

the Environment 1981). In 1984, 164 sites within three miles (4.8 kilometers) of the Niagara River were considered as potential contaminant sources to the Niagara River (Niagara River Toxics Committee 1984).

Evaluation of the sites (U.S. EPA and NYSDEC 2000) identified 26 locations as significant hazardous waste sites responsible for over 99 percent of the estimated input from all such sites on the U.S. side of the Niagara River basin. Remediation of the sites is intended to virtually eliminate the migration of toxic pollutants from the sites. Current schedules call for all sites to be remediated by 2003 (U.S. EPA and NYSDEC 2000).

Human Health Considerations

Uncontrolled hazardous waste sites have been documented as a major environmental and public health concern (Johnson and DeRosa 1997) (Lichtveld and Johnson 1993). Specifically in regard to the Love Canal area, health studies documented apparent increases in miscarriages (NYSDOH 1978) and low birth weight (Vienna and Polan 1984), and increased prevalence of seizures, learning problems, hyperactivity, eye irritation, skin rashes, abdominal pain, and incontinence (Paigen *et al.* 1985). The NYSDOH (2000) conducts follow-up health study activities and publishes a newsletter that serves as a health information clearinghouse for citizens.

Information on the general health status and selected health outcomes for populations living within the Ontario portion of the Niagara River AOC has been compiled (Health Canada 2000a). Consumption of sport fish caught from the Niagara River and downstream waters of Lake Ontario remains a principal route of human exposure to persistent toxic substances. Concerns were raised over risks to susceptible populations during the Commission's public consultation session conducted as part of the Niagara River Status Assessment. In particular, concern was expressed regarding non-English speaking urban poor who fish within the AOC and may consume sport fish on a subsistence basis. Contaminants of concern include 2,3,7,8-TCDD, PCBs, mirex/photo-mirex and mercury. It has been demonstrated that the consumption of PCB-contaminated foods is the most significant route of exposures to PCBs for the general population (NRC 2001). The human health implications associated with PCBs, the exposure to which occurs primarily through consumption of fish, have been documented by the Agency for Toxic Substances and Disease Registry and the U.S. Environmental Protection Agency in Johnson *et al.* (1999). Monitoring of PCB levels in juvenile fish from nine sites sampled since 1980 has shown decreases at each site (Niagara River Secretariat 2001).

The effectiveness of fish consumption advisories has been questioned (NRC 2001). Health Canada's Great Lakes Health Effects Program funded a survey of shoreline fishing and fish consumption in the Ontario portion of the Niagara River AOC. Of the fishers surveyed, 32 percent reported that they ate some, or all, of their catch during the previous 12 months (Health Canada 2000b). Of these fish consumers, the survey found that 33 percent of survey participants who had eaten their catch the previous year reported using the publication *Guide To Eating Ontario Sport Fish*. Accordingly, a considerable percentage of Niagara River shoreline fishers who consume their catch may not be aware of the up-to-date information contained in the *Guide To Eating Ontario Sport Fish* or the potential human health effects from eating contaminated fish. Recently, the Niagara Peninsula Conservation Authority, Ontario Ministry of Environment and Energy and Environment Canada have begun outreach efforts devoted to reaching and influencing fishers who read certain languages other than French or English.