

FACT SHEET 96

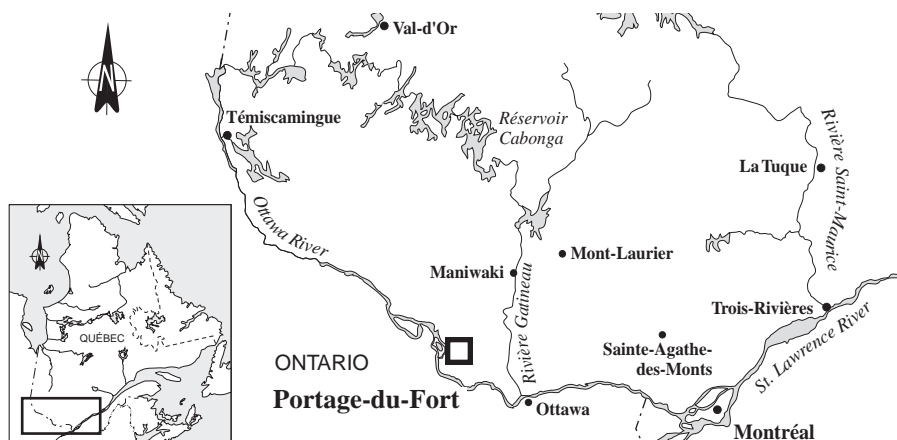
Stone Container (Canada) Inc., Pontiac Division

211 Route 301, P.O. Box 68
Portage-du-Fort, Quebec
J0X 2T0

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 STONE CONTAINER (CANADA) INC., PONTIAC DIVISION mill in Portage-du-Fort is in Group 3, which comprises regulated industrial plants.

The objective for Group 3 is to check toxic discharges of regulated plants against environmental objectives and establish corrective measures for maximum reduction of harmful effects on the receiving environment.



INDUSTRIAL PLANT

Kraft pulp production

The STONE CONTAINER (CANADA) INC., PONTIAC DIVISION plant in Portage-du-Fort produces bleached Kraft pulp from a mixture of hardwood and softwood chips. Logs are dry-debarked then chipped. The chips are screened and cooked in a digester into unbleached pulp. After dewatering, knotting, washing and thickening, the pulp is bleached with chlorine and chlorine dioxide. The pulp is then refined, dried and prepared for shipping. Cooking chemicals are regenerated by incineration in a recovery boiler that produces energy in the form of heat. The mill has a production capacity of 196 905 t/yr. In 1995, the plant works at 106% capacity and employs a work force of 351.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Wood chips
- Logs
- Heavy oil
- Light oil
- Chemicals (chlorine, sodium hydroxide, oxygen, sodium sulphate, aluminum sulphate, antifoaming agent, sulphuric acid, sodium chlorate, sulphur dioxide, and methanol)

FINISHED PRODUCT

- Bleached Kraft pulp

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

ss and BOD₅

According to company data, in 1993 the mill discharged 61 082 m³/d of effluent, containing notably:

- 2757 kg/d of suspended solids (ss)
- 2305 kg/d of biochemical oxygen demand (BOD₅)

RESOURCES AND USES TO PRESERVE

Vulnerable plant and animal species

Effluent from the STONE CONTAINER (CANADA) INC., PONTIAC DIVISION mill at Portage-du-Fort, flows from a point on the left bank of the Ottawa River. The segment of the river downstream from the mill is an important area for land and aquatic species that feed in the aquatic environment. Many vulnerable plant and animal species live in the area, in particular two birds, the Sedge Wren and the Least Bittern, along with four reptiles, the Northern water snake, map turtle, Blanding's turtle and spiny softshell. Some fifty fish species can also be found in the area. Commercial fishing is practised on the river in the vicinity of Portage-du-Fort. The area contains beaches, parks and picnic areas. The first water intake downstream from the mill is at Portage-du-Fort, about 5 km from the effluent discharge point.

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 to select treatment methods which best promote environmental protection. The environmental discharge objectives for STONE CONTAINER (CANADA) INC., PONTIAC DIVISION will be available by 1997.

EFFLUENT TREATMENT

Secondary treatment

Pulp bleaching produces acid and alkaline effluent. All effluent undergoes secondary treatment. The alkaline effluent flows into a sedimentation basin and then into voluntary aerated lagoons. The acid effluent goes directly into the aerated lagoons. Modifications to the lagoons in 1992 and 1993, at a cost of \$5.5 million, increased their efficiency by 60% to 90%.

PREVENTION AND CLEANUP MEASURES IMPLEMENTED

Leachate treatment

The piles of bark and wood chips have been equipped with a waterproof covering and a leachate collection system. The recovered water is now treated in an aerated lagoon. Cost of the installation was \$1 million. A new dump was built at a cost of \$2.7 million. Leachate is also treated in the plant's aerated lagoons.

The chlorine dioxide generator has been replaced, resulting in a considerable increase in process efficiency. The company has also installed gas purifiers to reduce emissions of chlorine and chlorine dioxide. Concentrations of dioxins and furans are now negligible, and the quantity of fresh water used has decreased by about 5000 m³/d. The company invested \$18.5 million in this project.

REGULATORY COMPLIANCE - WATER COMPONENT

Compliance with standards

The STONE CONTAINER (CANADA) INC., PONTIAC DIVISION mill in Portage-du-Fort is subject to the provincial pulp and paper regulation as well as the federal regulation governing pulp and paper mill effluent. With the implementation of the environmental measures, the company has complied with the latest provincial standards, which came into force on September 30, 1995.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Mainly dioxins and furans

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 shows company monthly data for the last quarter of 1995 along with Chimiotox values estimated from them assuming an effluent flowrate of 63 493 m³/d. According to these data (supplied by the company as required by the provincial pulp and paper regulation), dioxins and furans account for 35% of the Chimiotox index, followed by mineral oil and grease with 28% and total aluminum with 9%.

