

# *Public Health Protection and Drinking Water Quality on First Nation Reserves: Considering the New Federal Regulatory Proposal*

**Constance MacIntosh**

## **Introduction**

Access to clean water, for drinking and personal hygiene, is a cornerstone of public health. Dr. Lee Jong-Wook, the Director General of the World Health Organization, stated quite simply in 2004 that “[w]ater and Sanitation [sic] is one of the primary drivers of public health.”<sup>1</sup> We have known of the link between water and health – or water as a vector for disease transmission – for a very long time. Any introductory course on public health will likely include reference to Dr. John Snow’s epidemiological studies in cholera-infested mid-19<sup>th</sup> century London, where he linked the spread of cholera to drinking water sources that had been contaminated by human sewage.<sup>2</sup> In one study he found that one water supply company, which drew its water from the Thames upstream from London, had a client base that experienced a lower incidence of cholera than the average for London as a whole. A second water supply company’s clients had an elevated incidence of cholera. That company also drew its water from the Thames, but in the middle of London where it had already been subjected to considerable quantities of human sewage.<sup>3</sup> Dr. Snow identified water supply as a key transmission vector.

In spite of such basic understanding, in 1998, the water treatment plant for the reserve community of

Kasechewan was built downstream from its sewage lagoon. Dr. Snow could have advised us that this arrangement was one that elevated risks to public health. In response to risk, not only were boil water advisories constantly in place, but enhanced levels of chemicals were also added to the water. Ironically, these chemicals had their own health consequences, as the “[h]igh levels of chlorine that were used to combat *Escherichia coli* were exacerbating scabies, impetigo and other skin disorders, as well as concerns about hepatitis A and gastroenteritis.”<sup>4</sup> This situation eventually led to the evacuation of the community’s members, in 2005. That same year the Commissioner of the Environment and Sustainable Development observed that “[d]espite the hundreds of millions in federal funds invested, a significant proportion of drinking water systems in First Nations communities ... deliver drinking water whose quality or safety is at risk... they do not benefit from a level of protection comparable with that of people living off-reserve.”<sup>5</sup>

Currently, water safety on reserves is managed through a series of guidelines, protocols and contracts between Indian and Northern Affairs Canada (INAC) and First Nation communities.<sup>6</sup> Although the contracts assign responsibility for operating and managing water facilities, they do not address questions of liability, nor



do they mandate action in the face of system failures.<sup>7</sup> There is general consensus—among senate committees,<sup>8</sup> independent commissions,<sup>9</sup> and political representatives of Aboriginal peoples such as the Assembly of First Nations<sup>10</sup>—that the current situation produces unacceptable levels of risk to public health, and that a regulatory framework is needed. In January of 2009, the federal government issued a discussion paper that details its preferred regulatory route for enabling a legislative framework.<sup>11</sup> This route is to referentially incorporate provincial legislation regarding operational standards through a framework statute, and then develop the details of the regime through regulations to be developed in consultation with First Nations over the next few years.<sup>12</sup>

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Importantly, the opening sentence of the discussion paper’s executive summary expressly connects water and public health. It reads: “The provision of safe drinking water and the effective treatment of wastewater are critical in ensuring the health and safety of First Nations people and the protection of source water on First Nation lands.”<sup>13</sup> Below I sketch out the current conditions and how the federal proposal suggests engaging these conditions. I conclude that although regulated standards will undoubtedly bring about improvements to public health, the proposal misses some key issues. One major failing is that the proposed regime does not address off-reserve source water protection. I suggest routes to amend this omission.

### **The Promise of Regulation**

The health and safety of some reserve residents is poorly protected from waterborne disease. INAC has rated the 755 drinking water systems currently operating on First Nation reserves for risk. According to its 2006-2007

Departmental Performance Reports, 97 of the water systems were “high risk” facilities.<sup>14</sup> “High risk” means that the system “has major deficiencies in several aspects. Should a problem arise in one of those areas, the system is unlikely to be able to compensate, thus there is a high probability that any problem could result in unsafe water.”<sup>15</sup> A further 355 were rated as “medium risk.”<sup>16</sup> As of March, 2008, the high risk figure had been reduced to 77 systems, but the medium risk figure had escalated to 385, representing over half of all on-reserve water systems. Is the proposed regulatory framework likely to improve this situation? I believe that the answer is yes. With the current situation, reserve facilities have not been bound to judiciable building standards or operating procedures. As a result, despite being funded and built by the federal government, some facilities do not meet the design standards which provinces consider essential to protect the water supply,<sup>17</sup> nor do they have the basic safety measures in place which provinces require for a facility to operate.<sup>18</sup> The federal proposal contemplates addressing such risks by bringing in provincial building standards<sup>19</sup> and operating approval procedures.<sup>20</sup> As long as funding is calibrated to need, so that these standards can be met in practice, it is reasonable to assume that risk levels will be reduced.

