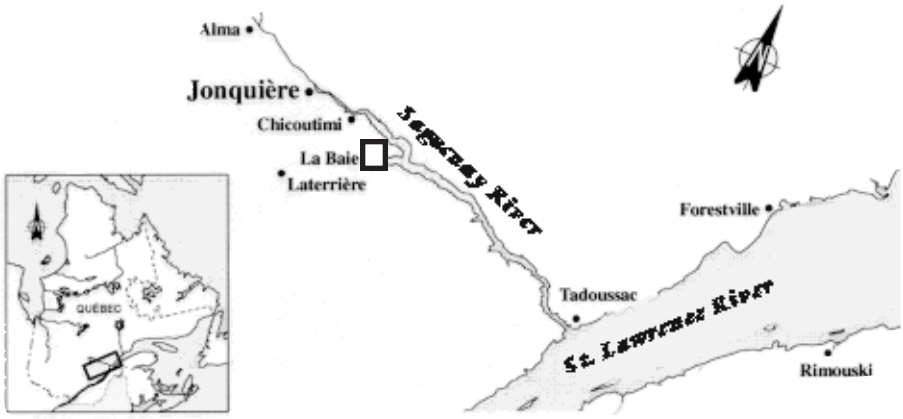
FACT SHEET No. 44

Stone-Consolidated Corporation, Port Alfred Division

542 1st Street

La Baie, Quebec

G1B 3R2



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 STONE-CONSOLIDATED CORPORATION, PORT ALFRED DIVISION mill, located in La Baie, 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

Large production capacity

The STONE-CONSOLIDATED CORPORATION, PORT ALFRED DIVISION mill in La Baie makes newsprint from mechanical, thermomechanical and chemical pulps, all three of which are produced on site. Mechanical pulp is made from debarked wood billets reduced in grinding machines. Thermomechanical pulp is made from wood chips (preheated and washed) processed in refiners. Chemical pulp is made by cooking wood chips in an acid solution of sodium bisulphite, then processing the resulting stock in refiners. The pulps are cleaned, screened, thickened and stored in tanks.

The mill purchases additional pulp supplies to meet its paper-making requirements. That pulp is refined and mixed with the other stocks, then fed to one of the four paper machines. Given that the mill makes newsprint, the pulps are lightly bleached with sodium hydrosulphite. The sodium bisulphite used in the chemical pulping shop is made on site. The mill has an annual production capacity of 445 000 t and employs a work force of 750.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Wood billets
- Wood chips
- Sulphur
- Sodium hydroxide
- Pulp from outside suppliers
- Borol

FINISHED PRODUCT

- Newsprint

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

BOD_5 and SS

In 1988 the mill had an average effluent discharge of 72 058 m^3/d, containing:

- 35 321 kg/d of biochemical oxygen demand (BOD_5)
- 11 082 kg/d of suspended solids (SS)

RESOURCES AND USES TO PRESERVE

A heavily used area

The STONE-CONSOLIDATED CORPORATION, PORT ALFRED DIVISION paper mill in La Baie is located at the mouth of the Mars river, in the western part of Ha! Ha! bay, into which the plant discharges its treated wastewater. That area of the Saguenay provides habitat for a wide variety of fish and other aquatic organisms, including shrimps, crabs and molluscs, as well as minke whales. Atlantic cod and haddock are the two main species for the winter and summer fisheries. Smelt, capelin, salmon and sea trout are also harvested commercially. Belugas, harp seals and the occasional minke whale make their way into the fjord. Grande-Baie and Benjamin and Philippe coves are frequented by diving ducks, dabbling ducks and shorebirds, among other waterfowl. There is a heronry in the bay at Caribou brook; peregrine falcons congregate in Poulette cove. Anglers fish in Benjamin and Philippe coves and from the non-commercial wharves. Water-sports enthusiasts enjoy boating and windsurfing. Ice fishing in Philippe and Benjamin coves and Grande-Baie is an increasingly popular activity of considerable social and economic importance. Six commercial fishing licences have been issued for Ha! Ha! bay; American eel, smelt, Atlantic sturgeon, alewife and Atlantic tomcod are harvested. The area around the Mars and Ha! Ha! rivers and Grande-Baie includes large numbers of wharves and campgrounds. The Baie-des-Ha! Ha! area is cottage country, with facilities for such activities as hiking, downhill and cross-country skiing, rock climbing and canoeing. There is also a public beach at La Baie.

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 STONE-CONSOLIDATED CORPORATION will be available on request by 1997.

EFFLUENT TREATMENT

Primary and secondary treatment

Water from the logway's recirculating well overflow, the debarking process and the wood preparation room, effluent from the last pulp cleaning stage and leachates from the mill's sanitary landfill are treated by a primary treatment system. Air-water separators are installed on selected vacuum pumps to recover white water. White water of acceptable consistency is returned to the process stream.

Indirect cooling water is partially recycled into the process water or discharged with the process wastewater. Rainwater from the mill grounds and waste storage areas is treated together with the process wastewater. All of the mill's process water including water that has undergone primary treatment, goes through an activated-sludge secondary treatment system (R.B.S.) and is then discharged into Ha! Ha! bay through a submerged outfall. Sanitary wastewater empties into the La Baie municipal sewerage system.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

$25 million invested

In 1994, the pulp refining capacity of STONE-CONSOLIDATED CORPORATION mill in La Baie was increased without adverse effect on the effluent.

