

FACT SHEET No. 26

Wood Preservation Industries Ltd.

2210 Saint-Roch Road

Tracy, Quebec

J3R 3L2

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. WOOD PRESERVATION INDUSTRIES LTD., located in Tracy, 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

A pressure-treated wood plant

The WOOD PRESERVATION INDUSTRIES LTD. pressure-treated wood plant handles 72 500 m³/yr. Three preservatives are used: chromated copper arsenate (CCA), pentachlorophenol (PCP) and creosote. The creosote process is now used for only 3.4% of the production. In 1995, the plant operated at 98% of rated capacity and employed a work force of 22 (seasonal minimum).

PRODUCTION

PRINCIPAL RAW MATERIALS

- Wood
- CCA, PCP and creosote

FINISHED PRODUCTS

- Treated wood (poles, railroad ties, wood for fences and patios, etc.)

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Total solids and oil and grease

In 1988, based on the 1985 characterization by the Ministère de l'Environnement et de la Faune du Québec (MEF) and the 1991 Action Plan characterization (dioxins and furans), the average effluent discharge was 41 m³/d, containing:

- 8.5 kg/d of total solids (TS)
- 1.33x10⁻¹⁰ kg/d of dioxins and furans
- 0.04 kg/d of oil and grease (O&G)

The pH was 9.1.

RESOURCES AND USES TO PRESERVE

Possibility of nonpoint source pollution

Both effluents from the WOOD PRESERVATION INDUSTRIES LTD. plant (treated domestic and industrial wastewater) empty into the municipal sewage system. However, there is a possibility of non-point source pollution for the Richelieu River from water draining off a former drying area for treated wood. The Richelieu, which has several marinas along its shores, is particularly well suited to water sports such as boating and windsurfing. At the mouth of the river, there are several boat-launching ramps (Pointe aux Pins) and wharves, as well as a beach. The Richelieu provides habitat for some 40 fish species and attracts anglers. The right bank of the St. Lawrence between the Richelieu and Yamaska rivers is a recreation area from which the river is easily accessible. It is a favourite spawning ground for Northern pike, Yellow perch and Atlantic sturgeon. It is also a suitable habitat for certain rare vascular plants. And lastly, along this section of the shore, there are nesting sites and staging areas for migratory wildfowl (such as Canada geese and dabbling ducks).

WATER QUALITY BASED OBJECTIVES

Environmental protection

In order to protect resources and uses, environmental objectives for toxic effluent are calculated in terms of concentrations and loads that must not be exceeded. These values are guidelines in seeking the most appropriate treatment solutions for protecting the environment. The water quality based objectives of WOOD PRESERVATION INDUSTRIES LTD. are available on request.

EFFLUENT TREATMENT

Recycling of process water

The company has not emptied its industrial wastewater into the Richelieu since December 1991. The water from the CCA process is completely recycled, while a large amount of the water from the PCP process is also recycled in the CCA unit. The water from the PCP unit that is not recycled, the blow-down from the boilers, the regenerated water from the water softeners, and the run-off from the drying area have been treated since December 1991. Treatment involves neutralization, oxidation with peroxide, and activated-carbon filtration. The treated water then merges with domestic wastewater in the sewer connected to the Tracy wastewater treatment plant.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

Sound measures

Between 1985 and 1991, the WOOD PRESERVATION INDUSTRIES LTD. plant instituted the most up-to-date measures available in the industry. These included collecting and recycling process water, installing walls around the tanks, and enclosing the exterior drying area.

REGULATORY COMPLIANCE - WATER COMPONENT

Commendation

All the recommended methods were adopted. City of Tracy municipal by-law 663-87 sets standards for discharge into sewers in order to protect the sewage system and the treatment plant. The company meets these standards, except in the case of the pH level, which is sometimes too high.

In 1993, Environment Canada and the Ministère de l'Environnement et de la Faune du Québec (MEF) commended WOOD PRESERVATION INDUSTRIES LTD. for its cleanup measures.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Dioxins and furans

The Chimiotox index gauges the load of all the toxic substances 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 Action Plan characterization data gathered in November 1991 as well as the Chimiotox values calculated from them for a discharge flow of 15 m³/d. Twelve substances were detected in testing for more than 120. The data show that dioxins and furans were preponderant in the treated water, representing 83% of the Chimiotox index. Oil and grease followed with 17%. The significant contribution of dioxins and furans to the Chimiotox index reflects the high toxicity of these substances. Nevertheless, it should be noted that the overall Chimiotox index is very low.

Figure 1 is plotted from the data of the 1991 characterization study. The Chimiotox indices for the 1988 to 1995 period were extrapolated from the 1991 figures. Because the new wastewater treatment procedure introduced in December 1991 had no bearing on the substances evaluated for the Chimiotox index, the value was deemed constant for the entire period.

