Environmental Effects Monitoring (EEM)

The Pulp and Paper Sector in Quebec

Fact Sheet

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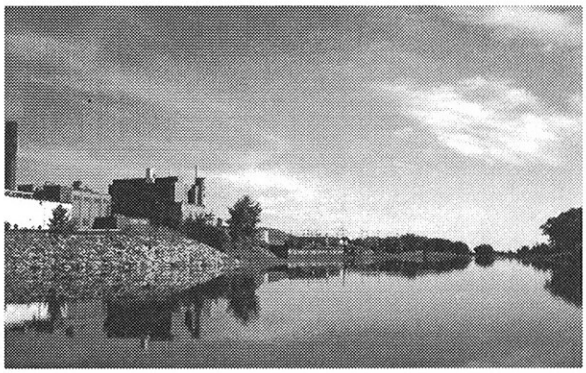
In 1992, the federal government adopted more stringent regulations pertaining to pulp and paper mill effluents. These increased measures were required to better control the pollution generated by this industry and to protect fish and fish habitat. To comply with the new regulatory framework and stricter standards, mills were obliged to change certain manufacturing processes and install new effluent treatment equipment.

Pulp and paper mills were also required to perform environmental effects monitoring of their effluents to track the recovery of affected aquatic environments and assess the efficacy of the new regulations.

A Dynamic and Progressive Program

Environmental Effects Monitoring (EEM) is first and foremost a scientific method of gathering information on the health of an aquatic ecosystem that is likely to be disturbed by effluent discharges.

The first step in the monitoring process is to define the area of exposure to effluents, along with an unaffected reference site.



Environment Canada

Abitibi-Consolidated, Beaupré

Studies have looked at the differences between fish populations in exposure areas versus fish in reference zones, to assess the effects on fish survival, growth and reproduction.

Benthic invertebrate communities are also assessed in this way. They are a good indicator of aquatic habitat quality, with environmental stress generally leading to reduced diversity and a greater abundance of pollution-tolerant species. Periodic laboratory assays are also performed to establish the sublethal toxicity of effluents at different dilution rates. The aim is to determine the potential impact of discharging deleterious substances on aquatic organisms.

Environment Canada Quebec Region
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The Regulatory Framework

Government of Canada's environmental monitoring of the pulp and paper sector is conducted according to the *Pulp and Paper Effluent Regulations* of the *Fisheries Act*. These regulations also concern the acute lethality, biochemical oxygen demand (BOD_5) and suspended solids in mill discharges. Additionally, two regulations under the *Canadian Environmental Protection Act* — the *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations* and the *Pulp and Paper Mill Defoamer and Wood Chip Regulations* — are aimed at the complete elimination of dioxins and chlorinated furans and their chemical precursors from pulp and paper mill effluents.

Quebec's 62 pulp and paper mills represent almost 40% of all the Canadian mills that are subject to federal regulation. The Quebec government also applies its own regulations to this industry. To facilitate the exchange of effluent discharge monitoring information between them, the two governments entered into an agreement in 1994 by which mills fulfill their reporting requirements using a mechanism referred to as a "single window interface".

The two governments had previously come together prior to the adoption of the new regulations, under a program called St. Lawrence Vision 2000. This program was designed to reduce the toxic effluent discharges at 38 pulp and paper mills along the shores of the St. Lawrence River and some of its tributaries.

In its application, EEM is an iterative process that is structured according to a sequence of observations and interpretations over a three to four year period, referred to as *cycles*. At the beginning of each cycle, mills develop monitoring programs adapted to their specific contexts. At the end of each cycle, the mills submit reports to Environment Canada summarizing their activities and interpreting the results obtained. These cyclical reports serve as the basis for the objectives and requirements of the subsequent cycle.

The first cycle of monitoring studies took place between 1992 and 1996. In Quebec, 51 mills completed the reporting requirements. In April 2000, the mills submitted their interpretation reports for the second cycle (Cycle 2) and began Cycle 3, which is scheduled for completion in 2004.

Convincing Results

Ten years after implementation, the EEM studies are revealing the worth of the pulp and paper regulations. They have also allowed scientists to check on the recovery of disturbed areas and identify those that continue to be affected by the polluting loads of local mills.

The EEM program has proven such a success for the pulp and paper sector that an EEM program will soon be implemented within the metal mining sector.

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