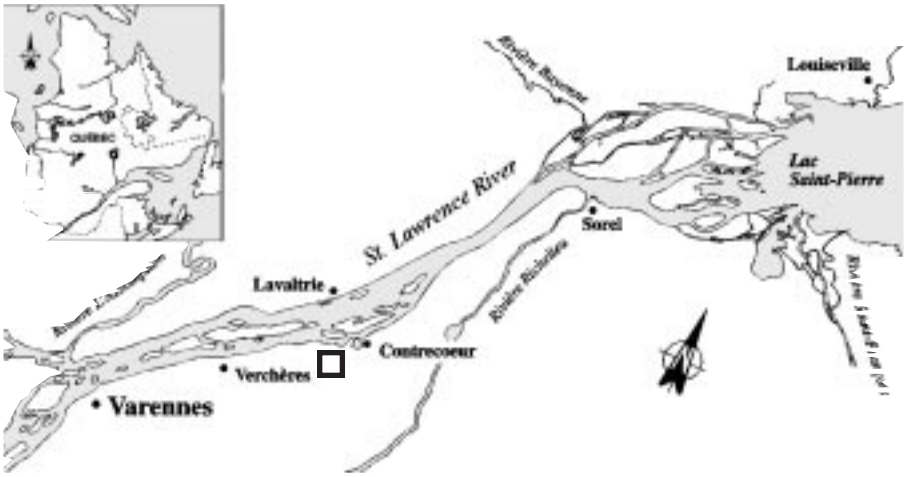
FACT SHEET No. 24

Sidbec-Dosco (Ispat) Inc.

3900 Route des Aciéries
Contrecoeur, Quebec
J0L 1C0



***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 SIDBEC-DOSCO (ISPAT) INC. complex located in Contrecoeur 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 large primary processing and recycling complex

The SIDBEC-DOSCO (ISPAT) INC. complex in Contrecoeur has an annual production capacity of 1 600 000 t and operated at 92% capacity in 1995. It comprises a reduction plant, a melt shop, hot and cold mills, and a hot-rolling rod and bar mill. Iron oxide pellets are reduced with reformed natural gas in a shaft furnace. In the melt shop, the raw material is processed in three electric arc furnaces. The molten steel is cast into billets and slabs. The rolling mills produce finished products in the desired shapes. In addition to using iron ore as a raw material, the facility also recycles scrap. It has a work force of 1554.

PRODUCTION

PRINCIPAL RAW MATERIALS	FINISHED PRODUCTS
• Iron ore	• Steel billets and slabs
• Scrap	• Sheet, rods and bars

TREATMENT MEASURES

INITIAL EFFLUENT VALUES

Iron and other suspended solids

At the time of the characterization study conducted in summer 1988 by the Ministère de l'Environnement du Québec, the complex had an effluent discharge of 51 200 m^3/d, containing:

- 12 740 kg/d of total solids (TS)
- 979 kg/d of suspended solids (SS)
- 337 kg/d of iron
- 159 kg/d of oil and grease (O&G)

RESOURCES AND USES TO PRESERVE

Nearby wildlife area

Effluent from the SIDBEC-DOSCO (ISPAT) INC. metallurgical complex in Contrecoeur is discharged into the St. Lawrence River. The Contrecoeur islands, lying downriver from the outfall, are a National Wildlife Area. They include spawning grounds for ten some fish species; bird nesting, breeding and staging areas; and muskrat habitat. The Lake sturgeon of the Contrecoeur islands is an important commercial species and has potential for sport fishing. The Contrecoeur drinking water intake is located in the island channels. There are numerous recreational activities in the area, and there are cottages along the riverbank south of the islands.

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. SIDBEC-DOSCO (ISPAT) INC.'s water quality based objectives are available on request.

EFFLUENT TREATMENT

Diverse treatment systems

Each type of effluent produced at the Contrecoeur complex undergoes its own specific treatment. Process wastewater and gas scrubbing water from the reduction plant flow to a clarifier. Once clarified, this water is recirculated to the process stream. Melt shop wastewater is settled in scale pits to remove iron oxides. Water from the hot mills undergoes the same treatment and is then circulated to a settling pond. Acidic water from the cold mills is neutralized.

PREVENTION AND CLEANUP SYSTEMS IMPLEMENTED

Reduction at source

Ever since the complex committed to a wastewater treatment program (PAE) in 1990, processes have been modified to improve water recirculation, reduce iron discharges and eliminate the release of acidic water. The company has installed a series of metering stations for continuous effluent monitoring. One settling pond was built for the melt shop and another for the runoff water from the reduction plant. Altogether, the work under the wastewater treatment program represents spending of $14 million.

REGULATORY COMPLIANCE - WATER COMPONENT

Work in progress

In October 1990, SIDBEC-DOSCO (ISPAT) INC. entered into a wastewater treatment program for its Contrecoeur complex. The measures taken under that agreement will bring the effluent into line with the program standards by June 1996.

POLLUTION ABATEMENT

CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

Mostly oil and grease

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 (see Figure 1) and determine the proportion of each pollutant (see Table 1).