Table 1 *Chimiotox Index (1991) - Wood Preservation Industries Ltd.**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
2,3,7,8-T ₄ CDD equivalent	1.33 x 10 ⁻¹⁰	7.142 x 10 ¹⁰	10
Total Oil and Grease	0.015	100	2
Dichloromethane	0.007	64	<1
Chromium	7.57 x 10 ⁻⁰⁴	500	<1
Total Phosphorus	0.006	50	<1
Cadmium	1.07 x 10 ⁻⁰⁴	909	<1
Iron	0.005	3	<1
Aluminum	8.23 x 10 ⁻⁰⁴	11	<1
Bis-(2-ethylhexyl)phthalate	3.973 x 10 ⁻⁰⁶	1667	<1
Zinc	4.89 x 10 ⁻⁰⁴	9	<1
Di-n-butylphthalate	1.39 x 10 ⁻⁰⁵	250	<1
Benzene	1.867 x 10 ⁻⁰⁵	25	<1
CHIMIOTOX INDEX			12

* For effluent discharge of 15 m³/d (12 substances detected in testing for more than 120).

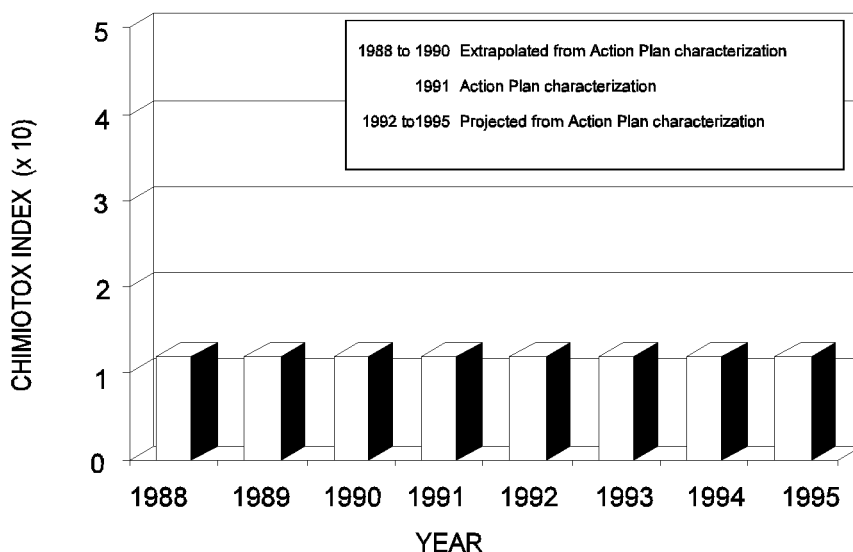


Figure 1 Changes in toxic effluent discharges, 1988-1995 - Wood Preservation Industries Ltd.

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

Careful monitoring required

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.

The 1991 Action Plan characterization study showed a load of 0.133 µg/d of dioxins and furans.

PEEP TOXICITY REDUCTION

Low toxicity

The Potential Ecotoxic Effects Probe, or PEEP, combines the 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. In the case of the WOOD PRESERVATION INDUSTRIES LTD. plant in Tracy, one series of bioassays was carried out. The 1991 PEEP value was 0.4. This was one of the lowest PEEP values among the 50 Action Plan plants.

REDUCTION IN SUBSTANCES MONITORED

Alkaline effluent

Based on company data for 1995, the average effluent discharge was 14.2 m³/d, containing:

- 0.830 kg/d of total solids (TS)
- 0.0215 kg/d of phenols
- 0.033 kg/d of oil and grease (O&G)
- 0.003 kg/d of suspended solids (SS)

The effluent is alkaline with a pH value of 8.98.

Between 1988 and 1995, company data show a 90% reduction in total solids and a 65% reduction in effluent discharge. These reductions can be attributed to the cleanup measures the company has introduced since 1985.

KEY POINTS

- The Chimiotox index and the PEEP value were among the lowest for any of the Action Plan plants
- Introduction of sound treatment measures
- In 1993, Environment Canada and the Ministère de l'Environnement et de la Faune du Québec (MEF) commended WOOD PRESERVATION INDUSTRIES LTD. for its cleanup measures

ADDITIONAL INFORMATION

Chimiotox index and PEEP: Gilles Legault, Environment Canada, (514) 283-3452.

Water quality based objectives: Francine Richard, MEF, (418) 644-3574.

Records officer at the Ministère de l'Environnement et de la Faune du Québec (MEF): Luc St-Martin, (514) 928-7607.

Environment officer at WOOD PRESERVATION INDUSTRIES LTD.: Jacques McKay, (514) 474-7211.

Based on December 1995 inventory.
Information reviewed by Gilles Legault, SLV 2000.

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