

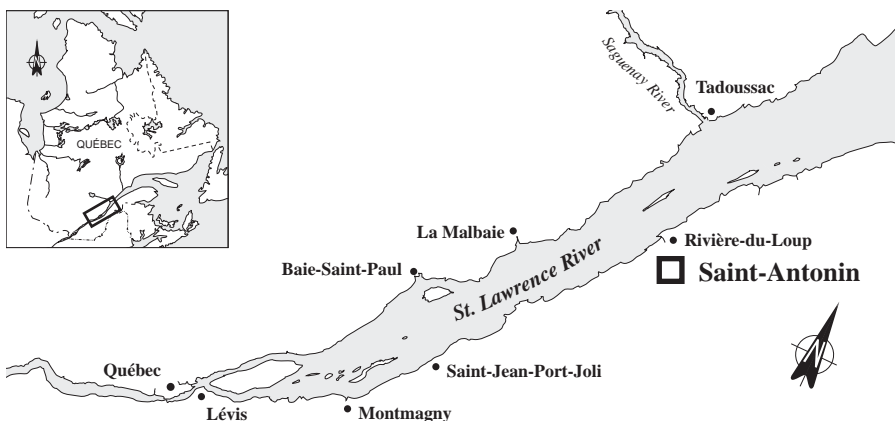
## FACT SHEET 90

### Mohawk Pulp Ltd

235 Rang 1

Saint-Antonin, Quebec

G0L 2J0



*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 MOHAWK PULP LTD mill in Saint-Antonin 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 to establish corrective measures for maximum reduction of deleterious effects on the receiving environment.*

## INDUSTRIAL PLANT

### *A mechanical wood pulp mill*

The MOHAWK PULP LTD mill uses wood grinding machines to make mechanical wood pulp. Softwood logs are soaked, debarked, cut up, and then ground into pulp. The pulp is thickened, baled and then compressed in hydraulic presses. Annual production capacity of the mill is 50 000 t. In 1995, the plant operates at 15% design capacity and employs a work force of 50.

## PRODUCTION

### PRINCIPAL RAW MATERIAL

- 4- or 8-ft softwood logs

### FINISHED PRODUCT

- Mechanical pulp

# TREATMENT MEASURES

## INITIAL EFFLUENT VALUES

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

According to company data, in 1993 the mill discharged 4752 m<sup>3</sup>/d of effluent containing notably:

- 2101 kg/d of suspended solids (ss)
- 583 kg/d of biochemical oxygen demand (BOD<sub>5</sub>)

## RESOURCES AND USES TO PRESERVE

*Areas attractive to waterfowl*

The MOHAWK PULP LTD mill in Saint-Antonin empties its effluent into du Loup River 20 km from the mouth of the river. There is a 500-metre set of rapids downstream of the mill. Further downstream, the river runs for several kilometres through flood plains and bogs. The flood plains attract waterfowl and are used by perch during spring spawning. Fishermen occasionally fish for perch between Saint-Antonin and the city of Rivière-du-Loup. Rivière-du-Loup draws its drinking water from the du Loup River about 15 km downstream of the mill.

## ENVIRONMENTAL DISCHARGE OBJECTIVES

*Environmental protection*

Environmental discharge objectives are established to preserve local resources and uses. Expressed as maximum permissible loads and concentrations for effluent released into the environment, these guideline are used to select treatment methods which best promote environmental protection. Environmental discharge objectives for the MOHAWK PULP LTD mill will be available by 1997.

## EFFLUENT TREATMENT

*Whitewater retention pond*

The MOHAWK PULP LTD mill has no industrial wastewater treatment system, but it does have a whitewater retention pond.

## PREVENTION AND CLEANUP MEASURES IMPLEMENTED

*Filtration and recirculation*

Filters were installed in 1995 to reduce ss and recover fibre from industrial effluent. In addition, the company has also started recirculating some of the process water and has installed an Ecoflo system to treat domestic sewage.

## REGULATORY COMPLIANCE - WATER COMPONENT

*Regulations*

The MOHAWK PULP LTD mill is subject to federal and provincial pulp and paper regulations. With the secondary treatment system the company is planning to install, the mill will be able to meet the latest provincial standards, which came into force on September 30, 1995.

# POLLUTION ABATEMENT

## CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

### *Mineral oil and grease*

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 characterization data collected at the MOHAWK PULP LTD mill in 1994 for the industrial effluent abatement program (PRRI) along with the Chimiotox values estimated from them assuming a flowrate of 6853 m<sup>3</sup>/d. According to these data, mineral oil and grease dominate the wastewater, accounting for 53% of the Chimiotox index.