Table 1 gives the 1991 Action Plan characterization data, as well as the Chimiotox values estimated from those figures, for an effluent flow of 45 858 m^3/d. In testing for more than 120 substances, 9 were found. The figures show a predominance of oil and grease in the treated wastewater. Oil and grease make up 89% of the Chimiotox index, followed by sulphides (4%), iron (3%) and total phosphorus (2%).

Figure 1 is plotted from the characterization data gathered in 1988 for the Ministère de l'Environnement du Québec (MENVIQ) and in 1991 under the St. Lawrence Action Plan. The Chimiotox values for 1992, 1993 and 1994 are estimated from the 1991 Action Plan characterization data, factoring in the quarterly company figures for oil, grease and iron. The 1992-1995 Chimiotox index is projected from the 1991 characterization results and shows the effluent to be consistent with the standards set out in the wastewater treatment program.

The Chimiotox index should drop 74% during the period 1988-1995, with particularly large reductions in oil and grease (88%), iron (88%) and suspended solids (52%). These projections assume that the complex will achieve the effluent reduction objectives agreed upon for 1995.

Table 1 ***Chimiotox Index (1991) - Sidbec-Dosco (Ispat) Inc.****

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Mineral Oil and Grease	279.421	100	27 942
Sulphides	2.752	500	1 376
Iron	254.400	3	848
Total Phosphorus	10.249	50	512
Diethylphthalate	0.088	5 000	440
Bis-(2-ethylhexyl)phthalate	0.128	1 667	213
Zinc	9.163	9	86
Nitrites-Nitrates	10.249	5	51
Ammonia Nitrogen	42.198	0.8	34
CHIMIOTOX INDEX			**31 503**

* For effluent discharge of 45 858 m^3/d (9 substances detected in testing for more than 120).

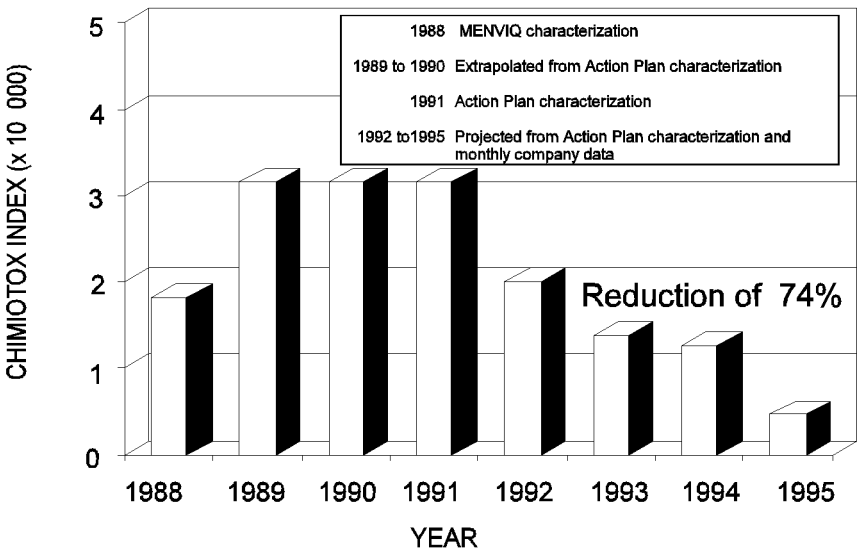


Figure 1 ***Changes in toxic effluent discharges, 1988-1995 - Sidbec-Dosco (Ispat) Inc.***

VIRTUAL ELIMINATION OF PERSISTENT TOXIC SUBSTANCES

No persistent toxic 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.

None of the targeted substances was detected during the 1991 Action Plan characterization study.

PEEP TOXICITY REDUCTION

Average toxicity

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 conducted for the SIDBEC-DOSCO (IPAT) INC. complex in Contrecoeur. The 1991 PEEP index was estimated at 4.0, in the average range of the PEEP indices found for the 50 plants. A monitoring survey in June 1996 will point up any improvement in the PEEP.

REDUCTION IN SUBSTANCES MONITORED

Future drop in SS and O&G

According to company data for 1995, the complex had an average effluent discharge of 50 934 m^3/d, containing:

- 13 423 kg/d of total solids (TS)
- 607 kg/d of suspended solids (SS)
- 116 kg/d of oil and grease (O&G)
- 78 kg/d of iron

Comparison of recent company data with 1988 figures gathered by the Ministère de l'Environnement du Québec shows a slight increase in total solids. Loads of oil and grease, iron and suspended solids dropped 27%, 77% and 38%, respectively. The wastewater treatment program foresees substantial drops in these substances as a result of the measures to be completed by the end of 1995.

KEY POINTS

- **Commitment to a wastewater treatment program in 1990**
- **Extensive wastewater treatment projects (estimated spending of $14 million)**
- **74% reduction in the Chimiotox index**

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.

Records officer at the Ministère de l'Environnement et de la Faune du Québec (MEF): Renald Richard (514) 928-7607.

Environment officer at SIDBEC-DOSCO (ISPAT) INC.: Robert Santerre (514) 392-3301.

Published by authority of the Minister of the Environment

Catalogue No. En 153-6/24-1996E
ISBN 0-662-23348-4

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