

# NovaTox

## Human Health and Ecological Risk Assessments for DFO Small Craft Harbours

### Client

Public Works and  
Government Services  
Canada

### Location

Various locations in  
Newfoundland and Labrador

### Date Completed

2005–2010

NovaTox scientists have completed human health and ecological risk assessments for PWGSC at more than 25 Small Craft Harbours (SCH) and similar federal properties in Ontario, Nova Scotia, and Newfoundland. Risk assessments supported the estimation of environmental liabilities under the Federal Contaminated Sites Action Program (FCSAP). The human health PQRA were conducted in accordance with Health Canada guidance; ERAs adhered to DFO guidance based on the CCME Framework for Ecological Risk Assessment.

Contaminants at SCH typically include petroleum hydrocarbons, PAHs, and metals present in soil, groundwater, and marine sediment as a result of maintenance activities, fuel spills, and releases from fuel storage tanks. Most SCH consist of both upland parcels and parcels adjacent to water with associated piers, boat slips, launch ramps, maintenance sheds, and fueling facilities.



Human health PQRA were conducted for SCHs based on the unique characteristics of each site. Human exposure scenarios included visitor receptors (toddlers and adults, the most sensitive receptors for non-carcinogenic and carcinogenic contaminants, respectively) and DFO workers potentially exposed via soil ingestion, dermal contact, and inhalation pathways. Consistent with Health Canada PQRA guidance, risks to human receptors were evaluated using a hazard quotient approach. Default Health Canada TRVs and exposure calculations were used, unless alternative values were justified.

Ecological risk assessments were conducted to evaluate risks to upland plants, soil invertebrates, and wildlife (small mammals, birds) potentially exposed to contaminants in soil via ingestion and contact pathways, and marine receptors (benthic invertebrates, fish) potentially exposed via discharge of ground water to the marine environment. Risks were estimated using a hazard quotient approach, where measured or estimated contaminant concentrations in soil/sediment or water were compared to CCME Soil Quality Guidelines, interim marine Sediment Quality Guidelines, or marine Water Quality Guidelines for the Protection of Aquatic Life.



### NovaTox Inc.

10 Crane Avenue  
Guelph, Ontario N1G 2R2  
Tel 1.877.680.7256  
Fax 1.519.231.0130  
<http://novatox.ca>

**Christopher Marwood**, PhD  
Ecological Risk Assessment  
[marwood@novatox.ca](mailto:marwood@novatox.ca)

**Mark J. Chappel**, MSc, DABT  
Human Health Risk Assessment  
[mchappel@novatox.ca](mailto:mchappel@novatox.ca)

The PQRA and ERAs completed for the SCH sites identified risk-based remediation targets and the most appropriate remedial options for each site based on the feasibility of various options, given site conditions.