

## IN TUNE

### **Towards greater knowledge of the health risks and benefits associated with uses of the St Lawrence**

A range of activities are carried out under the Human Health component of SLV 2000 to enable residents to base their perceptions of the risks and benefits associated with uses of the St Lawrence on facts, rather than on preconceived notions.

### **Action to protect public health in the event of a spill in the St Lawrence**

A guide has been drafted to enable emergency response teams to increase their level of readiness and the effectiveness of their actions to deal with spills in the river environment.

### **ZIP Chronicle**

A project is under way to preserve the St Lawrence and its biodiversity, while also giving riverside residents access to marshland on the Ile d'Orléans. This project, viewed as a priority by the community, is being implemented with the collaboration of the Quebec City and Chaudière-Appalaches ZIP Committee.

## Towards greater knowledge of the health risks and benefits associated with uses of the St Lawrence

*Fishing, shellfish harvesting, hunting, swimming, and drinking water supply: these are among the many uses that riverside dwellers make of the St Lawrence and its resources. With a view to gaining a better understanding of the risks and benefits associated with these various uses, the Human Health component was established in 1993 under the second phase of the St Lawrence Vision 2000 Action Plan (SLV 2000). This article describes the activities carried out under Phase III of the Action Plan to achieve the public health objectives related to the St Lawrence.*

**M**ichèle Bélanger, co-chair for Quebec of the Human Health Co-ordination Committee said: "The Human Health component involves activities aimed at answering a fundamental question posed by riverside dwellers: How can we derive maximum benefit from this magnificent river while preserving its health and improving the quality of life?"

However, it can be difficult to identify the links between the substances to which residents are exposed when they eat natural foods from the St Lawrence or when they engage in water-contact activities and the effects of those substances on human health. To determine whether the presence of a contaminant poses a risk to human health, it is necessary to determine the extent of residents' exposure and also measure the effect of this contaminant on human health.

## SUMMARY

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Photo : Françoise Lapointe, Environment Canada

Exposure may vary according to several factors, including people's habits and place of residence. The same method is used to assess the benefits attributable to certain resources that are used as food, for example.

The Human Health Co-ordination Committee, co-chaired by Health Canada and the Quebec Department of Health and Social Services, has access to the expertise of many representatives with Quebec's public health network, Environment Canada, the Quebec Department of the Environment as well as non-governmental organizations. In order to illustrate the objectives set in Phase III of the Action Plan, we will give an overview below of the range of activities carried on with the financial support of partners of the Human Health component.

### **Recreational activities**

In a survey conducted during Phase II of SLV 2000, it was determined that

more than one third of respondents who did not currently swim in the St Lawrence would be interested in engaging in this activity if the water quality were suitable.

The primary objective of the Human Health component is to reduce the microbiological risks to which people who engage in recreational activities involving water contact are exposed. As a follow-up to the research done under Phase II of SLV 2000, a study was launched to assess the microbiological quality of the water at about 30 swimming sites along the St Lawrence. In addition, a survey was carried out in order to identify behaviours that entail health risks for users of Rivière des Mille-Îles and to gain insight into their perceptions of the risks.

### **Drinking water quality**

The data collected in Phase II showed that, although the drinking water meets the existing standards, it sometimes contains micro-organisms

that can cause disease. As a result, a pilot project has been set up under Phase III to monitor intestinal diseases and to evaluate the relationship between the incidence of the diseases and consumption of drinking water.

In addition, an intervention guide for dealing with the problem of potential or real drinking water contamination following a major spill in the St Lawrence has been prepared for the benefit of regional public health departments.

These projects are part of the efforts devoted to meeting the second objective of the Human Health component, that is, reducing residents' exposure to chemical and microbiological contamination in drinking water.

### **Eating habits related to resources of the St Lawrence**

Riverside dwellers eat a variety of animal and plant species that can be found along the St Lawrence. The third objective of the Human Health component is to reduce the population's exposure to organic and inorganic contaminants from eating fish and shellfish from the river. For example, a monitoring program has been implemented by health establishments in the regions where shellfish harvesting is carried out, in order to collect more information on cases of food poisoning.

A study on the risks related to waterfowl consumption and an assessment of contaminant exposure among ice fishing enthusiasts of the Saguenay are two other initiatives that are currently under way. As well, the program to monitor PCB exposure

in new-borns on the North Shore, initiated under Phase II of SLV 2000, is ongoing.

