FACT SHEET No. 30

Tripap Inc.

508 Commissaires Street
Trois-Rivières, Quebec
G9A 5H6

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. The TRIPAP INC. plant, located in Trois-Rivières, 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

Reopening the factory

The TRIPAP INC. plant in Trois-Rivières formerly belonged to Canadian Pacific Forest Products Ltd. (CPFP), which closed the plant in June 1992. TRIPAP INC. reopened it in February 1994. The annual production capacity has remained constant at 350 000 t from eight paper machines. The plant uses mechanical pulp that is made on site from conifer billets (fir and spruce). The wood is brought in by truck. Unlike the Canadian Pacific Forests Product plant, the TRIPAP INC. plant no longer makes chemical bisulphite pulp; the company buys some kraft pulp and chemi-thermomechanical pulp to use for a few clients. The paper is bleached by using peroxide and sodium hydrosulphite (the same process as the one formerly used by CIPFP). In 1995, only five machines were in operation. The plant, therefore, was only operating at 67% of rated capacity and employed a work force of 485.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Wood billets (fir and spruce)
- Kraft pulp (bought)
- Chemi-thermomechanical pulp (bought)

FINISHED PRODUCTS

- Specialty paper

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

BOD_5 and SS

According to data from CPFP, which was operating the mill at the time, in 1988, there was an effluent discharge of 79 727 m^3/d, containing:

- 92 122 kg/d of biochemical oxygen demand (BOD_5)
- 4566 kg/d of suspended solids (SS)

CPFP closed the plant in June 1992 and TRIPAP INC. took over the operations in February 1994.

RESOURCES AND USES TO PRESERVE

Gateway to an extensive watershed

The TRIPAP INC. plant in Trois-Rivières is located on the north shore of the St. Lawrence, at the mouth of the Saint-Maurice River. The effluent from the plant empties into the St. Lawrence. The area around Trois-Rivières and Cap-de-la-Madeleine is highly urbanized. Nevertheless, Saint-Quentin Island, at the mouth of the Saint-Maurice River, has been kept as a park where people can enjoy various activities (boating, cruises, windsurfing, water skiing). There are many cottages and motels along the banks of the St. Lawrence as far as Champlain. The appeal of a large stretch of water in an urban setting is underlined by the many parks that exist the length of the river. The Notre-Dame-du-Cap shrine, which attracts thousands of pilgrims every year, is particularly noteworthy. This area also hosts the annual International Canoe Race. In this event, the canoeists come down the Saint-Maurice River from La Tuque to Shawinigan.

There is no particularly important wildlife habitat along the St. Lawrence in the Trois-Rivières area, even though hundreds of Canada geese and ducks stop on the banks during their spring and fall migrations. The Saint-Maurice drains a vast system of rivers and lakes that comprises spawning grounds for several fish species (pike, Walleye and Burbot). There is some commercial fishing (shad, catfish and Atlantic tomcod) near the islands at the mouth of the Saint-Maurice River.

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 for TRIPAP INC. will be available on request by 1997.

EFFLUENT TREATMENT

Secondary treatment

Most of the industrial effluent of TRIPAP INC. in Trois-Rivières is treated first in a flotation system, then sent through an activated-sludge system. Domestic wastewater is separated and emptied into the municipal sewage system.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

A $25 million investment

Starting in October 1988, CPFP implemented a water treatment program (PAE). In 1991, in compliance with one of the PAE objectives, the chemical pulp was partially replaced by kraft pulp purchased outside the plant in order to reduce the BOD_5 of the effluent. A new pulper also had to be installed to treat the surplus kraft pulp. A final measure taken by CPFP was separating the domestic wastewater from the plant before emptying it into the municipal sewage system. The wastewater treatment program consisted of three stages: CPFP had completed two of them and was working on the third.

In February 1994, at the time the plant was reopened, the CPFP wastewater treatment program was not transferable, but TRIPAP INC. was obliged to complete the work that had been started. TRIPAP INC. then built a new primary flotation treatment system combined with a secondary treatment system using activated sludge. The new treatment system, which went into operation in September 1995, has improved the quality of the effluent and brought it up to the standard required by the new regulations respecting pulp and paper mills. The total cost of these changes is estimated at $25 million. An awareness campaign and water recovery measures reduce consumption of fresh water.

REGULATORY COMPLIANCE - WATER COMPONENT

Compliance with standards

The TRIPAP INC. mill is subject to the provincial regulations respecting pulp and paper mills, as well as to the federal Pulp and Paper Effluent Regulations. The new treatment facilities recently brought on line enable TRIPAP INC. to comply with the new provincial regulations, which have been in effect since September 30, 1995.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

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 and determine the proportion of each pollutant.

A comprehensive characterization of CPFP effluents was carried out in 1990 under the Action Plan. After TRIPAP INC. reopened the plant, new processes were instituted and the type of effluent changed.

