FACT SHEET No. 40

F.F. Soucy Inc.

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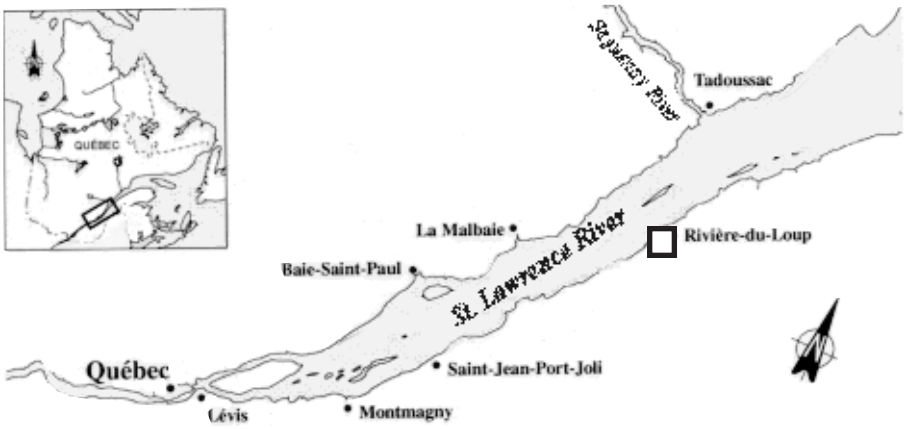
Rivière-du-Loup, Quebec
G5R 3Z1



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 F.F. SOUCY INC. mill, located in Rivière-du-Loup, 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

Production boosted

The F.F. SOUCY INC. mill in Rivière-du-Loup manufactures newsprint from thermomechanical pulp made from wood chips and billets. The pulp is normally bleached with sodium hydrosulphite and occasionally with peroxide.

Capital spending of $3 million boosted annual production capacity from 234 000 to 253 000 t in 1994. In 1995, the mill had a work force of 264 and operated at 85% capacity.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Wood chips (mainly softwood)
- Wood billets
- De-inked pulp

FINISHED PRODUCTS

- Newsprint
- Peroxide-bleached newsprint

TREATMENT MESAURES

INITIAL EFFLUENT VALUES

BOD_5 and SS

According to company data, in 1988 the mill had an average effluent discharge of 18 721 m^3/d, containing:

- 9677 kg/d of biochemical oxygen demand (BOD_5)
- 3332 kg/d of suspended solids (SS)

RESOURCES AND USES TO PRESERVE

A rich, diverse and sensitive region

The F.F. SOUCY INC. mill in Rivière-du-Loup is located on the left bank of the Rivière du Loup for which the town is named, about 6.5 km from its confluence with the St. Lawrence. The mill discharges its wastewater into the Rivière du Loup. The riverbanks, foreshores and islands within the Kamouraska - Trois-Pistoles section (Kamouraska and Gros-Cacouna marshes and Île Verte Bay) are ecologically sensitive zones. In addition, they provide habitat for many plant and animal species, such as dabbling and diving ducks, seaducks, Green-winged Teal, Common Eider, Brant, Greater Snow Geese, Canada Geese, seabirds (including gulls) and shorebirds. Le Gros Pèlerin Island, about 15 km above the mouth of the Rivière du Loup, hosts what is probably the world's largest colony of Double-crested Cormorants (roughly 2000 nests). About ten belugas that inhabit the St. Lawrence estuary are regularly spotted around the wharf at Rivière-du-Loup. Whales, seals and porpoises are found in the waters around Trois-Pistoles and downriver. The stretch of river between Kamouraska and Trois-Pistoles is particularly favourable for rebuilding of the stocks of fish spawning in the region (capelin, smelt and herring), as well as a stopover for salmon swimming upstream.

Degradation of the Rivière du Loup and its temperature upstream and downstream of the mill have nevertheless caused some loss of aquatic habitat.

East of the wharves at the mouth of the Rivière du Loup, are boat service points and two public beaches (at Rivière-du-Loup and Saint-Georges-de-Cacouna) where vacationers can enjoy windsurfing and other recreational activities. The lake formed by the inlet at Rivière-du-Loup is not used for swimming. Because of bacterial pollution of the water, there is little recreational or commercial fishing and no clam harvesting there. The clam bed in Persil Cove, downriver from the mouth of the Rivière du Loup, is closed to harvesting for the same reason.

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 while taking into account effluent from other sources. The water quality based objectives for F.F. SOUCY INC. will be available on request by 1997.

EFFLUENT TREATMENT

Secondary treatment

The F.F. SOUCY INC. mill releases around 12 000 m^3/d of wastewater to the environment. Recirculated water and rainwater from the plant site are discharged with the process wastewater.

Sanitary wastewater from the mill empties into the Rivière-du-Loup public sewerage system. However, the municipality still has no treatment works.

The mill has three systems with both a septic tank and treatment unit that handle sewage from the barking room, metering station and effluent treatment building.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

$19.5 million invested

Between 1991 and 1994, the F.F. SOUCY INC. mill carried out a process water reduction and recirculation program which cut annual consumption from 23.8 to 21.9 m^3/t. In 1994, it began construction of a secondary treatment system comprising an activated-sludge basin (57 x 30 m) and a secondary clarifier, which reduces the organic load (BOD) by more than 94%. The eliminate of the lethal toxicity of the effluent has been ensured since October 1995. The cost of the water reduction program and the secondary treatment system is estimated at $14.5 million. Lastly, in 1995 the company invested another $4.8 million to install a residue dryer and wet purifier to upgrade sludge as required by provincial regulations.