In addition to contributing to more than 30 research projects, the partners of the Human Health component have set some ambitious objectives with respect to disseminating knowledge both to specialists (physicians, stakeholders and environmental health researchers) and the general public. One of these objectives involves forging partnerships with community organizations. For example, the ZIP committees of Chaleur Bay, the Magdalen Islands and the North Shore of the Estuary have been supported by the Co-ordination Committee in setting up awareness campaigns on shellfish harvesting in their respective areas. "It is important to ensure that residents and health stakeholders can base their perceptions of the risks and benefits associated with uses of the St Lawrence on facts rather than on preconceived ideas," said Richard Carrier, co-chair for Canada of the Human Health Co-ordination Committee. Improved knowledge of the environmental gains made in recent years could encourage riverside dwellers to once again engage in certain uses of the St Lawrence and thus capitalize on the associated benefits.

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# Action to protect public health in the event of a spill in the St Lawrence



Photo : Canadian Coast Guard

*A source of drinking water for half of Quebec's population, the St Lawrence River is also a major navigation channel that is used by hundreds of ships each year that transport large quantities of chemicals and oil products. Some of the consequences of a spill of dangerous goods include contamination of the water used by drinking water treatment plants and cut-off of the drinking water supply for riverside communities. Regional health protection departments were recently supplied with a guide prepared under the Human Health component of the St Lawrence Vision 2000 Action Plan. This guide is aimed at raising their level of readiness and their capacity to deal with a spill in the river.*

**A**lthough major spills are a rare occurrence, the St Lawrence is not immune to incidents such as the grounding of ships that are transporting petroleum products or chemicals or the accidental spill of dangerous goods during transshipment operations in ports. If a chemical or oil spill were to occur on the St Lawrence, one of the priorities for action related to public health would be to protect the water supply. In Quebec, the municipalities vulnerable to this type of event are located west of Ile d'Orléans. The brackish or salty nature of the water in other sections of the river makes it unsuitable as a source of drinking water.

"When a spill occurs, the emergency response teams should be able to estimate the probability of the hazardous substances entering drinking water intakes, as well as the risk that contaminated water would pose to public health. The emergency response guide in the event of a spill in the St Lawrence,

which has been prepared for regional public health departments in Quebec (called the *Guide d'intervention en cas de déversement en milieu fluvial pour les directions régionales de santé publique du Québec*) is aimed at improving the readiness of emergency response teams and the effectiveness of their actions in dealing with real or potential contamination of drinking water following a major spill," said Philippe Guerrier, project leader at the Quebec City public health department and scientific advisor to Quebec's National Public Health Institute (Institut national de santé publique du Québec).

## **Chemicals and oil products and the risk they pose to the drinking water supply**

Following a spill of hazardous materials in the river environment, the risks to public health depend on the quantity of contaminants, along with their concentration, properties and effects in the water. Inhalation, skin contact and ingestion represent possible exposure routes for the population, with the first two routes posing a particular threat to emergency response workers. The crew and members of the response organizations, the staff assigned to the clean-up, as well as people who draw their water from the river may be worried about hazards associated with the spilled products.

By referring to a list of the dangerous chemicals and oil products that are shipped on the St Lawrence, the stakeholders prepared a table containing 19 substances that may pose a threat to drinking water intakes in the event of a spill. These substances are water soluble and denser than water or likely to react with water to form new products that represent human health hazards. The physico-chemical characteristics of the different substances are also

listed, along with their behaviour in water, their toxicological properties upon ingestion, the standards related to drinking water, as well as the action that should be taken in the event they are spilled in the river. Chemicals can behave in different ways when spilled in the water: they can evaporate, catch fire, and react with the water, float, sink or dissolve. Chemicals that will sink after a spill may pose a threat to drinking water intakes. In such a case, the response teams must ensure that the substance will not sink near intakes or, if appropriate, they must stop pumping during the recovery operation or as the contaminant flows by.

### **Promoting readiness**

The new guide, which was designed to be comprehensive, lists all the main organizations likely to play a role in promoting readiness for a spill of dangerous goods in the river and in response activities. It defines the mandate assigned to regional public health departments in this regard.

