

## FACT SHEET No. 1

### Dominion Textile Inc., Beauharnois Finishing Plant

400 Rang Saint-Joseph  
Saint-Timothée, Quebec  
J0S 1X0

*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 DOMINION TEXTILE INC. plant located in Saint-Timothée 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

*Plant closed*

The DOMINION TEXTILE INC. facility in Saint-Timothée was a cotton and polyester finishing plant with an annual production capacity of 8100 t. Its principal activities were fabric desizing, washing, bleaching, dyeing, printing and finishing. The plant was closed at the end of July 1992. Half of the machinery has since been dismantled, and that work is continuing. There is no effluent discharge.

## PRODUCTION

**Before closing**

### PRINCIPAL RAW MATERIALS

- Cotton
- Polyester
- Chemical dyes

### FINISHED PRODUCTS

- Cotton
- Polyester

# TREATMENT MEASURES

## INITIAL EFFLUENT VALUES

*Mostly COD*

Based on company data, in 1988 the plant had an effluent discharge of 7470 m<sup>3</sup>/d containing, among other things:

- 8244 kg/d of chemical oxygen demand (COD)
- 1520 kg/d of biochemical oxygen demand (BOD<sub>5</sub>)
- 1280 kg/d of suspended solids (ss)

## RESOURCES AND USES TO PRESERVE

*Impacts nullified by shutdown*

Before closing, the DOMINION TEXTILE INC. plant discharged its effluent into Beauharnois Canal, a major staging area for migratory birds. A no hunting zone 14.5 km long established under the Wildlife Conservation and Management Act lies along the south canal bank near the municipality of Beauharnois. Large plant communities where waterfowl congregate and a brown bullhead spawning ground are found along the north canal bank, about 3 km below the plant site. Sport fishing along the canal is a popular pastime. The Beauharnois municipal water intake is 15 km below the plant site. Beauharnois Canal is a commercial waterway.

## 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.

## EFFLUENT TREATMENT

*Incomplete treatment*

When the plant was in operation, process wastewater was neutralized and mixed with sanitary sewage before circulating to the plant's treatment system, consisting of a complete mixing aerated pond. Rain water and indirect cooling water were collected in a separate facility. The two outfalls emptied into Beauharnois Canal.

In 1987, the company committed to a provincially administered wastewater treatment program calling for various cleanup measures. A secondary treatment system was planned for 1992, but was never built since the plant was decommissioned that year.

## PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

*Effective measures*

The neutralization and supplemental nutrient system prescribed in the wastewater treatment program was set up in 1987, followed by installation of a Parshall flume (flowmeter) and a neutralizing tank in fall 1990. In 1990 and 1991, improvements for wastewater separation, reuse, recirculation and reduction at source appreciably cut effluent flow.

## REGULATORY COMPLIANCE-WATER COMPONENT

*Treatment program annulled*

Owing to the plant shutdown and imminent dismantling of all production units, the wastewater treatment program no longer applies.

# POLLUTION ABATEMENT

## CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

### Mostly 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 characterization data gathered in 1990 pursuant to Action Plan requirements, as well as the Chimiotox values estimated from those figures, for an effluent flow of 7710 m<sup>3</sup>/d. In testing for more than 120 substances, 6 were found. The figures show a predominance of oil and grease in the treated wastewater. Oil and grease make up 78% of the Chimiotox index, followed by bis-(2-ethylhexyl)phthalate (16%), thallium (5%) and iron (1%).

Figure 1 is plotted from the 1990 characterization data, which were used to extrapolate Chimiotox indices for 1989 and 1991. The 1988 index was estimated from the 1990 characterization results, factoring in operation of the aerated pond at less than 50% efficiency. The 1992 Chimiotox index was derived from the 1990 index, reduced by 50% to extrapolate the values obtained over the six month period until the plant closed in July 1992 to one year. No further discharges have occurred since the plant closed. As there is no effluent flow, the Chimiotox index is zero.

Table 1 *Chimiotox Index (1990) - Dominion Textile Inc., Beauharnois Finishing Plant\**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Mineral Oil and Grease	12.440	100	1244
Bis-(2-ethylhexyl)phthalate	0.155	1667	258
Thallium	0.650	125	81
Iron	2.610	3	9
Acetone	2.253	2	5
Benzene	0.010	25	<1
<b>CHIMIOTOX INDEX</b>			<b>1597</b>

\* For effluent discharge of 7710 m<sup>3</sup>/d (6 substances detected in testing for more than 120).

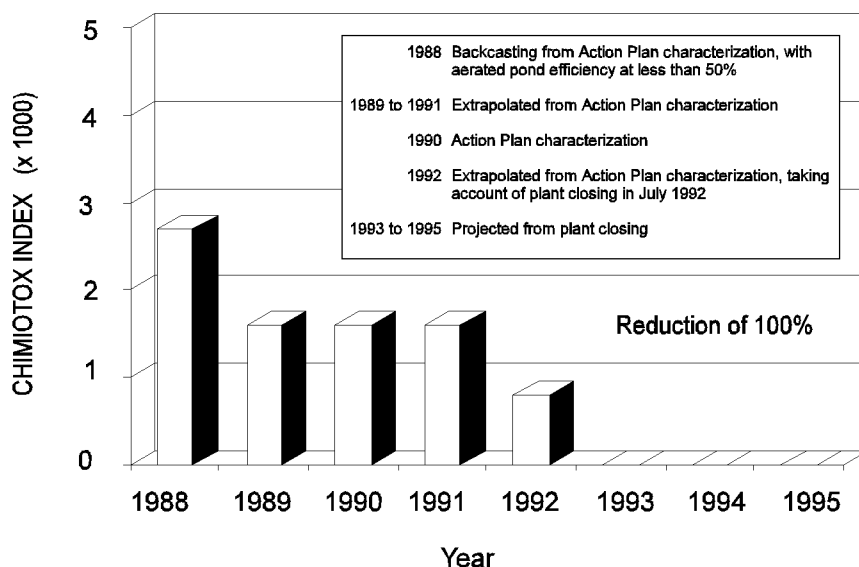


Figure 1 *Changes in toxic effluent discharges, 1988-1995 - Dominion Textile Inc., Beauharnois Finishing Plant*

## 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 Action Plan characterization study of 1990.

## PEEP TOXICITY REDUCTION

### *High toxicity*

The Potential Ecotoxic Effects Probe, or PEEP, combines results from 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 DOMINION TEXTILE INC. plant in Saint-Timothée. The 1990 PEEP index was estimated at 5.6. It was among the highest of the PEEP indices found for the 50 plants.

## REDUCTION IN SUBSTANCES MONITORED

### *Plant out of operation*

Extensive rationalization of water use and production slowdown at the plant reduced effluent flow by 77% between 1988 and 1992. Discharges stopped altogether when the plant closed in July 1992.

## KEY POINTS

- **Commitment to a wastewater treatment program in 1987 and extensive cleanup work**
- **Characterization study in December 1990**
- **The plant closed in 1992; half of the production units have been dismantled to date**

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.

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