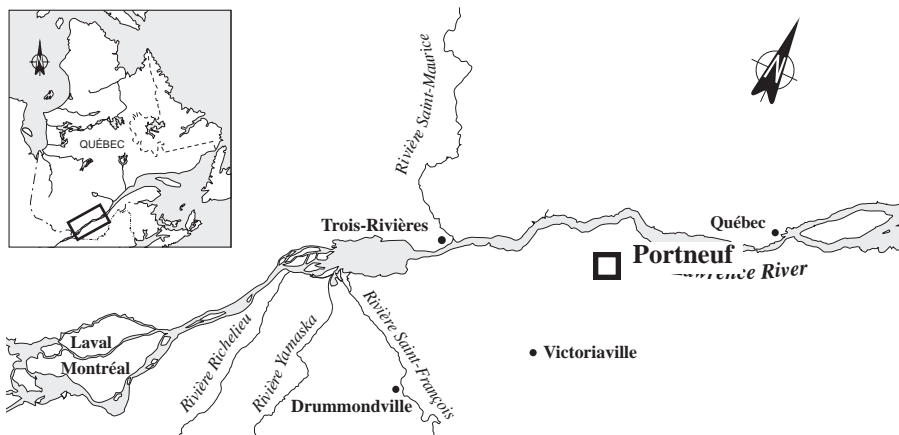


## FACT SHEET 100

### J. Ford & Co. Ltd.

200 Moulin Street  
Portneuf, Quebec  
G0A 2Y0



*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 J. FORD & CO. LTD. mill in Portneuf 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

### Paper and board mill

The J. FORD & CO. LTD. complex in Portneuf produces various papers and cardboard from purchased pulp, old papers and refined pulp. The complex includes a paper mill (Mill No. 1), equipped with three paper machines, a second paper mill with one paper machine (Machine No. 6) and a felt board mill (Mill No. 2). In Mill No. 1 and Machine No. 6, the purchased pulp is treated in pulpers and then refined before going to the paper machines, then dried. In Mill No. 2, the pulp is obtained from old papers disintegrated in a pulper and then refined before being mixed, in precise proportions, with pulp obtained by refining wood chips and waste. The pulp mixture is sent to the paper machine and then dried. The mill has a rated production capacity of 85 000 t/yr. In 1995, the mill works at 68% capacity and employs a work force of 225.

## PRODUCTION

### PRINCIPAL RAW MATERIALS

- Virgin pulp
- Recycled pulp
- De-inked pulp
- Old cardboard and papers
- Wood waste
- Wood chips

### FINISHED PRODUCTS

- Felt board
- Paper tissues
- Tissue paper
- Premoistened towelettes
- Coffee filters
- Masking tape

# TREATMENT MEASURES

## INITIAL EFFLUENT VALUES

### *Minimal loads*

According to company data, in 1993 the mill discharged 2292 m<sup>3</sup>/d of effluent, containing notably:

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

In 1993, biochemical oxygen demand and suspended solids from the J. FORD & CO. LTD. mill are among the lowest of all the pulp and paper mills covered by SLV 2000.

## RESOURCES AND USES TO PRESERVE

### *Degraded aquatic environment*

The J. FORD & CO. LTD. mill is located in the southern part of the drainage basin of the Portneuf River, an area mainly used for farming and industry. The aquatic environment is degraded to the point where it is no longer appropriate for many fish species. Some resistant species nevertheless live there, such as perch, white sucker and red sucker. There is no commercial fishing on the river, and sport fishing is rare. However, eel are fished commercially at the river mouth. There are no drinking water intakes on the Portneuf 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 to select treatment methods which best promote environmental protection. The environmental discharge objectives for J. FORD & CO. LTD. have been calculated.

## EFFLUENT TREATMENT

### *Filtration and re-use*

Effluent from Mill No. 1 and Machine No. 6 makes up most of the wastewater; it is pumped into ditches and then filtered and analysed (flowrate, temperature, pH and conductivity) before being discharged into the Portneuf River. Wastewater from Mill No. 2 is re-used in the Mill No. 1 process, and domestic sewage flows into the municipal sewerage system.

## PREVENTION AND CLEANUP MEASURES IMPLEMENTED

### *Connection to municipal sewerage system and re-use of wastewater*

The complex was connected to the municipal sewerage system in 1995 so as to discharge domestic sewage. The company also installed recirculation facilities during the same year to limit effluent from Mill No. 2 to indirect-contact cooling water.