Facilities are, of course, operated and maintained by individuals. In his work assessing why drinking water failures occur in developed countries, Steve Hrudehy has pointed to “inadequate training and the lack of understanding of essential principles of water quality management and public health protection” as an important risk factor.<sup>21</sup> It is therefore deeply troubling that 59% of persons who operate on-reserve drinking water systems have not been certified as water systems operators.<sup>22</sup> The proposal’s suggestion on this point is to bring in the provincial practice of requiring operators to be certified.<sup>23</sup> Once again, it seems reasonable to assume that if operators are required to have been trained to do their jobs, they will be more likely to be able to do it correctly, and thus reduce levels of risk to health. The practical problem is the challenge of *finding* certified operators, which plagues many small communities.<sup>24</sup> One would hope that the legislation embraces supporting circuit-rider training programs to enable capacity to be developed and maintained. Otherwise, such a legislated standard will be ineffectual.

Given the compromised character of the infrastructure, and the dependence upon operators who may not know



how to respond to changing stressors on the system, or even how to keep it in good repair, it is not surprising that about 10.5% to 14% of reserves have been under boil water advisories at any given time from early 2006 to early 2009.<sup>25</sup> Boil water advisories are intended to operate as a temporary measure, until standards have been re-assumed. However, although reserve communities strive to meet federal guidelines for water quality standards, there are no legally enforceable quality standards on reserves. The lack of regulation has in practice left water quality standards to exist as essentially discretionary, a situation which contrasts boldly with the lawful rights of federal employees who are assigned on-reserve worksites because the *same* federal guidelines are referentially incorporated into the *Canada Labour Code*.<sup>26</sup> This creates a lawful right for federal employees to potable water and hygienic facilities. As a result, when on-reserve water quality falls below standards, Health Canada must install water treatment units to serve these employees. In 2002 alone, Health Canada installed 20 such units in on-reserve nursing stations.<sup>27</sup> One could argue that the different level of protection for “regular” reserve residents and federal employees is a case of environmental racism, for there is no juridical reason to subject reserve residents to lower safety standards.<sup>28</sup>

To address this risk factor, the proposal suggests both incorporating judicial standards onto reserves, and creating a clear line of accountability to ensure compliance. Importantly, the discussion paper emphasizes that measures to ensure compliance ought to emphasize prevention, not penalty,<sup>29</sup> and that before a community is bound to the standards, the federal government would work with First Nations to appropriately address capacity issues.<sup>30</sup> Once again, it is difficult to see how imposing such standards will not bring improvements, as long as resources are available to enable meeting those standards.

Unfortunately, we have incomplete data on health risks associated with drinking water on First Nation reserves. An Expert Panel, convened to assess options for regulating drinking water on reserves, “identified communities that were clearly at higher risk, but these communities failed to appear as high risk on the Department [of Indian and Northern Affairs]’s risk assessments because they did not have water systems at all.”<sup>31</sup> Indeed, a 2002/2003 survey found that 37% of reserve residents do not receive water through a piped-in system originating at a water treatment

facility.<sup>32</sup> The quality of this population’s water, and risks associated with infrastructure, appears to be completely unmonitored. Of this population, approximately half rely on well or lake intakes for drinking water, and half rely on trucked in water. As to wells, were they dug on provincial lands they would be subject to regulation in terms of placement and building standards.<sup>33</sup> Even these minimal standards are absent on reserves. The proposal does acknowledge the existence of the well-reliant population, and suggests that risk controls could be adopted through regulations.<sup>34</sup> However, the proposal is silent on addressing the lack of piping. I turn now to considering such orphaned issues.

