LE FLEUVE

NEWSLETTER
ST. LAWRENCE VISION 2000

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IN TUNE

Monitoring poisonings linked to the consumption of shellfish from the St. Lawrence

Eating mussels from the St. Lawrence: a well-established monitoring system to reduce the public health risks from shellfish consumption.

Indicators that informed us about the state of the St. Lawrence River

A program to monitor the St. Lawrence ecosystem has been established under Phase III of SLV 2000. Eighteen scientifically valid indicators have been selected; these are measurements or statistics that provide information on characteristics of the St. Lawrence.

ZIP Chronicle

The Alma-Jonquière ZIP Committee is working to restore the Bédard River, which flows across the lowlands around Saint-Bruno and Hébertville-Station. Its expertise is being used abroad.

Monitoring poisonings linked to the consumption of shellfish from the St. Lawrence

Photo : Fisheries and Oceans Canada

Gathering shellfish is a traditional activity for many people living along the Estuary and Gulf of St. Lawrence. Despite the existence of programs to monitor toxic algae and shellfish, poisonings linked to the consumption of shellfish are reported every year in Quebec. As part of the Health component of St. Lawrence Vision 2000 (SLV 2000), the public health research unit of the Quebec City hospital "Centre hospitalier universitaire de Québec (CHUQ)" has implemented a project to detect cases of poisoning and reduce the health risks for those eating shellfish.

Shellfish are harvested along both shores of the St. Lawrence, beginning near Île aux Coudres on the north shore and Saint-Roch-des-Aulnaies on the south shore, as well as in Chaleur Bay and the Magdalen Islands. Because the activity is unregulated, it is difficult to provide an accurate picture of the number of people involved or the most popular areas. However, in the Baie-Comeau region alone, it is estimated that more than a thousand people engage in shellfish gathering.

SUMMARY

Canada

Saint-Laurent Vision 2000

Québec

You don't harvest shellfish just anywhere!

Today, areas where people can gather shellfish that are fit for consumption are very rare. For example, in the summer of 1999, harvesting was prohibited in 439 of the approximately 525 shellfish areas surveyed in Quebec, while 56 areas were open and another 20 were open under certain conditions.

This situation is largely attributable to bacteriological contamination of the waters of the Estuary and the Gulf. It is also the result of the presence of toxic microscopic algae that appear in certain areas of the St. Lawrence between June and September. Shellfish filter and accumulate these toxins, thus becoming unfit for consumption.

A well-established monitoring system

Environment Canada is responsible for assessing the bacteriological quality of the waters of the St. Lawrence. On the basis of its recommendations, the federal Department of Fisheries and Oceans (DFO) classifies shellfish areas as open, conditionally open or closed.

In the areas classified as open or conditionally open, three agencies are responsible for monitoring marine toxins in algae and shellfish. The Quebec Department of Agriculture, Fisheries and Food (Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec – MAPAQ) is responsible for toxicological analysis of shellfish handled in processing plants and businesses in Quebec. The Canadian Food Inspection Agency (CFIA) monitors toxic shellfish in Canadian waters and in processing plants that sell their products outside the province. Finally, DFO's Maurice Lamontagne Institute uses a network of coastal stations to monitor the natural appearance of toxic algae in the waters of the St. Lawrence.

Red tide in the St. Lawrence River

Photo : Fisheries and Oceans Canada

Alexandrium tamarense, a microscopic toxic alga.
On occasion, toxic algae concentrations become high enough to turn the water red.

When marine toxins are detected by the CFIA, DFO immediately prohibits harvesting in the shellfish area(s) concerned. However, despite all the measures taken to ensure the safety of marine products, shellfish poisonings are reported every year.

Some disturbing illnesses

The most common type of poisoning resulting from the consumption of contaminated shellfish from the Estuary and Gulf of St. Lawrence is paralytic shellfish poisoning (PSP). Its primary victims are those who eat mussels and softshell clams. The symptoms of PSP include tingling or numbness in various parts of the body, headaches, nausea, dizziness, loss of coordination and general weakness. In cases of fatal poisoning, death occurs as a result of respiratory failure.

There is no antidote to the toxins responsible for this form of poisoning. In addition, while PSP is the primary threat, other types of poisoning associated with the consumption of shellfish from the St. Lawrence pose potential threats to public health, including amnesic shellfish poisoning (ASP) and diarrhetic shellfish poisoning (DSP).

Photo : Fisheries and Oceans Canada

Since 1880, the St. Lawrence has had the highest incidence of PSP in Canada, with more than 215 reported cases and 25 deaths.

