

## FACT SHEET 89

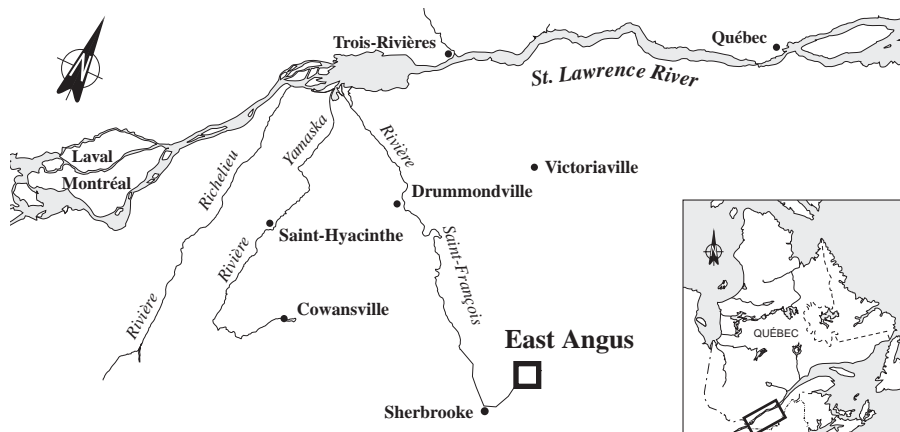
# Cascades East Angus inc. and Cascades Cartech inc.

248 Warner St.  
East Angus, Quebec  
JOB 1R0

*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 with a specific objective. The CASCADES EAST ANGUS INC. and CASCADES CARTECH INC. mills, located in East Angus, are part of Group 3, comprising regulated industrial plants.*

*The objectives for Group 3 are to assess the toxic waste of regulated plants in terms of environmental objectives and establish corrective measures for optimum reduction of any harmful impact on the receiving environment.*



## INDUSTRIAL PLANT

### Wrapping paper and cartons

For the purposes of SLV 2000, the CASCADES complex includes the CASCADES EAST ANGUS INC. plant and the CASCADES CARTECH INC. plant. The two plants include a pulp shop, a paper mill and a board mill. The pulp shop produces unbleached kraft pulp from softwood chips and a small proportion of hardwood. The chips are steam-heated in five digesters. The steam required for operations may come from incineration of used cooking liquor to recover chemicals, a bark boiler in which wood waste is burned or one of the combined natural gas/oil boilers. The pulp is sent to the paper mill where various types of wrapping paper are produced. The pulp used in the paper mill also contains recycled fibres (waste paper and cardboard). The board mill uses only commercially purchased recycled fibres which the mill de-inks. In 1995, the two plants employ a work force of about 440.

## PRODUCTION

### PRINCIPAL RAW MATERIALS

- Softwood chips
- Hardwood chips
- Lime
- Sodium sulphate
- Old paper

### FINISHED PRODUCTS

- Wrapping paper (paper for bags, crepe paper, special-use paper)
- Cardboard cartons (for food, garment and footwear industries)

# TREATMENT MEASURES

## INITIAL EFFLUENT VALUES

### *BOD<sub>5</sub> and ss*

Based on company data, in 1993 the plant had an effluent discharge of 11 398 m<sup>3</sup>/d, containing notably:

- 3380 kg/d of biochemical oxygen demand (BOD<sub>5</sub>)
- 2338 kg/d of suspended solids (ss)

## RESOURCES AND USES TO PRESERVE

### *Many fish species*

Wastewater from the two plants has been treated at the East Angus municipal sewage treatment plant since the summer of 1995. Effluent from the sewage treatment plant is discharged into the Saint-François river. Between East Angus and Lennoxville, the river is used by waterfowl and various fish species, and contains spawning grounds for yellow walleye and stocking areas for brown trout, rainbow trout and speckled trout. Some stretches of the river have designated fishing seasons for smallmouth bass, pike, walleye, and speckled trout. Kayaking, canoeing, swimming, and sport fishing enthusiasts use the river as well as the nearby camping area and park. A number of wildlife and recreational areas between Lennoxville and Drummondville are vulnerable; this stretch also contains the drinking water intake for Drummondville. There is a commercial bait fishery between Windsor and Drummondville, and this section also contains industrial water intakes for Kruger at Bromptonville, Domtar in Windsor, and Celanese in Drummondville.