In 1993 and 1994, the mill implemented treatment measures (including devices to recover spent oil from the four paper machines) for reduction at source of the pollutant loads in the process effluent. In June 1995, STONE-CONSOLIDATED CORPORATION brought on stream an activated-sludge secondary treatment project (R.B.S.) whose cost is estimated at $25 million.

A project to recirculate part of the cooling water into the process was also carried out in 1995, an additional investment of $3.7 million.

REGULATORY COMPLIANCE - WATER COMPONENT

Compliance with new standards

The STONE-CONSOLIDATED CORPORATION, PORT ALFRED DIVISION mill in La Baie is subject to the Quebec Regulations Respecting Pulp and Paper Mills and the federal Pulp and Paper Effluent Regulations. The new secondary treatment system has enabled the company to meet the latest standards, which took effect September 30, 1995.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Oil and grease

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 47 242 m^3/d. The figures show a predominance of oil and grease, lead and copper in the treated wastewater. Mineral oil and grease make up 48% of the Chimiotox index, followed by lead (25%), then copper (12%).

Figure 1 is plotted from the Action Plan Characterization data for 1990 and the company data for October to December 1995. Chimiotox values for 1988-1994 were extrapolated from the 1990 Action Plan characterization data. The treatment measures implemented have reduced the Chimiotox index by 98% between 1988 and 1995.

Table 1: ***Chimiotox Index (1995) - Stone-Consolidated Corporation, Port-Alfred Division****

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Mineral Oil and Grease	9.736	100	974
Total Lead	1.623	314	510
Total Copper	0.535	451	242
Total Aluminum	19.472	11	214
Total Zinc	7.010	9.4	66
Dehydroabietic Acid	0.094	77	7
Linoleic Acid	0.188	19	4
Stearic Acid	0.141	19	3
Oleic Acid	0.094	19	2
Abietic Acid	0.094	19	2
CHIMIOTOX INDEX**			**2024**

* For effluent discharge of 47 242 m^3/d.
** October to December 1995.

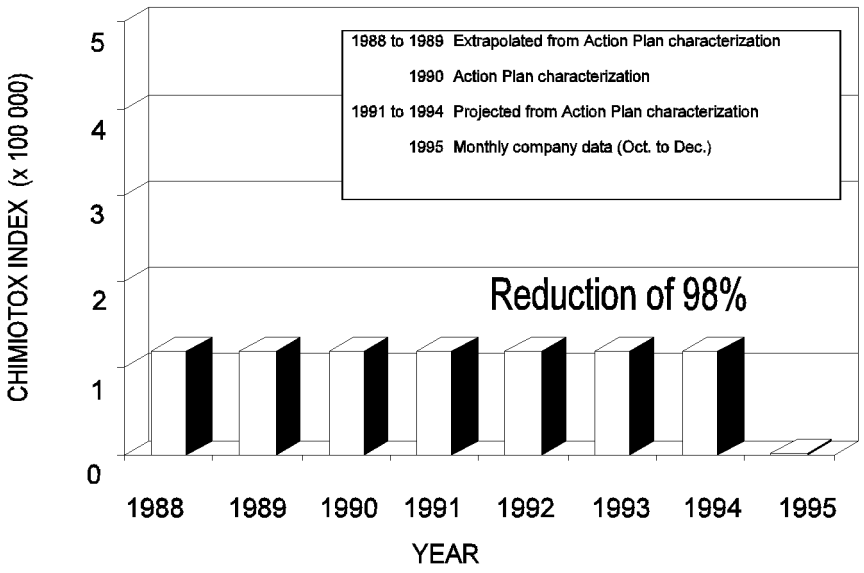


Figure 1: ***Changes in toxic effluent discharges, 1988-1995 - Stone-Consolidated Corporation, Port Alfred Division***

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

No persistent toxic substances detected

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 data for October to December 1995 show no persistent toxic substances 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 STONE-CONSOLIDATED CORPORATION, PORT ALFRED DIVISION mill in La Baie. The 1990 PEEP index was estimated at 7.0.

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 STONE-CONSOLIDATED CORPORATION, PORT ALFRED DIVISION mill in La Baie has helped reduce the toxicity of the effluent. According to the data for the months of October to December 1995, the final effluent is non-toxic.

REDUCTION IN SUBSTANCES MONITORED

Drop in ss and BOD_5

According to company data on October, November and December 1995, the average effluent discharge was 46 688 m^3/d, containing:

- 4887 m^3/d of suspended solids (SS)
- 3057 m^3/d of biochemical oxygen demand (BOD_5)

Data for 1988-1995 show a 56% cut in SS, a 91% in BOD_5 and a 33% in effluent flow. The cuts in SS in BOD_5 and effluent flow were chiefly due to the introduction of a system to recover white water at source and of the new secondary treatment system.

KEY POINTS

- **Construction of an activated-sludge secondary treatment system ($25 million)**
- **98% reduction in the Chimiotox index**
- **Pollution reduction at source**

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:
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