Canadian Water Quality Monitoring Networks

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Outline

• History, where we are now? Why?
• Where we are going?
• Challenges
Legal Authority and Mandate

- Jurisdictional authority and legislative authority (1867 Constitution Act)
- “Federal waters” and responsibilities (navigation, fisheries, boundary waters, federal lands)
- Federal-Provincial Agreements – cost sharing (Canada Water Act)
- Specific legislation and agreements (Fisheries Act, Shellfish agreement)
- Research related surveillance
Fragmented sets of transient networks
Regionally-implemented, limited national co-ordination and support
Limited nation-wide programs or synthesis
Shorter-term issue-based surveillance

Deficient coverage
Objective drift, performance unknown
Clients and partners expanding
Strong research capacity (in areas)
Perceptions and Realities

The "Turning Point" 1999-2000

- Public awareness, concern and expectation (Water quality remains a top environment issue of Canadians)
- External authoritative assessments and criticism (Auditor General, Parliament SC)
- Walkerton, North Battleford outbreaks, Source to tap?
- Limited ability to inform Canadians (e.g., drinkable, swimmable, fishable), support required policy and influence decision-making
- Efforts initiated towards renewal of a National Program
Water Quality Monitoring Branch

Strategy:

- Departmental
- Federal House
- National (FPT)
- International (UNEP GEMS Water)
- Linking distributed programs – “network of networks” approach
- Incremental growth through rationalized strategies
A Modern Framework

...moving beyond “taking the sample”

Water Quality Monitoring Functional Elements:
(2002 Strategic Plan)

1. National co-ordination
2. Program Design
3. Labs / Methods Development
4. Research
5. Data management
6. Interpretive tools
7. Reporting and information systems
8. Partnerships / Outreach

Priorities: Water Quality

*The 15 Threats* (2001)

1. Waterborne Pathogens
2. Algal Toxins and Taste and Odour
3. Pesticides
4. Persistent Organic Pollutants and Hg
5. Endocrine Disrupting Substances
6. Nutrients - Nitrogen and Phosphorus
7. Aquatic Acidification
8. Ecosystem Effects of GMOs
9. Municipal Wastewater Effluents
10. Industrial Point Source Discharges
11. Urban Runoff
12. Landfills and Waste Disposal
13. Agricultural and Forestry Impacts
14. Natural Sources of Trace Elements
15. Dams/Diversions and Climate Change
Priorities: The 15 Threats (2002)

Water Availability

1. Water Allocations, Diversion and Export
2. Dams, Reservoirs and Flow Regulation
3. Droughts
4. Floods
5. Municipal Water Supply & Urban Development
6. Manufacturing and Thermal Energy Demands

Land Use Practices and Changes:
7. Agriculture
8. Forestry
9. Mining and Petroleum Production

Climate Variability and Change:
10. Groundwater Resources
11. Rivers and Streams
12. Lakes and Reservoirs
13. Wetlands
14. Crysosphere
15. Integrated and Cumulative Threats
Advice: Experts Workshop 2002

- 70+ Canadian and international experts
- Analysis of current activities in Canada
- International models and lessons learned
- Innovations in S&T (methods, techniques)
- Meaningful reporting
- Greater integration
  - Planning, sampling, analysis, laboratory infrastructure, data management, interpretation, reporting
  - Physical-chemical-biological
  - Quality-quantity
- Nationally consistent approach
  - Guiding principles related to the purpose, conduct and results of water quality monitoring network development in Canada
- http://www.ccme.ca/sourcetotap/workshops.html
Monitoring Inventories (Capacity)

(Requisite to Gap Analyses and Proposals for Growth)

- Our own backyard - Environment Canada
- Other Federal Departments
- Provinces
- Territories
- Industry
- Universities
- Community Groups / Volunteers

(Requisite to Gap Analyses and Proposals for Growth)
wastewaters and sludge
  • Occurrence of naphthalene ethoxylates and their metabolites in Canadian pulp and paper mill effluent and sludge
  • Oil/misc. impacts (CERD) (Identification and characterization of natural hydrocarbon release)

P
  • PAH Contamination of Souris River Basin from Luscra and Prairie Coal Corporation Mine Dewastering
  • Persistent Organic Pollutants in Fish from lakes and Reservoirs in British Columbia
  • Pockwock Lakes Model Forest
  • Prairie and Northern National Parks Water Quality Monitoring
  • Prairie Provinces Water Quality Monitoring Program
  • Pulp and Paper Effluent Regulations
  • Pulp and Paper Environmental Effects Monitoring (EEM); Pulp and Paper Mill Environmental Effects Monitoring
  • Pulp and Paper Mill Deoamner and Wood Chip Regulations (CEPA)
  • Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations

R
  • Red River Water Quality Agreement International Monitoring

S
  • Sediment
  • Shellfish Water Quality Protection Program
  • South Tobacco Creek
  • St. Clair River Upstream/Downstream Monitoring (Part of Interconnecting Channels Program see FM-190)
  • St. Lawrence River Monitoring (Part of Interconnecting Channels Program see FM-190)
Agency

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Select a site from the list or from the map:

Assiniboine River below Kamsack
Results to date

• Incremental growth in priority areas (pesticides, agricultural impacts, nutrients, pathogens, source waters)
• National data/info management
• Reporting to Canadians, seamless access to information; moving from static to dynamic infobases and web services
• National indicator and monitoring network
Priorities & Challenges

- Strategies for sustained networks and resourcing
- Engaging an expanding monitoring community
- Reporting (interjurisdictional comparisons, alternative spatial scales)
- Effective use of monitoring results
- Integration and efficiencies (removing the stovepipes)
- Maintaining the “state-of-the-art”