Figure 1 is based on characterization data collected for the industrial effluent abatement program (PRRI) in July 1992 and monthly company data for October to December 1995. The Chimiotox index calculated from the 1992 PRRI characterization was applied for 1993 and 1994. Projections for 1996, 1997 and 1998 are based on company data for the last quarter of 1995. The reduction in Chimiotox index is mainly due to major improvements to the secondary treatment system.

Table 1 *Chimiotox Index (1995) - Stone Container (Canada) Inc., Pontiac Division**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
2,3,7,8-T ₄ CDD equivalent	7.28 x 10 ⁻⁸	71 428 571 429	5 199
Mineral oil and grease	41.886	100	4 189
Total aluminum	115.864	11	1 274
3,4,5-Trichlorocatechol	0.904	1 000	904
4,5-Dichlorocatechol	0.674	1 000	674
2,4-Dichlorophenol	0.078	5 000	392
Total copper	0.699	451	315
Tetrachlorocatechol	0.281	1 000	281
3,4,5-Trichloroguaiacol	0.267	1 000	267
Trichlorosyringol	0.242	1 000	242
6-Chlorovanillin	0.241	1 000	241
4,5,6-Trichloroguaiacol	0.231	1 000	231
4,5-Dichloroguaiacol	0.200	1 000	200
Stearic acid	6.978	19	133
Tetrachloroguaiacol	0.112	1 000	112
5,6-Dichlorovanillin	0.079	1 000	79
Total zinc	6.636	9.4	62
Trichlorophenols	0.226	56	13
CHIMIOTOX INDEX			14 808

* Assuming an effluent flowrate of 63 493 m³/d

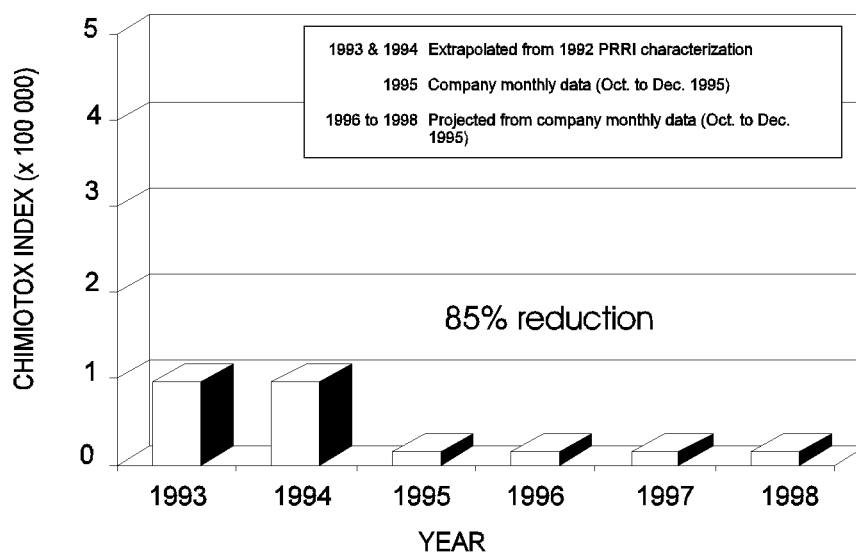


Figure 1 *Chimiotox Index trends (1993 to 1998)*
Stone Container (Canada) Inc., Pontiac Division

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 effluent of the 106 targeted plants along the St. Lawrence River 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.

Based on data from the self-regulating effluent monitoring program for the last three months of 1995, two of the eleven persistent toxic substances were detected in the company's effluent, dioxins and furans. However, measured concentration was near methodological detection limits. The environmental discharge objective for dioxins and furans will be available soon.

KEY POINTS

- 85% reduction in Chimiotox index and non-toxic effluent
- Cleanup operations from 1992 to 1995 for an investment of \$27.7 million
- Improvements to secondary treatment system in 1992 and 1993
- Leachate recovery from burial sites and storage of chips and bark
- Gas purifiers added

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):

Michel Rousseau (819) 771-4840

Environment officer at STONE CONTAINER (CANADA) INC., PONTIAC DIVISION:

Maryse Pineau (819) 647-2281, ext. 2804

EFFLUENT TOXICITY

Non-toxic effluent

Since September 30, 1995, it has been illegal under the Quebec pulp and paper regulation to release into the environment or a storm sewer a final effluent that is acutely lethal to rainbow trout, as demonstrated by bioassays. For the STONE CONTAINER (CANADA) INC., PONTIAC DIVISION mill, improvements to cleanup equipment in 1992 and 1993 contributed to reducing effluent toxicity. Company data from the last quarter of 1995 indicate final effluent is not toxic.

REDUCTION IN SUBSTANCES MONITORED

Reduction in biochemical oxygen demand

According to company data, during the last three months of 1995 the mill discharged 58 360 m³/d of effluent, containing notably:

- 2983 kg/d of suspended solids (ss)
- 1310 kg/d of biochemical oxygen demand (BOD₅)

The environmental measures implemented between 1993 and 1995 aimed at reducing biochemical oxygen demand. From 1993 to 1995, the biochemical oxygen demand decreased by 43%. No major modification has been made to the primary sedimentation basin, so ss loads remained stable.

Based on December 1995 inventory

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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