The guidelines related to dealing with contamination of drinking water are also set out, in the form of response protocols. For instance, in order to prevent contamination of the water supplied to a drinking water plant, the municipal director must stop the pumping and filtration of the raw water while the contaminant is still undergoing dilution and flowing along the river. This temporary stoppage could mean that drinking water will have to be obtained from the municipal reserves of treated drinking water. However, if these reserves are insufficient or if they become depleted, the public health stakeholders will have to find other sources of drinking water. The guide therefore deals with issues related to alternative drinking water sources and the restricted use of non-drinking water. Hence, the guide could also be used in a variety

of emergency situations where the drinking water supply is disrupted.

“There are many benefits related to increasing the readiness of emergency response organizations for dealing with spills on the St Lawrence Laurent. Response actions are likely to be implemented more quickly, effectively and at a lower cost, and they are likely to entail less stress for emergency response crews, if these stakeholders have a good knowledge of the region and the ability to predict potential hazards and if they have developed the requisite expertise in handling environmental emergencies,” Mr. Guerrier stated.

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### **Source:**

GUERRIER, P., et M. PAUL. 2000. Guide d'intervention en cas de déversement en milieu fluvial pour les directions régionales de santé publique du Québec, Unité de recherche en santé publique, Centre de recherche du CHUL et Institut national de santé publique du Québec, Plan d'action Saint-Laurent Vision 2000, 33 p. + annexes.■

**Chronicle**

ZIP Committees in  
the *Heat* of the Action

## The Quebec and Chaudière-Appalaches ZIP Committee —



Photo : Bruno-Pierre Harvey

## Conserving and developing marshland on Ile d'Orléans

A heritage jewel of the St Lawrence, the Ile d'Orléans is recognized as one of the prime birdwatching sites in the Quebec City region. During the spring migration, the marshland on either side of the bridge there receives an influx of more than one hundred migratory birds per kilometre of shoreline. Unfortunately, people who want to admire the St Lawrence and its rich biodiversity do not have access to this natural area. In response to the community's desire that access to this site be made a priority in order to permit the observation of geese and provide views of the river, the Quebec and Chaudière-Appalaches ZIP Committee supervised the preparation of a plan for conserving and enhancing the marsh on the northern part of Ile d'Orléans.

On the north shore of Ile d'Orléans, visitors can see one of the largest bulrush marshes in the Quebec City area. The partners of the North American Waterfowl Management Plan have listed this as one of the wetlands that should be given protection on a priority basis. The ecological importance of the marshland also relates to the site's plant diversity, since 10 vascular plant species have been inventoried there that are either threatened, vulnerable or likely to be listed as such on account of their endemic status along the fluvial estuary.

### A site with great potential for waterfowl observation

The marsh located at the northwestern tip of Ile d'Orléans is well known to birdwatching enthusiasts. The greatest number and diversity of birds can be observed there in April and early May. American bulrush, the dominant aquatic plant species in the marsh, is a key ingredient in the diet of snow geese. Ring-necked ducks, golden-eyes, mergansers, Canada geese, common eiders, northern pintails, black ducks and other species are also present among the flocks of birds that visit the site.

During the summer, some dabbling duck species nest and then raise their broods in the marsh, including northern pintails, shovelers, black ducks and mallards, as well as green-winged teals. To date, more than 200 bird species have been sighted in the study area and nearby.

### An idea that is catching on

The collaboration of the Quebec and Chaudière-Appalaches ZIP Committee was sought, in 1995, with the aim of making the marsh accessible to the public for waterfowl viewing. In addition to encouraging people to discover and appreciate the river's biodiversity, the goal was to increase the safety of automobile drivers, who owing to the lack of appropriate infrastructure, were inclined to use the service road operated by the Department of Transport that is located at the southern exit to the island, in spite of the risks involved. In view of this situation, the project was incorporated into the environmental remedial action plan (ERAP) for the Quebec City—Lévis sector.

When it conducted the characterization study of the site, in 1999, the ZIP Committee called on the help of regional managers and wildlife experts. The municipalities of Saint-Laurent and Saint-Pierre, the RCM of Ile d'Orléans, the Local Development Centre, the Beautification Committee of Saint-Pierre, the fishery rehabilitation corporation, and several departments and organizations (Société de la faune et des parcs du Québec, Quebec Department of Transport, Commission de protection du territoire agricole du Québec, Quebec Department of Culture and Communications, Club des ornithologues du Québec and the Fondation de la faune du Québec) answered this call for assistance.

