between Cap-à-l'Aigle and Pointe-au-Pic are frequented by at least seven fish species. The most abundant are capelin and rainbow smelt.

The only recreational facilities between Clermont and the mouth of the river are a few campgrounds. Though the river is accessible to anglers, swimmers and canoeists, poor water quality discourages recreational activities. The bay is nonethe-

less used in summer by sailboarders and pleasure boaters. It is also possible to fish for smelt on either side of the bay, from the wharves of Cap-à-l'Aigle and Pointe-au-Pic. The bay is no longer used for commercial fishing or shellfish harvesting, as it was in the past.

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. Environmental discharge objectives for BICC PHILLIPS INC. have been calculated.

EFFLUENT TREATMENT

No industrial wastewater

The plant does not discharge any industrial wastewater. The soluble oils used for lubrication are recirculated and then disposed of as hazardous waste; they are removed by an authorized carrier. Blowdown from the cooling towers, the heat exchangers and the boilers goes directly into the effluent. Sanitary sewage is channeled into two septic tanks; overflows from these tanks empty into a ditch and the Malbaie River.

PREVENTION AND CLEANUP MEASURES IMPLEMENTED

Manufacturing process modified

In 1990, the company added a third flattening mill for the manufacture of aluminum strip.

REGULATORY COMPLIANCE - WATER COMPONENT

No discharge standards

The BICC PHILLIPS INC. plant is not subject to any discharge standards.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

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 gives SLV 2000 characterization data collected in September 1995 along with the Chimiotox values calculated from them assuming an effluent flowrate of 22.5 m³/d. Nine substances were selected in testing for more than 120. The Chimiotox index obtained using these data was among the lowest of those of SLV 2000 plants.

Figure 1 is plotted from the 1995 SLV 2000 characterization data. The Chimiotox index calculated from these data was applied to the entire period between 1993 and 1998, since no major process changes were made between 1993 and 1995.

Table 1 *Chimiotox Index (1995) - BICC Phillips Inc.**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Total oil and grease	0.072	100	7
Total arsenic	4.87 X 10 ⁻⁵	57 143	3
Total phosphorus	0.020	50	1
Total copper	0.003	451	1
Total aluminium	0.004	11	<1
Total iron	0.011	3.3	<1
Total manganese	2.637 X 10 ⁻⁴ **	10	<1
Total vanadium	0.001 **	71	<1
Total zinc	0.005	9.4	<1

CHIMIOTOX INDEX

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* Assuming an effluent flowrate of 22.5 m³/d (nine substances selected in testing for more than 120)

** Load calculation based on analytical data which are near methodological detection limits

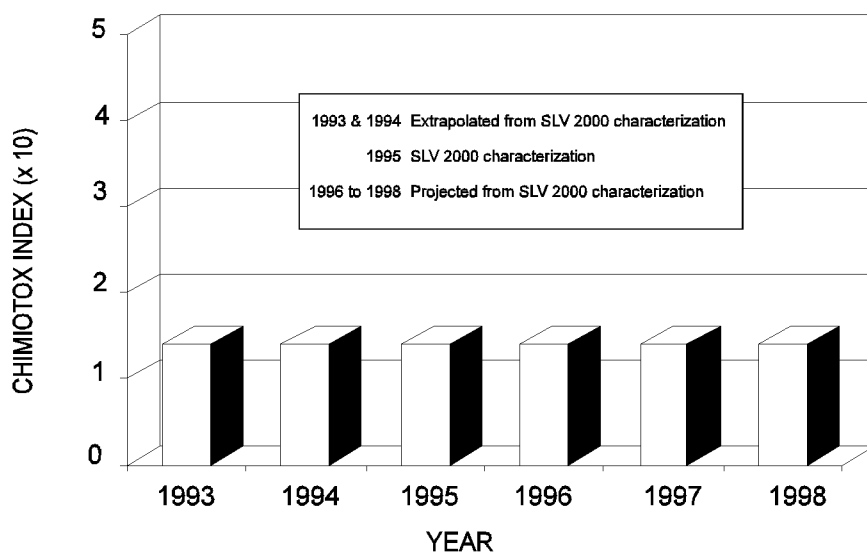


Figure 1 *Chimiotox Index Trends (1993 to 1998)*
BICC Phillips Inc.

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

One long-range objective of SLV 2000 is the virtual elimination of eleven persistent bioaccumulative toxic substances from the effluent of 106 priority plants located on 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 these persistent bioaccumulative toxic substances were detected during the 1995 SLV 2000 characterization.

PEEP TOXICITY REDUCTION

Non-toxic effluent

The Potential Ecotoxic Effects Probe (PEEP) combines the results of six standardized bioassays measuring the toxic effects of effluent. 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 BICC PHILLIPS INC. plant in Rivière-Malbaie was conducted in 1995; a PEEP index of 0.05 was obtained and effluent tests show no toxicity.

REDUCTION IN SUBSTANCES MONITORED

Dramatic reductions

According to the 1995 SLV 2000 characterization data, in 1995 the plant discharged an average 22.5 m³/d of effluent containing notably:

- 1.89 kg/d of chemical oxygen demand (COD)
- 0.55 kg/d of biochemical oxygen demand (BOD₅)
- 0.13 kg/d of suspended solids (ss)
- 0.06 kg/d of oil and grease (O&G)
- 0.01 kg/d of iron

Between 1993 and 1995, aluminum, suspended solids and oil and grease dropped 100%, 98% and 87% respectively, and effluent flowrate decreased 59%.

KEY POINTS

- One of the lowest Chimiotox indexes among SLV 2000 plants
- Non-toxic effluent

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):

Naldo Richard (418) 622-5151

Environment officer at BICC PHILLIPS INC.:

Richard Gagnon (418) 439-3916

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

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