Figure 1 is based on the 1994 PRRI characterization data. The Chimiotox index calculated from these data was applied for the entire period between 1993 and 1998. The improvement in effluent quality resulting from cleanup measures implemented between 1993 and 1995 cannot be assessed.

Table 1 *Chimiotox Index (1995) - Mohawk Pulp Ltd\**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Mineral oil and grease	7.105	100	711
Total arsenic	0.004	57 143	245
Dehydroabietic acid	2.659	77	205
Abietic acid	4.042	19	77
Total manganese	1.875	10	19
Linoleic acid	0.736	19	14
Total iron	3.859	3.3	13
Isopimaric acid	0.614	19	12
Oleic acid	0.534	19	10
Sandaracopimaric acid	0.387	19	7
Neobietic acid	0.262	19	5
Palustric acid	0.224	19	4
Palmitic acid	0.167	19	3
Levopimaric acid	0.181	19	3
Pimaric acid	0.144	19	3
Cresols (o,m,p)	0.008	200	2
Guaiacol	0.011	200	2
Ammoniacal nitrogen	1.801	0.8	1
Total zinc	0.137	9.4	1
Acetone	0.576	2	1
Linolenic acid	0.041	19	1
Stearic acid	0.040	19	1
Chlorodehydroabietic acid	0.028	19	1
<b>CHIMIOTOX INDEX</b>			<b>1 341</b>

\* Assuming an effluent flowrate of 6853 m<sup>3</sup>/d.

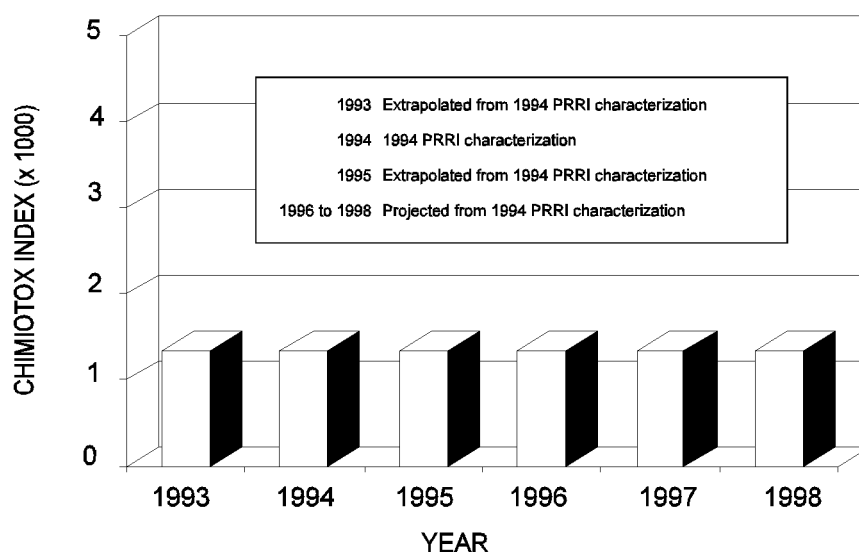


Figure 1 *Chimiotox Index trends (1993 to 1998)*  
*Mohawk Pulp Ltd*

## 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 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 the eleven targeted persistent and bioaccumulative toxic substances were detected during the 1994 PRRI characterization of the MOHAWK PULP LTD mill effluent.

## EFFLUENT TOXICITY

### *Low toxicity*

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 November 1995 show 1.58 toxic units in final effluent from the MOHAWK PULP LTD mill, indicating a low toxicity.

## REDUCTION IN SUBSTANCES MONITORED

### *Loads reduced*

According to company data, in November 1995 the mill discharged 1709 m<sup>3</sup>/d of effluent containing notably:

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

Between 1993 and 1995, suspended solids dropped 87%, biochemical oxygen demand 76%, and effluent flowrate 64%. The decline in loads is due mainly to recirculation and cleanup measures the company has introduced.

## KEY POINTS

- Water recirculation and cleanup measures implemented in 1995

Based on December 1995 inventory

## ADDITIONAL INFORMATION

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Published by authority of the Minister of the Environment

© Minister of Supply and Services Canada 1996  
Catalogue No. En153-6/90-1996E

ISBN 0-662-23306-9

(Aussi disponible en français sous le titre  
*Établissements industriels : faits saillants*)