

## FACT SHEET 94

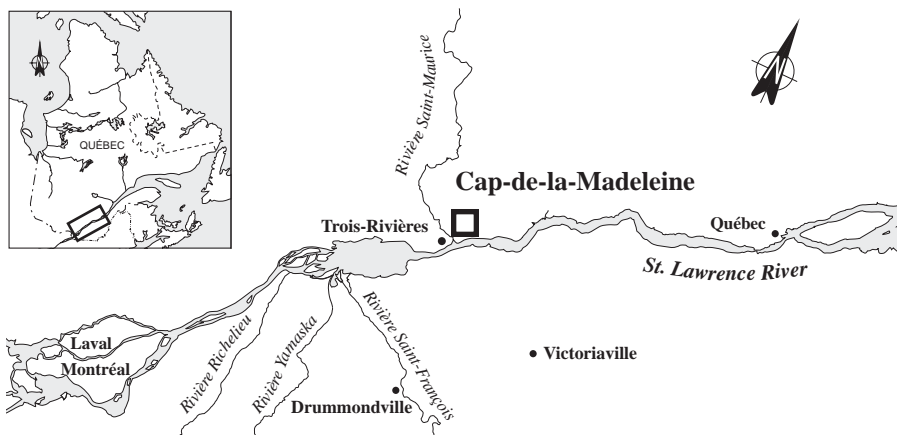
# Désencrage C.M.D. Inc.

702 Notre-Dame Street  
Cap-de-la-Madeleine,  
Quebec  
G8T 7W1

*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 DÉSENCRAGE C.M.D. INC. mill in Cap-de-la-Madeleine is in Group 3, comprising regulated industrial plants.*

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



## INDUSTRIAL PLANT

### *Manufactures papermaking pulp*

The DÉSENCRAGE C.M.D. INC. mill in Cap-de-la-Madeleine manufactures papermaking pulp from recycled newspapers and magazines. The pulp is used, among other things, to make newsprint. The raw material is ground and cleaned in two pulpers (with helical rotors) and three centrifugal cleaners. It is then screened and channeled to two air-injection flotation cells in series for de-inking. The pulp is refined, thickened, bleached, and washed; it is also run through a deflocculation process that reduces the size of any remaining ink particles and then pressed, cut and baled. In 1995, the mill employs a work force of 60.

## PRODUCTION

### PRINCIPAL RAW MATERIALS

- Recycled paper
- Recycled newspapers
- Recycled magazines

### FINISHED PRODUCT

- De-inked pulp

# TREATMENT MEASURES

## INITIAL EFFLUENT VALUES

### *Suspended solids and biochemical oxygen demand*

Based on company data, in 1993 the mill discharged 3179 m<sup>3</sup>/d of effluent containing notably:

- 254 kg/d of biochemical oxygen demand (BOD<sub>5</sub>)
- 141 kg/d of (SS)

## RESOURCES AND USES TO PRESERVE

### *Activity on the river*

The DÉSENCRAGE C.M.D. INC. mill in Cap-de-la-Madeleine is located on the shore of the St. Lawrence River. This stretch of the St. Lawrence is very popular for pleasure boating, especially because the Trois-Rivières marina is close by, as well as the rivière Saint-Maurice. In addition, there is a boat launch at Cap-de-la-Madeleine. Along the banks of the river a few kilometres downstream from the mill, there are seasonal as well as year-round homes. The area downstream from Carignan Island is used for bathing. The sublittoral zone downstream from the mill harbours water plant communities favourable for spawning and rearing of northern pike, perch, brown bullhead, and smallmouth bass. Close to 75 fish species inhabit these waters. Four commercial fishing licences were issued in 1995 for this stretch of the river. The small Champlain flat is a protected wetland. The area attracts sport fishermen as well, especially around Carignan and Valdor islands. More than 25 bird species frequent this river stretch, considered an excellent hunting area. Fishermen and hunters use the Champlain wharf. The Grondines drinking water intake is the first intake downstream from the mill's 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 in choosing treatment methods which best promote environmental protection. Environmental discharge objectives for DÉSENCRAGE C.M.D. INC. will be available by 1997.

## EFFLUENT TREATMENT

### *Secondary treatment*

Two Poseidon clarifiers control recirculation of process water. Industrial effluent undergoes primary treatment in a third clarifier and then enters an activated sludge secondary treatment system before discharge into the St. Lawrence. Sanitary sewage is channeled to the municipal sewerage system, which takes it to the Cap-de-la-Madeleine wastewater treatment plant.

## PREVENTION AND CLEANUP MEASURES IMPLEMENTED

### *Effluent adequately treated*

Since the mill already had a secondary treatment system, no additional treatment was required for mill effluent to meet the standards of the new federal and provincial pulp and paper regulations.