REGULATORY COMPLIANCE - WATER COMPONENT

Compliance with new standards

The F.F. SOUCY INC. mill in Rivière-du-Loup is subject to the Quebec Regulations Respecting Pulp and Paper Mills and the federal Pulp and Paper Effluent Regulations. Start-up of the new secondary treatment system enables the company to meet the latest standards, which took effect on September 30, 1995.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

A 99% reduction

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 (see Figure 1) and determine the proportion of each pollutant (see Table 1).

Table 1 gives the data supplied by the company, in accordance with provincial regulations governing pulp and paper mills, for the months of October to December 1995, as well as the Chimiotox values estimated from those figures, for an effluent flow of 16 561 m^3/d. The figures show a predominance of zinc in the discharged wastewater. Zinc makes up 49% of the Chimiotox index, followed by copper (32%).

Figure 1 is plotted from the 1990 characterization data, which were used to extrapolate Chimiotox indices for 1988-1994. For 1995, the Chimiotox index was calculated on the basis of the company's monthly figures for October to December 1995. The index fell by 99% between 1988 and 1995.

Table 1 ***Chimiotox Index (1995) - F.F. Soucy Inc.****

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Total Zinc	3.702	9.4	35
Total Copper	0.051	451	23
Stearic Acid	0.777	19	15
CHIMIOTOX INDEX **			**72**

* For effluent discharge of 16 561 m^3/d.
** October to December 1995.

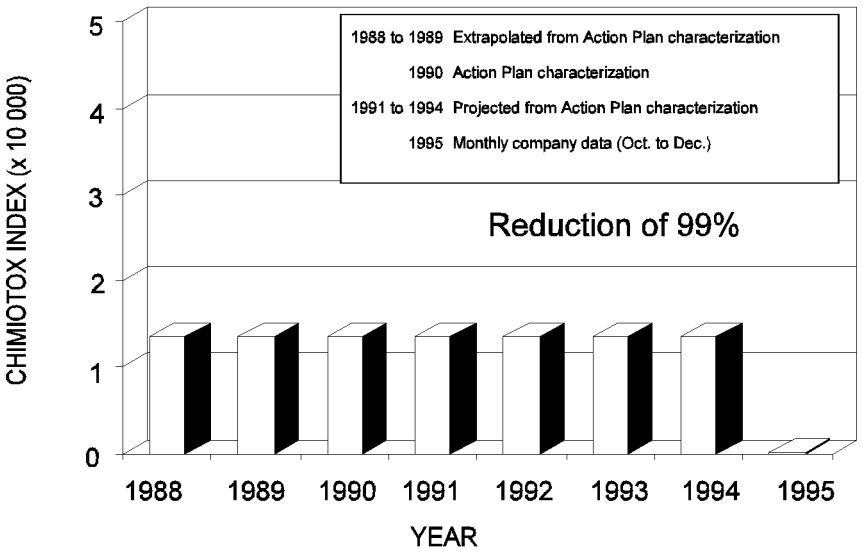


Figure 1 ***Changes in toxic effluent discharges, 1988-1995 - F.F. Soucy Inc.***

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

No persistent toxic substances

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.

The monthly figures for October to December 1995 show that no persistent toxic substances were detected.

PEEP TOXICITY REDUCTION

Non-toxic effluent

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.

One series of bioassays was conducted for the F.F. SOUCY INC. mill in Rivière-du-Loup.

Since September 30, 1995, the provincial Regulations Respecting Pulp and Paper Mills prohibit discharge of a final effluent whose toxicity has reached an acute lethality level (as demonstrated by bioassays with rainbow trout) into a storm sewer or elsewhere in the environment. The implementation of new cleanup measures at the F.F. SOUCY INC. mill in Rivière-du-Loup helped reduce the toxicity of the effluent. The monthly figures for October to December 1995 show that the final effluent is non-toxic.

REDUCTION IN SUBSTANCES MONITORED

An important reduction

According to company data for October, November and December 1995, the mill had an average effluent discharge of 14 957 m^3/d, containing:

- 755 kg/d of suspended solids (SS)
- 457 kg/d of biochemical oxygen demand (BOD_5)

Company data for 1988-1995 show reductions in effluent flow and SS and BOD_5 loads of 20%, 77% and 95% respectively. The smaller flow was achieved mainly through the 1991-1994 process water reduction and recirculation program. The drop in SS and BOD_5 is due largely to the secondary treatment system that began operation in September 1995.

TECHNOLOGICAL DEVELOPMENT

Under Environment Canada's Technology Development and Demonstration Program, F.F. SOUCY INC. undertook a project in 1991 to select and implement technologies for operating its mill as a closed-circuit system. A setup of that type requires full reuse of effluent and is feasible provided the effluent flow is small enough and the quality of the reused water is acceptable. F.F. SOUCY INC. began reducing its effluent flow gradually to achieve a 1994 volume of 15 to 20 m^3 per tonne of paper produced, the lowest figure in Canada for a newsprint mill. It then conducted a pilot study to assess technologies for treating this reduced volume of effluent for reuse in the process stream. Although technical feasibility was confirmed through the pilot project, for economic reasons the company has no immediate plans to switch to a closed circuit system.

KEY POINTS

- **Implementation of an activated-sludge secondary treatment system and technology to obtain energy from biological sludge ($19.3 million investment)**
- **99% reduction in the Chimiotox index**
- **Water use reduction program**

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

ADDITIONAL INFORMATION

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

Water quality based objectives: Francine Richard, MEF (418) 644-3574.

Records officer at the Ministère de l'Environnement et de la Faune du Québec (MEF): Gaétan Dubé (418) 722-3511.

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Published by authority of the Minister of the Environment

Catalogue No. En153-6/40-1996E
ISBN 0-662-23371-9

(Aussi disponible en français sous le titre *Établissements industriels - faits saillants*).