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### **The Legislative Orphans**

Without piped in water, hygiene becomes more complicated. Diseases which can be largely contained through basic hygienic practices arise in First Nation communities at rates which are not encountered elsewhere in Canada. In its 2004 comprehensive report, the Canadian Population Health Initiative describes a study which “found that household crowding, a lack of piped water and inadequate sewage disposal were significantly associated with an increased incidence of shigellosis (a highly infectious diarrheal disease) for First Nations persons living on-reserve.”<sup>35</sup> How much higher is the rate of shigellosis on First Nation reserves? The last time comprehensive data of notifiable waterborne diseases were compiled and made publicly available was in a 2002 Health Canada report. The report tracked statistics for the year 1999. It indicated that the incidence of shigellosis was almost 20 times that for the general Canadian population, the incidence of hepatitis A among First Nations children was 12 times higher than the general Canadian population, and the rates for giardiasis were more than twice as high.<sup>36</sup> For all three diseases, Health Canada links elevated levels



of risk of transmission to exposure to contaminated water, and a lack of running water to enable hand washing.<sup>37</sup> Although these statistics are a decade old, the connections which they draw between clean running water and public health remain relevant. A case in point is the tuberculosis outbreak which arose in Garden Hill First Nation in Manitoba in 2006.

This community of 3800 had 20 active cases of tuberculosis. To protect public health and “prevent a further outbreak, First Nation members were advised to wash their hands after each cough and sneeze.”<sup>38</sup> However, only 4% of the homes in this community have running water. The remainder rely upon collecting water from standpipes, which they then transport to their homes. It is plausible to suggest that as long as homes are not connected to running water, further outbreaks will occur. This issue, and its consequences for public health, appears to have been orphaned. A second and arguably more complex issue is the proposal’s silence regarding off-reserve source water protection.

This is striking because best practices for drinking water safety aim for a multiple-barrier approach, which addresses both operations as well as source water protection.<sup>39</sup> Source water protection is key because “relying solely or mainly on water-quality monitoring (also called compliance monitoring) has proven ineffective in preventing waterborne disease outbreaks.”<sup>40</sup> Indeed, the multiple-barrier approach of addressing upstream risks has been endorsed by the Canadian Council of Ministers of the Environment.<sup>41</sup> The logic is simple: by “implementing the multi-barrier approach from source to tap...Canadian drinking water supplies will have a better chance of being kept clean, safe and reliable....”<sup>42</sup> Stated more bluntly in Justice O’Connor’s report on the *e coli* outbreak in Walkerton, we need to be responsive to the fact that “[o]ne person’s sewage disposal system [may be] someone else’s water supply.”<sup>43</sup> There is also growing evidence that treatment methods carry their own health risks. For example, chlorination, the main method for treating water in Canada, is considered to pose a cancer risk. About 14-16% of bladder cancer cases in Ontario are attributed to exposure to chlorine by-products in drinking water.<sup>44</sup> There is thus good cause to consider tactics that lessen reliance upon such reactive treatment methods.

This would suggest that any regulatory regime—especially a new one—should engage up-stream factors. However,

a strategy for addressing this element is missing from the federal proposal, despite INAC having identified up-stream off-reserve contamination as affecting the drinking water quality on First Nation reserves in 2003.<sup>45</sup> The challenge here is that while the federal government has clear jurisdiction under s.91(24) of the *Constitution Act, 1867*,<sup>46</sup> to pass laws which affect reserved land, it would run into jurisdictional complications if it sought to regulate provincial land use. Source water protection requires engaging with sewage treatment practices and industrial effluents, as well as activities such as “fertilizing fields, raising cattle and cutting lumber, and even the run-off from roads and built-up areas,”<sup>47</sup>

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because these can all cause contamination. However, contaminants from these sources are addressed through “rigorous land use planning and activity controls,”<sup>48</sup> and such zoning and licensing legislation is squarely within provincial jurisdiction. Following on *Interprovincial Co-operatives Ltd. v. Dryden Chemicals Ltd.*,<sup>49</sup> it appears that as long as provincial legislation is complied with, “the acts [are] authorized by license and therefore justifiable in the place where they were done, [and so are] not civil wrongs and form no basis for a damages action.” The challenge, then, is finding a way to make the water quality interests of reserve residents legally relevant to provinces, such that provinces recognize and protect their source waters, despite the reserve boundary representing a jurisdictional divide.