With the support of the issue table thus formed, the firm BPH environnement began to prepare a master plan for protecting and enhancing the bulrush marsh area, defined as also encompassing several agricultural fields, woodlands and fallow fields as well. At the eastern boundary of the study area, there are also several lots that make up the right-of-way for a Hydro-Quebec transmission line.

### **A development proposal for the residents of the island**

The review of the inventory components and the analysis of the potential and constraints associated with the different proposals put forth by the consultants helped to fuel the discussions held by the issue table. The members unanimously agreed to support one of the options proposed. This option consists in ensuring better protection for the area through increasing the use of the "conservation" designation within the land use plan, in addition to creating a controlled access route to the river starting at the power line right-of-

way. Although the power transmission facilities represent a blight on the landscape, it was agreed by all that this site would be suitable for establishing visitor infrastructures with a soft environmental footprint and that the quality of the surrounding landscapes could be preserved. "Hydro-Québec was open to the idea of authorizing the construction of a parking lot and a visitor area," said Mrs Hamida Hassein-Bey, co-ordinator of the ZIP Committee.

In keeping with the development concept, it has also been proposed that a 1.5 km hiking trail be laid out along the shoreline, with observation areas that would allow visitors to get closer to the marsh and the river. When asked to comment on this proposal, some landowners said they worried about being invaded by visitors. The ZIP Committee has sought to reassure them. "Naturally, the project can only come to fruition if the island residents agree to it and if the owners of the lots concerned give the go-ahead," pointed out Mrs Hassein-Bey. The members of the issue table are aware of the fact that the concept can only be implemented by taking citizens' needs into consideration, and they are willing to discuss the matter with riverside dwellers in order to reach agreement."

Other types of authorization, for example that of the Commission de protection du territoire agricole du Québec, will be necessary for the implementation of the project. However, at present, the residents of Ile d'Orléans are being called upon to adopt this ecotourism development project involving the development of a birdwatching site that provides breathtaking views of the Côte-de-Beaupré and whose ecological qualities have been recognized time and time again.

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### **Source:**

HARVEY, B.P., J. VAILLANCOURT, S. HAMEL, et D. GAMACHE. 1999. Le marais du secteur nord de l'île d'Orléans : éléments d'inventaire et perspective de conservation et de mise en valeur, document préparé pour la ZIP de Québec et Chaudière-Appalaches par bph environnement, Québec, 72 p. + 3 annexes + 5 cartes.■

# News

## in BRIEF

### Participation in the “Coastal Zone 2000” international conference

An international conference, “Coastal Zone Canada 2000,” took place in Saint John, New Brunswick from September 18 to 22, 2000. Community-based coastal zone management was a primary focus of this event. Two representatives, Michel Chouinard of the Chaleur Bay ZIP Committee and Yolaine Saint-Jacques of Environment Canada, each gave a presentation on the community involvement program and activities connected with managing the coastal zones of the St Lawrence. Their presentations sparked a great deal of interest among the participants from other parts of Canada and from abroad. The ZIP Program was cited by a guest speaker during the opening address as a very good Canadian example of citizen participation in coastal zone management.

### The Biosphere’s Ecowatch Network

At a press conference held on September 27, 2000, the Biosphere officially welcomed some new organizations to its network. The Beauport River Enhancement Committee (Comité de valorisation de la rivière Beauport, or CVRB) has agreed to co-ordinate the “Adopt a River” project for the Biosphere’s Ecowatch Network. In addition to continuing its environmental education and awareness activities, the CVRB has undertaken to develop and manage the project throughout Quebec. Thus, nine new groups are joining the “Adopt a River” network, bringing the total number of participating institutions to 16. ■

# LE FLEUVE

NEWSLETTER  
ST. LAWRENCE VISION 2000

*Le Fleuve* is jointly published by St. Lawrence Vision 2000 partners.

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**Text:**

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**Revision:**

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**Realization:**

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**Translation from French to English:**

PWGSC—Translation Bureau

The *Le Fleuve* Newsletter is published on the SLV 2000 Internet Site at: [www.slv200.qc.ec.gc.ca/slv2000/english/indexeng.htm](http://www.slv200.qc.ec.gc.ca/slv2000/english/indexeng.htm)

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ISSN 0847-5334

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Volume 11, issue 6.

*Le Fleuve* est aussi disponible en français.