Table 1 presents the data supplied for the months of October to December, 1995, in accordance with the provincial pulp and paper mill regulations and the Chimiotox values calculated therefrom for a discharge rate of 34 093 m^3/d. The data indicate that copper and linolenic acid are the main pollutants in the water after treatment. Copper represents 28% of the Chimiotox index, while linolenic acid accounts for 22%.

Figure 1 reflects Action Plan characterization data for 1990 as well as the figures for October to December, 1995. The rate of reduction of the Chimiotox index between 1988 and 1995 amounted to 99.7%.

Table 1 ***Chimiotox Index (1995) - Tripap Inc.****

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Total Copper	0.329	451	148
Linolenic Acid	6.159	19	117
Total Zinc	5.703	9.4	54
Total Aluminum	3.839	11	42
Oleic Acid	1.960	19	37
Dehydroabeitic Acid	0.479	77	37
Abietic Acid	1.179	19	22
Linoleic Acid	0.927	19	18
Stearic Acid	0.947	19	18
Dichlorostearic Acid	0.836	19	16
Levopimaric Acid	0.493	19	9
Isopimaric Acid	0.149	19	3
Neoabetic Acid	0.109	19	2
Palustic Acid	0.092	19	2
Pimaric Acid	0.056	19	1
Sandaracopimaric Acid	0.045	19	1
CHIMIOTOX INDEX**			**527**

* For effluent discharge of 34 093 m^3/d
**October to December, 1995.

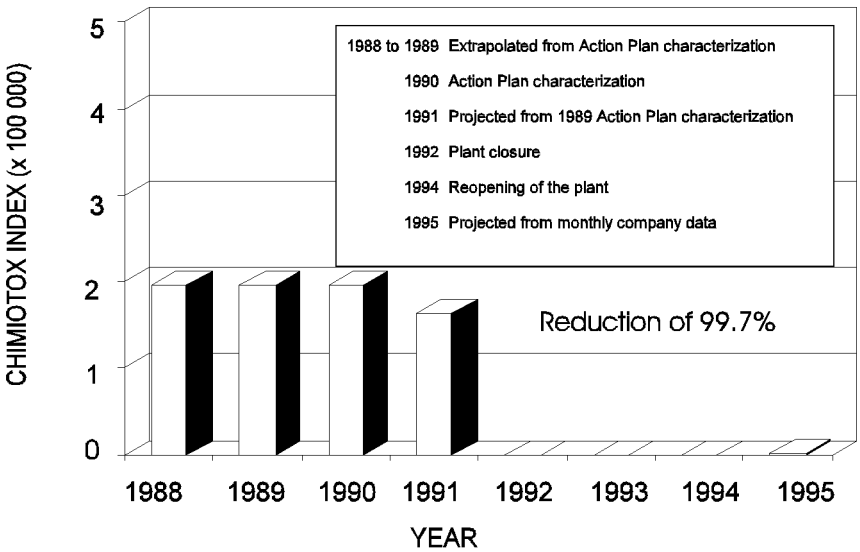

Figure 1 ***Changes in toxic effluent discharges, 1988-1995 - Tripap Inc.***

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

No persistent substances

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.

At the time of the Action Plan characterization study on effluent discharges from CPFP in 1990, none of these toxic substances were found.

PEEP TOXICITY REDUCTION

Non-toxic effluent

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 CPFP plant in Trois-Rivières, one series of bioassays was carried out. The Peep value in 1990 was 7.5.

Since September 30, 1995, the provincial regulations respecting pulp and paper mills have prohibited discharging a final effluent whose toxicity has reached an acute lethality level (as demonstrated by bioassays with Rainbow trout) into a storm sewer or elsewhere in the environment. In the case of the TRIPAP INC. facility, the cleanup measures implemented have helped to diminish the effluent's toxicity. Data for October to December, 1995, indicate that the effluent is non-toxic.

REDUCTION IN SUBSTANCES MONITORED

Reduction in BOD_5 and SS

Based on monthly company data for October, November and December 1995, TRIPAP INC. had an effluent discharge of 34 566 m^3/d, containing:

- 871 kg/d of biochemical oxygen demand (BOD_5)
- 1314 kg/d of suspended solids (SS)

Although production is not the same at the present time, a comparison of the CPFP discharges in 1988 at the beginning of the program with TRIPAP INC. discharges in 1995 indicates a 99% decrease in BOD_5, a 71% decrease in SS, and a 57% decrease in the effluent flow rate. Among other things, these figures reflect the fact that the chemical bisulphite pulp process was discontinued when the company reopened in 1994 and the implementation of the secondary treatment system in 1995.

KEY POINTS

- **Reopening of the plant in February 1994 (discontinuation of chemical pulp manufacturing)**
- **Primary and secondary wastewater treatment systems ($25 million investment) since September 1995**

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

ADDITIONAL INFORMATION

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

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

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