## REGULATORY COMPLIANCE - WATER COMPONENT

### *Compliance with standards*

The J. FORD & CO. LTD. complex in Portneuf 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 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 company monthly data for the last quarter of 1995 along with Chimiotox values estimated from them assuming an effluent flowrate of 5312 m<sup>3</sup>/d. According to these data (supplied by the company as required by the provincial pulp and paper regulation), mineral oil and grease dominate the wastewater, accounting for 84% of the Chimiotox index.

Figure 1 is based on characterization data collected for the industrial effluent abatement program (PRRI) in 1992 and monthly company data for October to December 1995. The Chimiotox index calculated from the 1992 PRRI characterization data was applied for 1993 and 1994. Projections for 1996 to 1998 are based on company data for the last quarter of 1995. These decreases are due to wastewater cleanup measures undertaken in 1995.

Table 1 *Chimiotox Index (1995) - J. Ford & Co. Ltd.\**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Mineral oil and grease	35.636	100	3564
Total aluminum	34.724	11	382
Dehydroabietic acid	1.623	77	125
Abietic acid	3.978	19	76
Total lead	0.105	314	33
Total copper	0.063	451	28
Isopimaric acid	0.599	19	11
Stearic acid	0.455	19	9
Sandaracopimaric acid	0.190	19	4
Palustric acid	0.161	19	3
Oleic acid	0.089	19	2
Pimaric acid	0.122	19	2
Zinc total	0.105	9.4	1
Dichlorostearic acid	0.029	19	1
Total nickel	0.042	10	<1
Linoleic acid	0.023	19	<1
Levopimaric acid	0.023	19	<1
<b>CHIMIOTOX INDEX</b>			<b>4241</b>

\* Assuming an effluent flowrate of 5312 m<sup>3</sup>/d

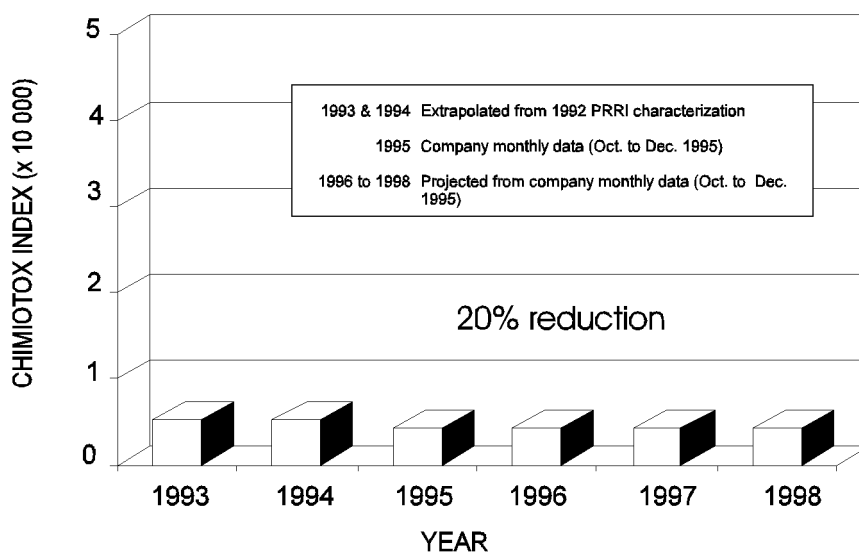


Figure 1 *Chimiotox Index trends (1993 to 1998)*  
*J. Ford & Co. Ltd.*

## 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 the 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.

None of the eleven targeted persistent and bioaccumulative toxic substances was detected during the effluent self-monitoring program activities of the last quarter of 1995.

## EFFLUENT TOXICITY

### *Moderate 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. For the J. FORD & CO. LTD. plant, data for September and November 1995 following bioassays with rainbow trout and daphnia indicated moderate toxicity.

## REDUCTION IN SUBSTANCES MONITORED

### *Increased flow and suspended solids*

According to monthly company data for the last quarter of 1995, the mill discharged 4163 m<sup>3</sup>/d of effluent containing notably:

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

The effluent flowrate increased by 82% and the suspended solids load more than doubled between 1993 and 1995. These increases are due to the heightened use of paper machines, additional screening filtrate loads and the purging of the water-treatment unit.

## KEY POINTS

- 20% decrease in Chimiotox index
- Re-use of process water and discharge of domestic sewage to Portneuf sewerage system in 1995

Based on December 1995 inventory

## 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):**

Vital Gauvin (418) 622-5151

### **Environment officer at J. FORD & CO. LTD.:**

Roger Bouliane (418) 286-3361

### **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

Published by authority of the Minister of the Environment

© Minister of Supply and Services Canada 1996  
Catalogue No. En153-6/100-1996E

ISBN 0-662-23305-0

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