## 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. There are no water quality based objectives for CASCADES EAST ANGUS INC. and CASCADES CARTECH INC. since effluent from the three sections and domestic sewage are discharged into the municipal sewerage system.

## EFFLUENT TREATMENT

### *Primary treatment*

Industrial wastewater from the paper mill undergoes primary treatment in a 282 m<sup>3</sup> sedimentation basin. Wastewater from the board mill also undergoes primary treatment, involving a 180 m<sup>3</sup> sedimentation basin followed by two filtration units. Effluent from the pulp shop is not treated at the plant. Indirect cooling water from the paper mill is recirculated. Effluents from the three sections, along with domestic sewage, has been discharged into the municipal sewerage system since May 1995 and treated at the East Angus sewage treatment plant which is subject to the federal regulation on pulp and paper mill effluent.

## PREVENTION AND CLEANUP MEASURES IMPLEMENTED

### *Reduction in volume of wastewater*

As part of the joint treatment of effluent from the two plants and municipal sewage, various measures have been implemented to reduce the volume of wastewater discharged to the municipal sewage treatment plant. This work involved equipping the pulp shop with recovery wells to control accidental spills of certain substances, recirculating indirect cooling water from the paper mill and the board mill, separating rainwater, domestic sewage and industrial wastewater, and carrying out various source-reduction measures. The work began in 1994 and was completed in the summer of 1995. The two companies invested over \$4 million in modifications to their facilities, in addition to contributing some \$2 million for municipal cleanup measures. The municipal sewage treatment system consists of two-level aerated lagoons with a holding time of at least ten days. These facilities result in a 90% decrease in biodegradable load.

## REGULATORY COMPLIANCE - WATER COMPONENT

### *Compliance with standards*

The CASCADES EAST ANGUS INC. and CASCADES CARTECH INC. plants in East Angus are partially subject to federal and provincial regulations governing pulp and paper mills. With the implementation of environmental measures, the companies have complied with the latest provincial standards, which came into force on September 30, 1995.

# POLLUTION ABATEMENT

## CHIMIOTOX INDEX ABATEMENT OF TOXIC POLLUTION

*Mainly mineral oil and grease*

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

Table 1 shows monthly data for the last three months of 1995, supplied by the company under the provincial regulation governing pulp and paper mills, and Chimiotox values estimated using these figures, for an effluent flowrate of 8289 m<sup>3</sup>/d. Based on these data, mineral oil and grease represent 86% of the value of the Chimiotox index.

Figure 1 is based on monthly company data for October to December 1995. In the absence of other available data for 1993 and 1994, the Chimiotox index calculated from these data was reported unchanged. Forecasts for 1996 to 1998 are based on company data for the last three months of 1995, adjusted according to the efficiency of the municipal secondary treatment system that started operations in the fall of 1995. The 90% reduction in the Chimiotox index is due to measures taken to reduce the volume of water and the connection of the effluent discharge to the municipal sewage treatment plant.

Table 1 *Chimiotox Index (1995) - Cascades East Angus inc. and Cascades Cartech inc.\**

Substance	Load (kg/d)	Toxic Weighting Factor	Chimiotox Units (CU)
Mineral oil and grease	39.103	100	3910
Total copper	0.820	451	370
Total aluminum	14.613	11	161
Total lead	0.269	314	85
Total zinc	0.852	9.4	8
Total nickel	0.083	10	1
<b>CHIMIOTOX INDEX</b>			<b>4535</b>

\* For an effluent flowrate of 8289 m<sup>3</sup>/d.