## REGULATORY COMPLIANCE - WATER COMPONENT

### *Standards met*

The DÉSENCRAGE C.M.D. INC. mill is subject to federal and provincial pulp and paper regulations. 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

### *Low Chimiotox index*

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 gives monthly data for 1995 along with the Chimiotox values estimated from them assuming an effluent flowrate of 4412 m<sup>3</sup>/d. According to these data (supplied by the company in compliance with the provincial pulp and paper regulation), total copper accounts for 59% of the Chimiotox index and total zinc for 30%.

Figure 1 was plotted from 1995 company data. The Chimiotox index estimated from those data was applied for the entire period between 1993 and 1998.

Table 1 *Chimiotox Index (1995) - Désencrage C.M.D. Inc.\**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Total copper	0.463	451	209
Total zinc	11.287	9.4	106
Total aluminum	2.916	11	32
Total nickel	0.154	10	2
Dehydroabietic acid	0.008	77	1
Oleic acid	0.014	19	<1
Stearic acid	0.012	19	<1
<b>CHIMIOTOX INDEX</b>			<b>352</b>

\* For an effluent flowrate of 4412 m<sup>3</sup>/d

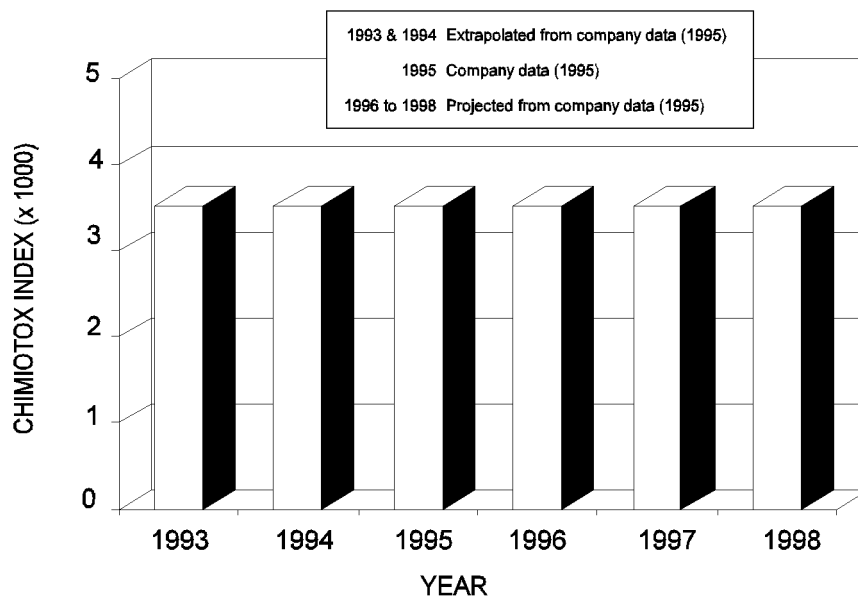


Figure 1 *Chimiotox Index Trends (1993 to 1998)*  
*Désencrage C.M.D. Inc.*

## 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 effluent of the 106 targeted plants along 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.

None of these eleven persistent and bioaccumulative toxic substances were detected in mill effluent during the effluent self-monitoring program activities of the last quarter of 1995.

## 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. Data for the last quarter of 1995 indicate that final effluent from the DÉSENCRAGE C.M.D. INC. mill is not toxic.

## REDUCTION IN SUBSTANCES MONITORED

### *Drop in biochemical oxygen demand*

According to company data, in 1995 the mill discharged 3641 m<sup>3</sup>/d of effluent containing notably:

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

Between 1993 and 1995, biochemical oxygen demand dropped 65% while effluent flowrate and suspended solids remained relatively stable.

## TECHNOLOGICAL DEVELOPMENT

### *Effluent treatment and de-inking sludges enhancement*

The purpose of the first technological development project was to analyse effluent from the DÉSENCRAGE C.M.D. INC. mill in Cap-de-la-Madeleine and to evaluate and perfect an activated sludge treatment system. System design and operation criteria were developed at the Pulp and Paper Research Centre of the *Université du Québec à Trois-Rivières* (UQTR). The treatment system has made it possible to eliminate effluent toxicity and meet the new standards for pulp and paper mills. The second project allowed the determination of optimal operation conditions of a new waste boiler and the verification of the energy efficiency of a fuel made of wood waste and de-inking sludge mix. The two projects required an investments of nearly \$8 million.

## KEY POINTS

- An activated sludge secondary treatment system introduced in 1992; a \$4 million investment
- Non-toxic effluent

Based on December 1995 inventory

## ADDITIONAL INFORMATION

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