

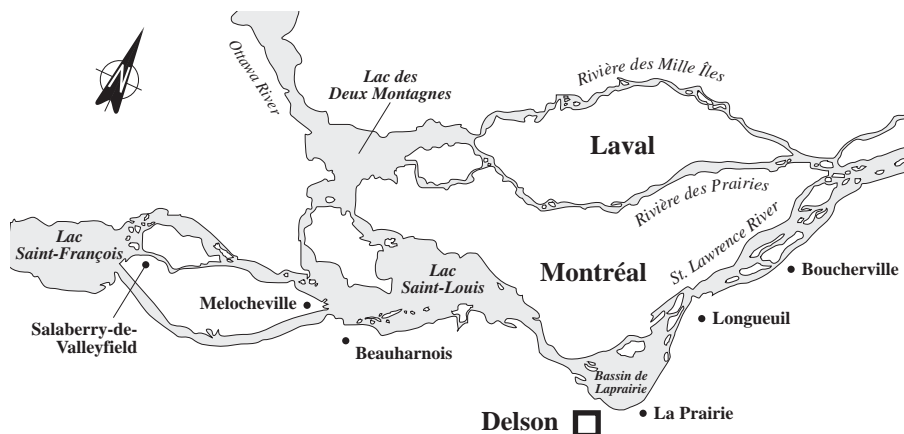
FACT SHEET 61

Stella-Jones Inc.

41 Rodier St.

Delson, Quebec

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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 of with a specific objective. The STELLA-JONES INC. plant, located in Delson, is part of Group 1, comprising plants whose effluent may contain toxic substances even though it is treated.

The objective for Group 1 is to reduce toxic effluent discharges in targeted plants by 90%.

INDUSTRIAL PLANT

Wood processing plant

STELLA-JONES INC. acquired the former DOMTAR plant in Delson in December 1993; although DOMTAR still owns the land on which the facility is located and is responsible for runoff. The preservation process in use at the plant involves oil-based products such as creosote, creosote solution, pentachlorophenol (PCP) solution and water-soluble salts in aqueous solutions namely chromated copper arsenate (CCA). The wood is first dried naturally or in a kiln, then perforated and cut before being treated. Wood that has not been air-seasoned is vacuum processed by steam or boiling. One of two impregnation techniques is used in the steel autoclaves, depending on how much preservative should be retained by the wood. The annual capacity of the plant is 26 280 hours for oil-based treatments and 8760 hours for CCA. In 1995, the plant employs 79 people.

PRODUCTION

PRINCIPAL RAW MATERIALS

- Wood
- Creosote
- Pentachlorophenol (PCP)
- Heavy oil (solvent for creosote)
- Oil for pole treatment (solvent for PCP)
- Chromated copper arsenate (CCA)

FINISHED PRODUCTS

- Railway ties
- Pilings
- Framing timber
- Structural timber
- Power and telephone poles

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Low flow

1993 figures for STELLA-JONES INC. put effluent flow at 96 m³/d. It contains notably:

- 27.8 kg/d of dissolved solids (DS)
- 16.7 kg/d of chemical oxygen demand (COD)
- 11.3 kg/d of biochemical oxygen demand (BOD₅)
- 3.7 kg/d of suspended solids (SS)
- 0.5 kg/d of oil and grease (O&G)

Also, two characterizations were carried out when DOMTAR was owner of the plant. The first characterization was carried out in 1984 by Environment Canada, and the second in 1989 by Ministère de l'Environnement du Québec (MENVIQ); these were adjusted with 1993 flow data. Based on this information, the effluent contains:

- 0.6 mg/d of chlorinated dioxins
- 0.2 kg/d of chlorophenols
- 0.002 kg/d of polycyclic aromatic hydrocarbons (PAHS)

RESOURCES AND USES TO PRESERVE

Diversity of birds and fish

Effluent from the STELLA-JONES INC. plant is discharged into the Saint-Pierre and Tortue rivers. Both join the south shore of the St. Lawrence River, in the Little La Prairie Basin. This area contains fish spawning sites. At least 14 species of aquatic birds have been recorded between Sainte-Catherine and Brossard. The mouth of the Tortue river is a water bird area also used by waterfowl during nesting and migration. It is also used for sports fishing and pleasure boating. The area between the mouths of the Saint-Régis and Saint-Jacques rivers is part of a commercial fishing zone for carp and yellow sturgeon.