This sort of challenge does not exist for reserves located in the north, because the territorial governments have jurisdiction over the lands and waters both within and outside of reserved lands.<sup>50</sup> How can a seamless approach be developed outside of that context? Obviously, one option would be for provinces to extend their source water protection regimes, such as they are, to source



waters which flow onto reserved land, despite the jurisdictional division. This would be possible through referential incorporation of provincial law either through a federal statute authorized by s.91(24) of the *Constitution Act*, or through band by-laws enacted under provisions such as s. 81(1)(a) of the *Indian Act*, which empowers by-laws that “provide for the health of residents on the reserve and to prevent the spreading of contagious and infectious diseases.” There is precedent for this approach. The *Indian Oil and Gas Regulations* referentially incorporate “all provincial laws ... that relate to the environment” into contracts for oil and gas development on reserve land.<sup>51</sup> Obviously such a route would require provincial support, which may not be immediately forthcoming, given that enforcement responsibilities and liability would follow.<sup>52</sup> It would also require political support within Aboriginal communities. Given the resistance which has already been expressed to extending provincial reach to reserves as a route for addressing water problems,<sup>53</sup> reserve based aboriginal communities are unlikely to embrace such an idea.

Another option is to mobilize a legislative structure which enables regional or watershed-based agreements that cross jurisdictional boundaries. The *Canada Water Act*<sup>54</sup> is an existing tool that was developed to enable federal-provincial agreements to protect water resources.<sup>55</sup> It permits inter-jurisdictional management and planning agreements to be formed, and the creation of Water Quality Management Systems which provide considerable water quality protection.<sup>56</sup> However, to fit under the mandate of the Act, the water must be of national concern.<sup>57</sup> It is thus unlikely that the Act would extend to enable protection of reserve watersheds. Nonetheless, it provides a model for how such relationships can be enabled legislatively and, perhaps more importantly, provides numerous examples of successful cross-jurisdictional water protection ventures which have engaged all levels of government as well as industry. For example, the Atlantic Coastal Action Plan involves provincial and federal government departments, private sector organizations, municipalities, and representatives from First Nations. Its results thus far include pollution prevention, restored habitats, and upgraded sewage treatment facilities.<sup>58</sup> The St. Lawrence Action Plan has involved the Governments of Quebec and Canada working together, and has enabled a 96% reduction in toxic effluent discharges by 50 industrial plants which were targeted as priorities.<sup>59</sup>

## Closing Comments

The federal government is to be commended for taking action to deal with water quality through a regulatory regime. The proposed framework focuses upon the operational elements of drinking water provision, so should lessen the public health risks that are perpetuated by substandard infrastructure, unenforceable quality standards, lack of operator qualifications, and no enforceable route to remedy non-compliance. In all cases, success will of course depend upon resources being made available to make standards practically attainable.

However, the current vision remains shortsighted by appearing to embrace drinking water safety as a matter that can be dealt with through a good treatment plant, instead of following best practices and engaging how to address the challenge of source waters that cross jurisdictional boundaries. It also appears to have omitted addressing the public health risks that arise when communities lack running water. More robust models for interjurisdictional management are available, but have yet to be fully advanced in this area.

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*Constance MacIntosh, Associate Professor, Faculty of Law, Dalhousie University, Halifax, Nova Scotia.*

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## Endnotes

- 1 Cited in World Health Organization, “Facts and figures: Water, sanitation and hygiene links to health,” online: WHO <[http://www.who.int/water\\_sanitation\\_health/publications/factsfigures04/en/](http://www.who.int/water_sanitation_health/publications/factsfigures04/en/)>.
- 2 Steve E. Hrudehy & Elizabeth J. Hrudehy, *Safe Drinking Water: Lessons from Recent Outbreaks in Affluent Nations* (London: IWA Publishing, 2004) at 9-10; in his famous Broad Street pump study, Dr. Snow first drew the epidemiological conclusion that one pump was connected to outbreaks. A subsequent study determined that diaper wastes from an infant that had died of cholera had been disposed of in a cesspool located less than a metre from the well which supplied the pump, and that there was seepage between the structures. See also National Academy of Sciences, *Drinking Water and*