Greater participation by the health network

A study conducted by the CHUQ Public Health Research Unit in 1999 indicated that there is no tool currently in existence that can be used for accurately recording and identifying all cases of marine toxin-induced poisoning in Quebec. While poisonings linked to shellfish consumption are among the diseases that physicians and laboratories are required to report, some cases are apparently not reported. This may be because of a low detection rate on the part of physicians, who are not always familiar with the symptoms produced by shellfish poisonings. Cases of shellfish poisoning may also be confused with other diseases.

As Jean-François Duchesne explains, the public health research unit feels that increased participation by the health network in the existing monitoring system could improve the situation. “This is why we set up a monitoring system in 1999 to record and characterize cases of marine toxin poisoning linked to the consumption of shellfish or other marine organisms collected in the Estuary and Gulf of St. Lawrence. Thanks to this monitoring program, doctors from the emergency units of 18 “sentinel” establishments have participated in awareness sessions designed to help them recognize cases of poisoning. Active monitoring could also permit earlier detection of the effects of new and as yet unknown toxins.” All the other hospitals and CLSCs of the regions covered by the project (Quebec City, the Lower St. Lawrence, the North Shore and the Gaspé) have been invited to participate in this monitoring program as well.

As a result, poisonings linked to shellfish or other marine products will be reported rapidly to the regional public health branches, which can then contact the victim to obtain information on a number of factors, including the source of the products (where they were harvested or purchased), the number of persons known to have eaten them, etc. This information will permit an improved response on the part of MAPAQ and the CFIA.

“The contacts established between the health network and the different government agencies responsible for monitoring marine toxins will make it possible to improve the efficiency of the response to a single poisoning or even an outbreak, and thus reduce further risks to the public from the consumption of contaminated shellfish or other marine products,” Duchesne noted. “In addition, if we find that the public health problems associated with the consumption of contaminated shellfish are greater than originally believed, corrective measures will be proposed to the agencies responsible for environmental monitoring of toxic algae and shellfish.”

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DUCHESNE, J.-F., T. TREMBLAY, M. RHAINDS and É. DEWAILLY. 1999. *Présence des toxines marines dans les estuaires et le golfe du Saint-Laurent et implications pour la santé humaine*. Unité de recherche en santé publique du Centre hospitalier universitaire de Québec, 41 p.

State of the St. Lawrence Monitoring Committee

Indicators that Informed Us about the State of the St. Lawrence River

Photo : Canadian Wildlife Service

Photo : Haut-Saint-Laurent ZIP Committee

Twelve years after the St. Lawrence Vision 2000 (SLV 2000) Action Plan was implemented, a number of observations indicate that the state of the St. Lawrence has improved substantially through the co-ordinated action of the federal and provincial governments and the efforts of citizens' groups interested in saving the river. At the start of Phase Three of SLV 2000, the action plan's managers asked the Monitoring Committee to identify and document indicators that would give the public and decision-makers a clear picture of the current state of the St. Lawrence River and how it has changed.

A number of clean-up, protection and enhancement initiatives have been carried out over the past 20 years to improve the health of the St. Lawrence for Quebecers. For example, a number of activities implemented under the SLV 2000 agreement have led to improvements in the river: toxic industrial discharges have decreased, thousands of hectares of wildlife habitat have been protected and measures to re-establish threatened species have been implemented. In addition, dozens of projects developed by riverside communities have been carried out under the Community Involvement component.

The Programme d'assainissement des eaux du Québec [Quebec water treatment program] is another program that has played a major role in improving the St. Lawrence River. When it was launched in 1978, only 2% of the province's municipalities were connected to a sewer system that treated their municipal wastewater before discharging it into the St. Lawrence; today, this figure is 98%.

Launched in 1992, the *Stratégie phytosanitaire* [phytosanitary strategy] is aimed at decreasing agricultural pollution and has already had a positive impact. The farming community is now more aware of the importance of integrated pest management and there has been a reduction in pollution of the St. Lawrence's tributaries by pesticides.

Worthwhile Investments

It is now evident that the effort and money invested to restore the St. Lawrence ecosystem have produced results. Although there is still work to be done, scientists have seen a significant improvement in some physical, chemical and biological characteristics.

In order to determine the state of the St. Lawrence and how it has changed, SLV 2000 managers asked a group of specialists, who now make up the State of the St. Lawrence Monitoring Committee, to develop a monitoring program based on credible scientific indicators. "Our challenge is to come up with reliable, accessible indicators that can be used by individuals and groups concerned about the health of

the St. Lawrence to judge the state of the ecosystem objectively," explained Marc Provencher, Committee Co-chair for Canada.