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. The water quality based objectives for STELLA-JONES INC. will be available by 1997.

EFFLUENT TREATMENT

Oil separation

Wastewater from processes using creosote and PCPs are treated in a number of stages. Oil is first separated from water in three primary settling tanks. The oil thus recovered is dehydrated and reused. Waters are channeled to the separator which removes floating oils and then to the flocculation system, which removes emulsified oils. The water next flows through a sand filter and two columns of activated charcoal before being discharged into the Saint-Charles river. Wastewater from CCA processing is recirculated within the process.

Domestic sewage, boiler purge water and water softener regeneration water is discharged into the public sewerage system and treated at the Sainte-Catherine sewage treatment plant.

Runoff from the land on which the STELLA-JONES INC. plant is located and treated wood leachate currently flows untreated into the Tortue and Saint-Pierre rivers.

PREVENTION AND CLEANUP MEASURES IMPLEMENTED

Containment of contaminated soil and recycling of oils

Since the plant was sold to STELLA-JONES INC., DOMTAR has removed a part of the contaminated soil from the drainage areas by the autoclave outlets and stored some of these soils in a watertight cell.

STELLA-JONES INC. installed two containment tanks in the spring of 1994 to be used in the event of an accidental spill and as a drainage area at the outlets of the oil-based treatment autoclaves. Since August 1994, oil-based process condensates have been stored in two reservoirs, then reused in the boiler.

REGULATORY COMPLIANCE - WATER COMPONENT

PAE and local regulations

The STELLA-JONES INC. plant in Delson is subject to Delson municipal regulations on discharge into the local sewerage system. In 1995, based on an estimation realized with MENVIQ 1989 data adjusted with 1995 flow, the chlorophenol load in effluent treated at the plant was 0.08 kg/d. The maximum recommended by the International Joint Commission for the Great Lakes in 1980 is 0.000017 kg/d. The 1997 characterization will show if chlorophenols are found in treated company effluent.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Characterization planned for 1997

The Chimiotox index gauges the load of all toxic substances present in industrial effluent, using the toxicity factors assigned to each contaminant. It is used, among other things, to monitor discharge trends over the years and determine the toxic contribution of each pollutant (see Table 1).

Since no exhaustive effluent characterization has been carried out under SLV 2000 for the STELLA-JONES INC. plant, there is insufficient data to calculate the Chimiotox index. Characterization of effluents is planned for 1997.

Table 1 *Chimiotox Index - Stella-Jones Inc.**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
<i>Since no exhaustive characterization of effluent from the STELLA-JONES INC. plant has been made, there is not enough data to calculate the Chimiotox index. Effluent characterization is planned for 1997. The study results will be used to calculate the Chimiotox index.</i>			
INDICE CHIMIOTOX			N/A

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 until the end of SLV 2000 in 1998, thereby ensuring that all uses of the receiving environment are protected.

Pentachlorophenol, a raw material used by the company, contains dioxins and hexachlorobenzene. The 1997 characterization will show if there is any persistent toxic substances in the treated effluent.

PEEP TOXICITY REDUCTION

Bioassays in 1997

The Potential Ecotoxic Effects Probe, or PEEP, combines the results of 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 STELLA-JONES INC. plant in Delson, a series of bioassays will be conducted along with the SLV 2000 characterization of effluent and runoff water planned for 1997.

REDUCTION IN SUBSTANCES MONITORED

Reduction in oil and grease and flowrate

According to company data for 1995, the average effluent discharge was 42.4 m³/d, containing notably:

- 27 kg/d of dissolved solids (DS)
- 15.4 kg/d of chemical oxygen demand (COD)
- 10.9 kg/d of biochemical oxygen demand (BOD₅)
- 2.4 kg/d of suspended solids (SS)
- 0.07 kg/d of oil and grease (O&G)

From 1993 to 1995, effluent discharged was reduced by 55%. As well, oil and grease loads decreased by 86%.

KEY POINTS

- **Confinement of part of the contaminated soil and recycling of oil**
- **Land contaminated by industrial activity prior to commencement of operations by STELLA-JONES INC.**

Based on December 1995 inventory

ADDITIONAL INFORMATION

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