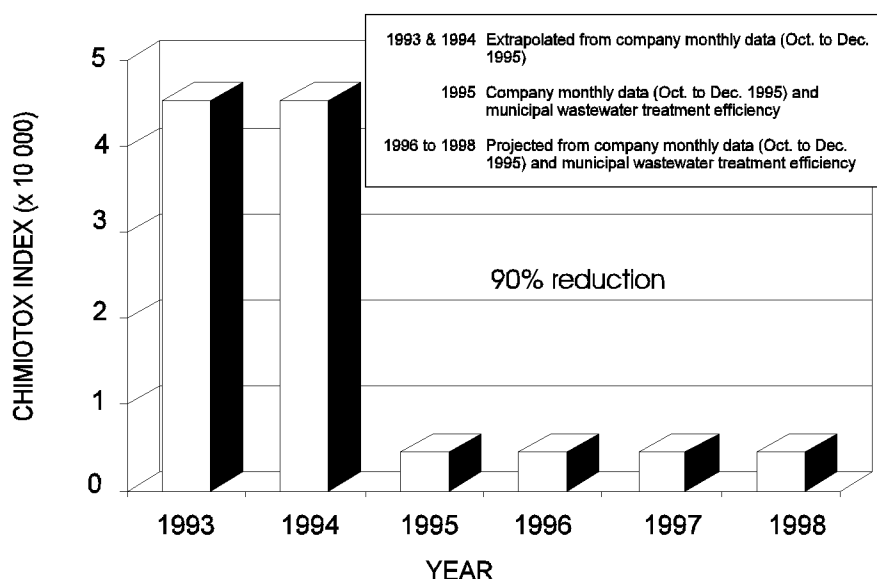


Figure 1 *Chimiotox Index Trends 1993 to 1998  
Cascades East Angus inc. and Cascades Cartech inc.*

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

Based on data from self-regulating effluent monitoring program for the last three months of 1995, none of the eleven persistent and bioaccumulative toxic substances were detected in the company's effluent.

## EFFLUENT TOXICITY

### *Effluent discharged to municipal sewage treatment plant*

Since September 30, 1995, it has been illegal under the Quebec pulp and paper regulation to release into the environment or a storm sewer a final effluent that is acutely lethal to rainbow trout, as demonstrated by bioassays. CASCADES EAST ANGUS INC. and CASCADES CARTECH INC. are not submitted to these requirements since the effluent is discharged into the municipal sewage treatment system.

## REDUCTION IN SUBSTANCES MONITORED

### *Reduction in discharge and suspended solids*

Based on company data for the last three months of 1995, the effluent discharge before the municipal treatment has a flowrate of 7695 m<sup>3</sup>/d and contains notably:

- 3482 kg/d of biochemical oxygen demand (BOD<sub>5</sub>)
- 1295 kg/d of suspended solids (SS)

From 1993 to 1995, effluent flow decreased by 33%, the suspended solids load by 45%, and biochemical oxygen demand remained nearly stable. The reductions were mainly due to cleanup measures introduced in 1994 and 1995.

## TECHNOLOGICAL DEVELOPMENT

### *New technology demonstration*

CASCADES EAST ANGUS INC. is involved in the demonstration, by Ferti-val Inc., of a new technique for cleaning up acid mine tailing dumps using two types of pulp and paper residues: de-inking residues and alkaline residues. The mine tailings are first neutralized using alkaline residues from CASCADES EAST ANGUS INC. Tests will be carried out on a one-hectare cell. This platform will yield the parameters necessary to restore acid mine tailing dumps.

## KEY POINTS

- Chimiotox index down 90%
- Process changes to decrease volume of water sent to municipal sewage treatment plant, an investment of over \$4 million
- Contribution of approximately \$2 million for construction of the East Angus treatment plant

Based on December 1995 inventory

## ADDITIONAL INFORMATION

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