Fifteen preliminary indicators were identified during the Committee's consultation and co-ordination exercise. These measures and statistics provide information on variations in certain characteristics of the state of the water, banks, bed and biological resources of the St. Lawrence River.

The data required to develop the indicators selected are now being collected under monitoring programs at Environment Canada, the Quebec Department of the Environment, Fisheries and Oceans Canada and the Quebec Wildlife and Parks Agency. "Our goal is to interpret the information available in order to create a picture of the state of the St. Lawrence," explained Guy Demers, Quebec Co-chair of the State of the St. Lawrence Monitoring Committee. He added, "We hope to popularize and disseminate data in order to provide accurate, credible information in the simplest terms possible that can be easily understood and used by decision-makers and citizens at all levels of society." It will also be possible to make connections between indicators in order to develop a comprehensive view of the St. Lawrence.

These indicators will provide the government partners, scientists, consultants, municipal decision-makers and environmental group representatives with objective information they can use to make decisions. Riverside communities, people who use the St. Lawrence and the general public will also be in a better position to understand the state of the river and become aware of the significant environmental benefits resulting from the many initiatives carried out over the past 20 years.

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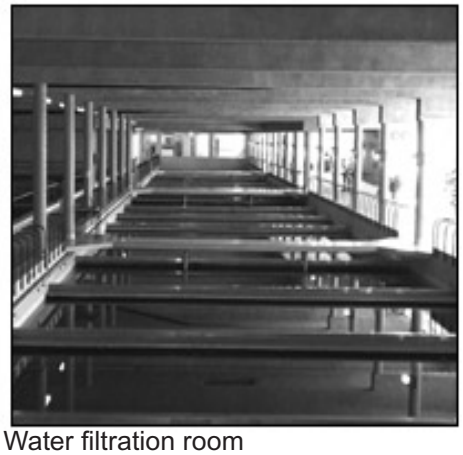
Treated water pumping room



Water filtration room

Ozone preparation room

Ozonized air production room

Photos : Françoise Lapointe

Chronicle
ZIP Committees in the Heat of the Action

The Alma-Jonquière ZIP Committee

Photo : Éric Gauthier, ZIP Alma-Jonquière

The Bédard River is reborn

Green banks, cool, clear water, brook trout returning to their spawning grounds … The Bédard River, which fifteen years ago held the unenviable title of the most heavily polluted river in the Lac-Saint-Jean region, is gradually regaining its health. The restoration of this tributary of the Saguenay is central to the activities of the Alma-Jonquière ZIP Committee, which has rallied a number of partners to its cause. The Committee is now being approached for advice on the restoration of other rivers in the region … but also by our French cousins.

The activities of the Alma-Jonquière ZIP Committee focus on the area around the confluence of Lac Saint-Jean and the Saguenay River. In 1996, during consultations for the preparation of the Environmental Remedial Action Plan (ERAP), local stakeholders pointed out the need to restore the Bédard River. For several decades, this river had been exposed to various forms of pollution and degradation: discharges of municipal and industrial sewage, inputs of pesticide and fertilizer, erosion of its banks, as well as channel straightening and agricultural drainage operations. In view of this situation, the ZIP Committee established a river management committee, which examined possible measures for restoring this watercourse, which flows for a distance of 21 km across the agricultural plain of Saint-Bruno and Hébertville-Station.

Bit by bit, the Bédard River is returning to life

The first phase of restoration began in 1997, on a 1.5-km stretch of the river near its source. First, several tonnes of debris of all sorts were removed from the river. Next, the eroded banks were stabilized by using geotextile membranes and rock fill and trees and shrubs based on bioengineering techniques. Structures designed to slow the current and to create cascades were built to improve the oxygenation of the water and create a suitable habitat for aquatic fauna. Finally, a number of deep pools were developed to recreate brook trout spawning grounds.

This initial phase of restoration provided clear-cut evidence of the community's commitment to the Bédard River. As a result, in 1998 and 1999, the ZIP Committee was able to obtain financial support from a number of partners (including Environment Canada, the Quebec departments of Agriculture, Fisheries and Food and Natural Resources, as well as the Lac-Saint-Jean East RCM) for two new phases of restoration. Nearly 9 km of riverbanks along the Bédard River and its tributaries have been restored to their original quality. Restoration efforts will continue in the spring of 2000 over a distance of 2.5 km.