- Health*, vol. 1 (Washington, D.C.: National Academy of Sciences, 1977) at 1-2.
- 3 National Academy, *ibid.* at 2; Hrudehy & Hrudehy, *ibid.* at 10.
- 4 Laura Eggertson, "Safe drinking water standards for First Nations communities" (2006) 174 Canadian Medical Association Journal 1248 at 1248.
- 5 *Report of the Commissioner of the Environment and Sustainable Development to the House of Commons: The Commissioner's Perspective-2005* (Ottawa: Office of the Auditor General, 2005) at 26.
- 6 For a fulsome analysis of how provincial and federal laws indirectly engage First Nation reserve drinking water, and for how the system operates, see Constance MacIntosh, "Testing the Waters: Jurisdictional and Policy Aspects of the Continuing Failure to Remedy Drinking Water Quality on First Nation Reserves" (2007-2008) 39:1 Ottawa L. Rev. 63 at 69-76..
- 7 *Ibid.* at 70.
- 8 *Safe Drinking Water For First Nations: Final Report of the Standing Senate Committee on Aboriginal Peoples* (Ottawa: Senate, 2007) at 2.
- 9 E.g. *Part Two: Report of the Walkerton Inquiry: A Strategy for Safe Drinking Water* by Dennis R. O'Connor (Toronto: Queen's Printer for Ontario, 2002) at 490.
- 10 *Supra* note 8.
- 11 Government of Canada, *Drinking Water and Wastewater in First Nation Communities: Discussion Paper: Engagement Sessions on the Development of a Proposed Legislative Framework for Drinking Water and Wastewater in First Nation Communities* (Ottawa: Indian and Northern Affairs Canada, 2009).
- 12 *Ibid.* at 4.
- 13 *Ibid.* at 3.
- 14 Treasury Board of Canada Secretariat, "Indian and Northern Affairs Canada and Canadian Polar Commission: Results Chart," online: Treasury Board of Canada Secretariat <<http://www.tbs-sct.gc.ca/dpr-rmr/2007-2008/inst/ian/st-ts10-eng.asp>>.
- 15 Indian and Northern Affairs Canada, *Plan of Action for Drinking Water in First Nations Communities: Progress Report – January 17, 2008* (Ottawa: Indian and Northern Affairs Canada, 2008) at iv, online: Indian and Northern Affairs Canada <<http://www.ainc-inac.gc.ca/enr/wtr/pubs/prpf/pad08/pad08-eng.pdf>>.
- 16 *Supra* note 14.
- 17 *Supra* note 6 at 88; *supra* note 8 at 4.
- 18 For example, some reserve facilities lack backup equipment, emergency procedures, safety equipment and operating manuals. See *supra* note 9 at 488.
- 19 *Supra* note 11 at 13, 15.
- 20 *Ibid.* at 14.
- 21 Samantha Rizak & Steve E. Hrudehy, "Achieving safe drinking water – risk management based on experience and reality" (2007) 15 Environmental Reviews 169 at 171.
- 22 *Supra* note 14 at 4.
- 23 *Supra* note 11 at 14.
- 24 *Supra* note 9 at 495.
- 25 For example, the number of communities under boil water orders was 79 (10.5%) in March 2006, 85 (11.3%) in February 2007, 106 (14%) in December 2008, and 107 (14%) in January 2009. See *supra* note 6 at 66-67. These figures were obtained by the author by visiting a Health Canada website at various times over the last few years. The website provides updated figures on advisories. See Health Canada, "Drinking Water Advisories," online: Health Canada <[http://www.hc-sc.gc.ca/fnih-spni/promotion/water-eau/advis-avis\\_concern\\_e.html#how\\_many](http://www.hc-sc.gc.ca/fnih-spni/promotion/water-eau/advis-avis_concern_e.html#how_many)>.
- 26 R.S.C. 1985, c. L-2, s.125(1)(i)-(j).
- 27 *Supra* note 5 at para. 5.27.
- 28 Analogous sentiments are expressed in the Walkerton Report, regarding the different levels of protection experienced by reserve residents versus other provincial residents. *Supra* note 9 at 487.
- 29 *Supra* note 11 at 12.
- 30 *Ibid.* at 19.
- 31 *Supra* note 8 at 4.
- 32 Assembly of First Nations/First Nations Information Governance Committee, *First Nations Regional Longitudinal Health Survey (RHS) 2002/03: Results for Adults, Youth and Children Living in First Nations Communities*, 2<sup>d</sup> ed. (Ottawa: Assembly of First Nations/First Nations Information Governance Committee, 2007) at 46-7.
- 33 Expert Panel on Safe Drinking Water for First Nations, *Report of the Expert Panel on Safe Drinking Water for First Nations*, vol. 1 (Ottawa: Minister of Public Works and Government Services Canada, 2006) at 36.
- 34 *Supra* note 11 at 10. The reasons why simply adopting provincial laws would be inadequate are canvassed *ibid.* at 39-41



