

## FACT SHEET 102

### Malette Québec inc.

101 route du Moulin

C.P. 609

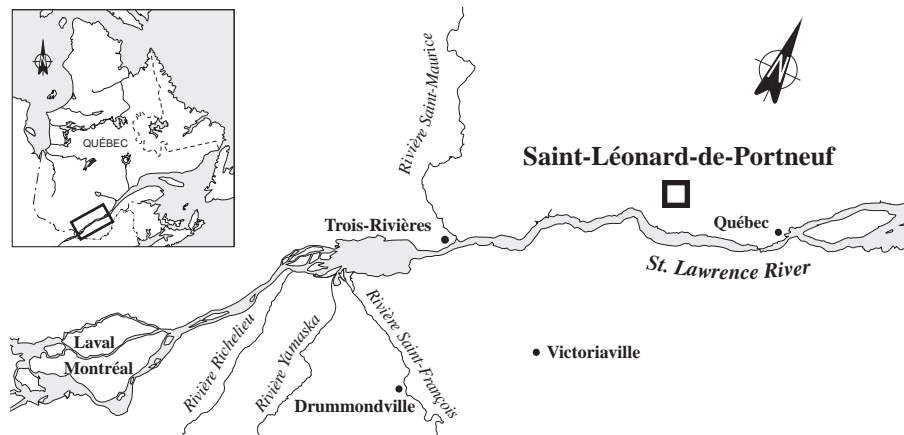
Saint-Léonard-de-Portneuf,  
Quebec

G0A 4G0

*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 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 MALETTE QUÉBEC INC. mill in Saint-Léonard-de-Portneuf is part of Group 3, comprising regulated industrial plants.*

*The objectives for Group 3 are to assess the toxic waste of regulated plants in terms of environmental objectives and establish corrective measures for optimum reduction of any harmful impact on the receiving environment.*



## INDUSTRIAL PLANT

### Paper production

The MALETTE QUÉBEC INC. plant produces coated paper and calendered newsprint using two paper machines. Pulp is produced on site using equal proportions of softwood and aspen chips. The chips are washed and bleached with hydrogen peroxide and then refined in two stages. The pulp is cleaned and mixed with purchased kraft pulp and the mixture is fed into the paper machines. Clay is added to increase opacity. In July 1994, a twin-wire was added to the newsprint machine, thus optimizing operations. The rated production capacity of the plant is 72 000 t/yr. In 1995, the plant works at 87% capacity and employs 150 people.

## PRODUCTION

### PRINCIPAL RAW MATERIALS

- Softwood chips
- Poplar chips
- Kraft pulp
- Clay
- Calcium carbonate
- Latex

### FINISHED PRODUCTS

- Coated paper
- Calendered newsprint

# TREATMENT MEASURES

## INITIAL EFFLUENT VALUES

*ss and BOD<sub>5</sub>*

Based on company data, in 1993 the plant had an effluent discharge of 11 680 m<sup>3</sup>/d, containing notably:

- 992 kg/d of suspended solids (ss)
- 210 kg/d of biochemical oxygen demand (BOD<sub>5</sub>)

## RESOURCES AND USES TO PRESERVE

*Residential and cottage area*

The MALETTE QUÉBEC INC. plant is located on the upper course of the Sainte-Anne river, a few kilometres downstream from Saint-Raymond. On the opposite bank from the plant is the Chute Panet area, a busy residential and cottage area. Vacationers have given up water sports because of the bacteriological contamination of the river. Wastewater from Saint-Raymond is discharged untreated into the river from about fifteen outfalls on both banks. There is occasionally a little sport fishing, with the main species caught being speckled trout, yellow walleye and tomcod. There are no drinking water intakes on the Sainte-Anne river.

## 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 in choosing treatment methods which best promote environmental protection. The water quality based objectives for MALETTE QUÉBEC INC. have been calculated.

## EFFLUENT TREATMENT

*Secondary treatment*

Industrial wastewater undergoes primary treatment (settling and thickening), then secondary treatment with activated sludge before being discharged into the Sainte-Anne river. An emergency tank is connected to the system to receive process water. Domestic sewage is discharged into a septic tank equipped with a treatment field.

## PREVENTION AND CLEANUP MEASURES IMPLEMENTED

*White water recirculation*

In 1994, piping changes resulted in better white water recirculation, while other changes made it possible to recover pulp. These improvements raised the daily production rate from 130 t/d to 160 t/d.