To date, more than 3,000 trees and 22,000 shrubs adapted to the agricultural environment have been planted along the restored banks. Seventy per cent of the cost associated with this work has been assumed at the local and regional level. "The Committee has had the support of the municipality of Hébertville-Station and benefited from the involvement of hundreds of enthusiastic volunteers, including the members of the Éperlan hunting and fishing club, the students of Bon-Conseil primary school, the Scouts and Guides and members of the local senior citizens' club, said Éric Gauthier, coordinator of the Alma-Jonquière ZIP Committee. Volunteers who walk along the riparian strip regularly to check on its health have reported the gradual return of wildlife to this habitat, including hares, black bears, waterfowl, muskrats and mink. Thanks to the improved water quality, brook trout have also returned to the sections of the river that were restored first.

Farmers are important partners

Farmers are among the major partners in the Bédard River restoration project. "In addition to providing a right-of-way for volunteers, landowners along the Bédard River have agreed to cede a large portion of the land required for the development of the riparian strip," Gauthier noted. They have also devoted considerable efforts along the restored segments in order to correct certain agricultural practices that had been damaging the watercourse. For example, cattle watering troughs have been installed to keep these animals out of the river. Fences have also been built to prevent animals from entering the newly restored sectors.

In exchange, the riparian strip is helping to reduce wind and water erosion on the surrounding farmland. The greater plant diversity has led to an increase in the number and diversity of birds—natural predators that assist farmers with integrated insect pest control. Farmers involved in farm tourism are proud to show their farms to visitors and to describe the results that have been achieved, together with the direct benefits in terms of the quality of their products and the quality of life in their communities.

"The ZIP Committee hopes to encourage more farmers to adopt environmentally-friendly agricultural practices," Gauthier pointed out. For instance, in a few weeks, more than 200 farmers will receive training in environmentally-sustainable agriculture. They will then receive support from experts with the Quebec Department of Agriculture, Fisheries and Food, the *Union des producteurs agricoles*, the *Centre de recherche en développement agricole* and the ZIP Committee in designing and implementing their own agri-environmental plans.

A project that is going places

News of the Bédard River restoration project is spreading and farmers have recently contacted the ZIP Committee for assistance in restoring the Mistouk, Harts and Chicots rivers, north of the Saguenay River. "More than a hundred people, half of them farmers, attended the first information meeting," Gauthier stated with enthusiasm. Because of the motivation shown by the local community, the ZIP Committee has established a provisional river basin committee, which has overseen a series of surveys and detailed the work to be done beginning next spring.

The expertise of the Alma-Jonquière ZIP Committee is even being put to use abroad. In fact, the *CŒUR Association (Comité opérationnel des élus et des usagers de la Rance)*, in Britanny, has contacted the officials of the Community Involvement component of St. Lawrence Vision 2000 for information on Quebec's approach to river ecosystem restoration. Because of the similarities between the regions covered by the Alma-Jonquière ZIP Committee and by the *CŒUR Association*, Gauthier and Yolaine Saint-Jacques, a spokesperson for the community involvement component, together described the experimental project conducted on the banks of the St. Lawrence and the Saguenay. In October 1999, Gauthier had the opportunity to praise the merits of the cooperation and commitment that had developed among riverfront property holders thanks to their renewed sense of pride in the natural environment.

According to Gauthier, the approach advocated by the CŒUR Association was highly politicized and left little room for community involvement. "However, in recent telephone conversations, the volunteers from this region of Brittany told us that they had reorganized their working structure and were developing a cooperative approach that will be implemented in the months to come."

Throughout Quebec's agricultural areas, this kind of community involvement and action is bringing rivers back to life. A video prepared by the Alma-Jonquière ZIP Committee and its partners, which profiles river restoration efforts in agricultural areas and sensitizes farmers to environmentally-friendly agricultural practices, can help to encourage this approach.

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News in BRIEF

An invitation to Quebec City in March 2000

This March 13, 14 and 15, the Third Conference of Local Health Authorities of the Americas will be held at the Quebec City Convention Centre. First held in 1995 in Brazil, and then in 1997 in Cuba, this year's event focuses on the theme of "**Health and Quality of Life: Our Municipalities in the Era of Globalization**."

This conference will be of interest primarily to those working in the area of health and social services, particularly public health, but also in the environmental sector and in land use planning. It also concerns municipal representatives and officials, community organizations and researchers in these fields. SLV 2000 will be there!

For more information, contact the Conference Secretariat at (514) 395-1808 or by e-mail at: info@opus3.com

You can also visit the Conference web site at:
http://www.msss.gouv.qc.ca/congres_quebec

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