

FACT SHEET No. 46

Abitibi-Price Inc., Kénogami Business Unit

3750 Champlain Street
Jonquière, Quebec
G7S 5J7



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 ABITIBI-PRICE INC. mill, located in Jonquière, 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

Specialty papers

The ABITIBI-PRICE INC. mill in Jonquière makes specialty papers from chemi-thermomechanical (CTM), mechanical and bleached kraft pulps. The CTM and mechanical pulps are made on site; the kraft pulp is purchased in bales. The pulps are lightly bleached with sodium hydrosulphite and fed to the four paper machines, namely three Fourdrinier machines and one Top Former. The paper is dried, calendered or supercalendered and rolled on reels for shipment. The mill has an annual production capacity of 240 000 t. In 1995, it operated at 80% capacity and employed a work force of 850.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Wood billets
- Wood chips
- Kraft pulp
- Sodium hydrosulphite
- Clay
- Polymer

FINISHED PRODUCTS

- Specialty papers

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

BOD₅ and SS

According to company data, in 1988 the mill had an average effluent discharge of 90 058 m³/d, containing:

- 5908 kg/d of biochemical oxygen demand (BOD₅)
- 5444 kg/d of suspended solids

RESOURCES AND USES TO PRESERVE

A cottaging area

The ABITIBI-PRICE INC. paper mill in Jonquière discharges its wastewater into Caron falls, an arm of the Saguenay, near the confluence with the Sables river. Drawing on a large population base, the middle Saguenay attracts many anglers, water sports enthusiasts and vacationers. In summer, Jonquière is a popular spot locally for recreational fishing of ouananiche, walleye and brook trout above and below the sector where the mill effluent mixes with the river water. Below the Shipshaw dam, the Saguenay riverbanks include parks, green spaces, walking paths, nature observation points and stairs down to the water's edge. The roads around Jonquière take motorists to the vicinity of the Saguenay for hikes, golf and cross-country and downhill skiing. Geese frequent the area, attracted by the sedge-rich foreshore of the middle Saguenay. As a result of strong river flow, tidal dynamics and inputs from urban and industrial activities, this section of the Saguenay has fairly small fish populations. However, all species of fish in Kenogami Lake (brook trout, ouananiche, sucker, lake chub, mullet and stickleback) may also be found in the Sables river.

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. The water quality based objectives for the ABITIBI-PRICE INC. mill will be available on request by 1997.

EFFLUENT TREATMENT

Primary and secondary treatment

Industrial wastewater primarily from the paper machines, CTM shop and mechanical pulp screening shop is circulated first to a primary clarifier to trap solid particles, then to an activated-sludge biological treatment to eliminate organic contamination. Treated water is released into the Saguenay through an open outfall. Sanitary sewage from the mechanical pulping shop is treated by biological disk and then discharged into the Saguenay. Sanitary wastewater from the paper mill empties into the municipal sewerage system.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

\$15 million invested

In November 1993, the ABITIBI-PRICE INC. mill in Jonquière replaced its wet barking system (on stream six months a year) with a dry barking system. That measure eliminated wet barking effluent, which produced a discharge of roughly 40 000 m³/d, and reduced contaminant loads.

In summer 1994, the company began construction of an activated-sludge secondary treatment system to further the elimination of toxicity. Construction ended in July 1995. Moreover, the effluent flow was reduced to 30 000 m³/d. In October 1994 and December 1995, the mill installed a pumping system to circulate the leachate from the sludge and bark storage area to the clarifier. The total cost of the projects is estimated at \$15 million.

Since the fall of 1995, sanitary sewage from the paper mill have been treated at the Jonquière wastewater treatment station. During the same year, ABITIBI-PRICE INC. installed a system to separate uncontaminated water and process wastewater. This has reduced the flow of water undergoing secondary treatment by 24 000 m³/d.

REGULATORY COMPLIANCE - WATER COMPONENT

Compliance with new standards

The ABITIBI-PRICE INC. mill in Jonquière is subject to the Quebec Regulations Respecting Pulp and Paper Mills and the federal Pulp and Paper Effluent Regulations. The new secondary treatment system enabled the company to meet the latest standards, which came into effect on September 30, 1995.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

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 calculated therefrom, for an effluent flow of 51 238 m³/d. The figures show that zinc predominates in the treated wastewater, at 59% of the Chimiotox index, followed by dehydroabietic acid (20%) and oleic acid (13%).

