FACT SHEET No. 11

Elkem Metal Canada Inc.

Canal Road

Beauharnois, Quebec

J6N 1W4

***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 ELKEM METAL CANADA INC. plant, located in Beauharnois, 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

Metallurgical plant closed since 1991

Until May 1991, the ELKEM METAL CANADA plant in Beauharnois made ferromanganese and silicomanganese. Annual production capacities were 110 000 t and 25 000 t, respectively. The mineral was screened, then dried and screened a second time before being mixed with other substances. That mixture was fed to an arc furnace. The metal flowed to the floor and solidified, then was crushed into fragments sized to customer specifications. The company employed a work force of 185 at the time; that number has now dropped to only one part-time employee. Plant operations were shut down permanently in May 1991.

PRODUCTION

Before closing

PRINCIPAL RAW MATERIALS

- Mineral ore (manganese oxide)
- Iron turnings
- Coke
- Limestone
- Quartz

FINISHED PRODUCTS

- Ferromanganese
- Silicomanganese

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Mostly metals

The 1988 figures were established from the 1986 characterization data gathered by the Ministère de l'Environnement du Québec. The effluent discharge was estimated at 1370 m^3/d, containing:

- 1000 kg/d of suspended solids (SS)
- 630 kg/d of chemical oxygen demand (COD)
- 230 kg/d of manganese
- 130 kg/d of zinc
- 13 kg/d of lead
- 2 kg/d of cadmium

RESOURCES AND USES TO PRESERVE

A national wildlife area to be protected

ELKEM METAL CANADA discharged its effluent into Lake Saint-Louis. The Iles de la Paix National Wildlife Area is located about 2.5 km downstream from the plant outfall, along the south lakeshore. The de la Paix Islands contain marshes and aquatic plant communities; they are waterfowl sanctuaries and include large spawning grounds for several fish species. Lake Saint-Louis is used for commercial and recreational fishing. The south lakeshore is suitable habitat for muskrat and beaver. The confluence of the lake and the Saint-Louis River, 1 km below the plant outfall, is a popular spot with water sports enthusiasts. There are many public wharfs and boat-launching ramps along the south shore of Lake Saint-Louis between Beauharnois and Châteauguay. The Châteauguay water intake is near the south lakeshore 11 km below Beauharnois.

WATER QUALITY BASED OBJECTIVES

Environmental protection

Water quality based 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.

EFFLUENT TREATMENT

Closed treatment system

Before the Beauharnois plant stopped operating, a closed-circuit system was used to treat the water from the combustion gas cleaning process. After the flocculation and settling stages, the contaminated water was cooled and filtered, then recirculated. The overflow from the primary treatment system was released to Lake Saint-Louis along with rainwater and indirect cooling water. Sanitary wastewater still empties into the municipal sewer and undergoes activated-sludge treatment at the Beauharnois treatment station.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

Treatment had begun

In 1990, the company implemented measures under a comprehensive scheme to upgrade the gas cleaning system. The frequency of overflow was cut by 70%; the drains and pipes were repaired; a gasket water recovery line and a holding tank were installed. The plant intended to build a secondary treatment unit, but that project folded when the plant closed. ELKEM METAL CANADA never committed to a formal treatment agreement or a wastewater treatment program (PAE), and no characterization study was performed.

REGULATORY COMPLIANCE - WATER COMPONENT

Plant closed

The ELKEM METAL CANADA plant in Beauharnois was not subject to any industrial wastewater standards. Having ceased all activity in May 1991, it no longer discharges effluent.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Plant closed before characterization

The Chimiotox index gauges the load of all toxic substances present 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.

Given that the ELKEM METAL CANADA plant closed in May 1991, the discharge characterization planned for fall 1991 could not be performed. Consequently, there are no data for establishing a Chimiotox index.

Table 1 ***Chimiotox Index - Elkem Metal Canada Inc.***

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Given that no effluent characterization study was conducted prior to shutdown of the ELKEM METAL CANADA plant in Beaucharnois, available data are insufficient to estimate a Chimiotox index.			
CHIMIOTOX INDEX			**N/A**

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

Plant closed before characterization

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.

There has been no discharge from the ELKEM METAL CANADA plant since production stopped in 1991, and there was no survey to measure toxic substances prior to shutdown.

PEEP TOXICITY REDUCTION

Plant closed before characterization

The Potential Ecotoxic Effects Probe, or PEEP, combines 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. One series of bioassays was planned for the ELKEM METAL CANADA plant, but could not be conducted during an effluent characterization because of the plant shutdown.

REDUCTION IN SUBSTANCES MONITORED

Plant closed

The ELKEM METAL CANADA plant has discharged no effluent into Lake Saint-Louis since its shutdown in May 1991.

KEY POINTS

- **70% reduction in overflow since the 1990 upgrading of the wastewater treatment system**
- **The plant closed in May 1991**

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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