## REGULATORY COMPLIANCE - WATER COMPONENT

*Effluent meets standards*

The MALETTE QUÉBEC INC. plant at Saint-Léonard-de-Portneuf is governed by federal and provincial regulations on pulp and paper mills. 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 total phosphorus*

The Chimiotox index gauges the load of all toxic substances present in industrial effluent, using the toxicity factors assigned to each contaminant. It is used, among other things, to monitor discharge trends over the years (see Figure 1) and determine the toxic contribution of each pollutant (see Table 1).

Table 1 shows industrial effluent abatement program (PRRI) data collected in October 1994, and Chimiotox values calculated using these figures, assuming an effluent flowrate of 13 006 m<sup>3</sup>/d. Based on the data, total phosphorus dominates in treated water; it represents 91% of the value of the Chimiotox index.

Figure 1 is based on October 1994 industrial effluent abatement program (PRRI) data. The Chimiotox index calculated using PRRI characterization data was applied unchanged for 1993 to 1998.

Table 1 *Chimiotox Index (1995) - Malette Québec inc.\**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Total phosphorus	31.906	50	1598
Total aluminum	10.240	11	113
Total iron	7.590	3.3	25
Total zinc	1.770	9.4	17
Dehydroabietic acid	0.043	77	3
Levopimaric acid	0.064	19	1
<b>CHIMIOTOX INDEX</b>			<b>1753</b>

\* For an effluent flowrate of 13 006 m<sup>3</sup>/d.

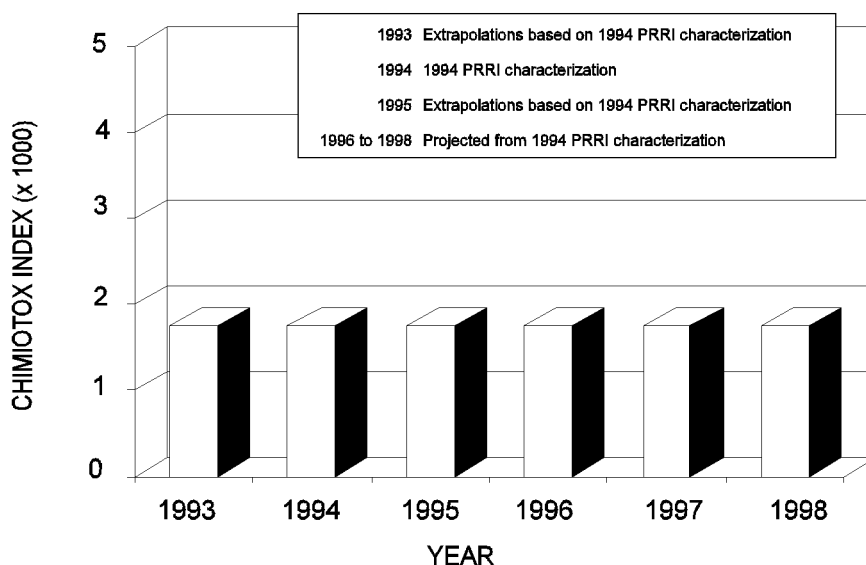


Figure 1 *Chimiotox Index Trends, 1993 - 1998  
Malette Québec inc.*

## 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 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 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, none of the eleven persistent bioaccumulative toxic substances were detected in the company's effluent.

## 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 MALETTE QUÉBEC INC., data for October to December 1995 indicate that final effluent is not toxic.

## REDUCTION IN SUBSTANCES MONITORED

### *Reduction in suspended solids and increase in biochemical oxygen demand*

Based on monthly company data, in 1995 the plant had an effluent discharge of 11 586 m<sup>3</sup>/d, containing notably:

- 615 kg/d of suspended solids (ss)
- 549 kg/d of biochemical oxygen demand (BOD<sub>5</sub>)

From 1993 to 1995, the suspended solid load decreased by 38% following improvements to the process. The increased in biochemical oxygen demand was probably due to increased pulp production and the greater use of aspen chips in pulp preparation.

## KEY POINTS

- Improvements to white water recirculation and pulp recovery in 1994
- Non-toxic effluent

Based on December 1995 inventory

## ADDITIONAL INFORMATION

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