Figure 1 is plotted from the 1990 Action Plan characterization data, which were used to extrapolate Chimiotox indices for 1988-1994, and the data supplied by the company for the months of October to December 1995. From 1988 to 1995, the Chimiotox index fell by 99% as a result of the secondary treatment system implemented.

Table 1 *Chimiotox Index (1995) - Abitibi-Price Inc., Kénogami Business Unit**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Total Zinc	7.016	9.4	66
Dehydroabietic Acid	0.292	77	22
Oleic Acid	0.711	19	14
Stearic Acid	0.403	19	8
Abietic Acid	0.096	19	2
CHIMIOTOX INDEX**			111

* For effluent discharge of 51 238 m³/d

**October to December 1995.

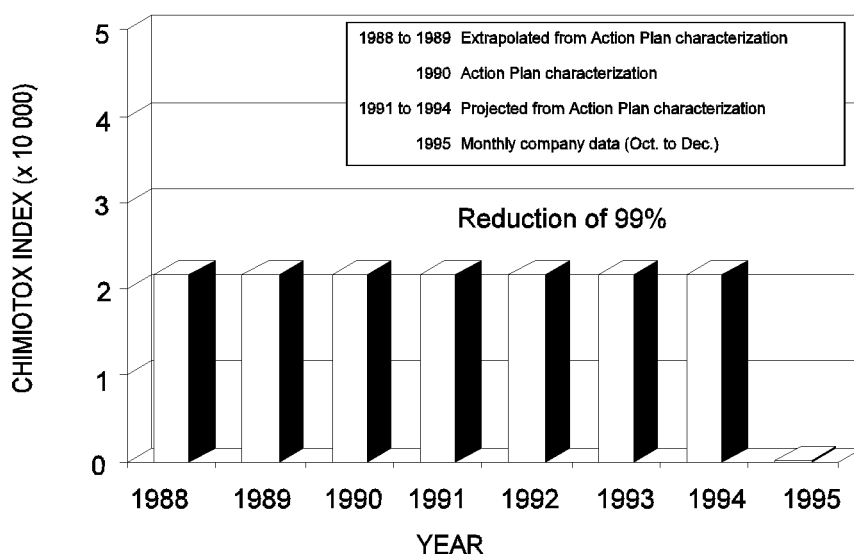


Figure 1 *Changes in toxic effluent discharges, 1988-1995 - Abitibi-Price Inc., Kénogami Business Unit*

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.

None of the targeted substances was detected during the 1990 Action Plan characterization study.

PEEP TOXICITY REDUCTION

High toxicity

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 ABITIBI-PRICE INC. mill in Jonqui re. The 1990 PEEP index was estimated at 5.5.

Since September 30, 1995, the provincial Regulations Respecting Pulp and Paper Mills prohibits the 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 ABITIBI-PRICE INC. mill has helped reduce the toxicity of the effluent. According to the monthly data for October to December 1995, the final effluent is non-toxic.

REDUCTION IN SUBSTANCES MONITORED

Reduction in ss

According to company data for October to December 1995, the mill had an average effluent discharge of 49 253 m³/d, containing:

- 407 kg/d of suspended solids (ss)
- 285 kg/d of biochemical oxygen demand (BOD₅)

Company data for 1988-1995 show suspended solids reduced by 93%, biochemical oxygen demand by 95% and effluent flow by 45%. That performance is explained by the start-up of a dry debarking system in November 1993 and of the new secondary treatment in 1995.

KEY POINTS

- 99% reduction in the Chimiotox index
- In July 1995, start-up of activated-sludge secondary treatment (\$15 million investment)
- Pollution reduction at source
- Between 1988 and 1995, 93% and 95% reduction, respectively, in ss and BOD₅

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

ADDITIONAL INFORMATION

Chimiotox index and PEEP:

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Water quality based objectives:

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