- 35 Canadian Population Health Initiative, *Improving the Health of Canadians* (Ottawa: Canadian Institute for Health Information, 2004) at 86.
- 36 Health Canada, *A Statistical Profile on the Health of First Nations in Canada for the Year 2000* (Ottawa: Health Canada, 2002) at 44-45.
- 37 *Ibid.*
- 38 Chief David Harper, cited in "Response to TB outbreak on Manitoba reserve criticized" *CBC News* (13 April 2006), online: [cbc.ca/canada/story/2006/04/13/tb060413.html](http://www.cbc.ca/canada/story/2006/04/13/tb060413.html).
- 39 See e.g. *supra* note 33 at 9.
- 40 *Ibid.* at 8.
- 41 Federal-Provincial-Territorial Committee on Drinking Water & the CCME Water Quality Task Group, *From Source to Tap: Guidance on the Multi-Barrier Approach to Safe Drinking Water* (Winnipeg: Canadian Council of Ministers of the Environment, 2004) at 16.
- 42 *Ibid.* at 9. And at 14: compliance monitoring only deals with a certain number of pathogens and contaminants, "making it nearly impossible to address the entire range of health concerns." Its other main failing is that it is also reactive, in that testing results are only available after the water has already entered distribution systems, and so will have been consumed before knowledge of the contaminant arises.
- 43 *Supra* note 9 at 487.
- 44 Donald T. Wigle, "Safe Drinking Water: A Public Health Challenge" (1998) 19:3 *Chronic Diseases in Canada* 103.
- 45 Indian and Northern Affairs Canada, *National Assessment of Water and Wastewater Systems in First Nations Communities: Summary Report* (Ottawa: Indian and Northern Affairs Canada, 2003) at 18.
- 46 "Indians and lands reserved to the Indians" are assigned as a federal head of power. See *Constitution Act, 1867* (U.K.), 30 & 31 Vict., c. 3, s. 91(24), reprinted in R.S.C. 1985, App. II, No. 5.
- 47 *Supra* note 33 at 9.
- 48 *Ibid.*
- 49 *Interprovincial Co-operatives Ltd. v. Dryden Chemicals Ltd.*, [1976] 1 S.C.R. 477 at 504, [1975] S.C.J. No. 42.
- 50 Except, of course, where this has been varied by a land claim agreement. See *supra* note 33 at 21.
- 51 *Indian Oil and Gas Regulations*, S.O.R./94-753, s.4.
- 52 *Supra* note 33 at 48; *supra* note 9 at 491.
- 53 See Expert Panel on Safe Drinking Water for First Nations, *ibid.* at 32-35; *supra* note 8 at 5-6.
- 54 *Canada Water Act*, R.S.C. 1985, c. C-11.
- 55 For a general discussion, see Ashok Lumb & Robert Healie, "Canada's Ecosystem Initiatives" (2006) 113 *Environmental Monitoring and Assessment* 1.
- 56 *Supra* note 54, s.13.
- 57 *Ibid.*, ss. 5, 13.
- 58 See "Atlantic Coastal Action Program (ACAP)," online: Environment Canada <[http://www.n.s.e.c.gc.ca/community/acap/index\\_e.html](http://www.n.s.e.c.gc.ca/community/acap/index_e.html)>.
- 59 See "Phase III," online: Environment Canada's St. Lawrence Action Plan <[http://www.slv2000.qc.ec.gc.ca/plan\\_action/phase3/accueil\\_a.htm](http://www.slv2000.qc.ec.gc.ca/plan_action/phase3/accueil_a.htm)>.

