Atlantic PIRI in 2011:

Innovative Results

ATLANTIC PIRI

PARTNERSHIP IN RBCA IMPLEMENTATION

Annual Report of Atlantic PIRI

April 2012

Executive Summary – Atlantic PIRI in 2011

Innovation employs new ideas to create better or more effective products or services. Innovation is a touchstone for government and business alike. The Atlantic Partnership In RBCA Implementation (PIRI) embraces innovation as the members fulfill their mandate to protect human health and the environment in Atlantic Canada, in support of regulators from the four Atlantic Provinces, and to the benefit of the private sector and residents in the region. Atlantic PIRI works by bringing together regulators and regional stakeholders in a collaborative approach to developing workable guidelines and science-based analytical tools. In the resulting discussion forum, sharing of issues contributes to regional harmonization of contaminated site management practices, and the group pursues its commitment to continuous improvement of the Atlantic Risk Based Corrective Action (Atlantic RBCA) technical toolkit. By drawing upon the knowledge of each regulator and stakeholder, and engaging the expertise of researchers, industry associations, and practitioners through Task Groups and Corresponding Memberships when required, Atlantic PIRI has succeeded in developing flexible technical tools and comprehensive regulatory approaches, often in advance of other jurisdictions.

Leadership by Atlantic PIRI in 2011 was demonstrated through a decision to make the new version of Atlantic RBCA, version 3.1, available for public comment prior to implementation. This is the first time Atlantic PIRI has requested feedback prior to launch, and the input obtained will contribute to the final version (v 3.2) of the tool. 2011 also saw successful completion of testing of petroleum hydrocarbon sediment toxicity criteria that are the penultimate step towards release of an updated ecological receptor screening guidance (EcoRBCA). The new ecological receptor screening levels, incorporate the latest science to assess ecological risk, make the Atlantic RBCA toolkit significantly stronger and more adaptable to local conditions. These significant technical achievements combine with Atlantic PIRI's ongoing regional harmonization work, its support for establishment of contaminated site regulations in Nova Scotia and New Brunswick, participation in National committees and presentations to national and regional organizations throughout the year.

The technical advances of v3 and EcoRBCA will contribute to Atlantic RBCA's already strong track record for closure of contaminated site files, which this past year exceeded 6000 sites since 1999. The benefits of this level of remediation activity is substantial and takes several forms: there are benefits in the form of groundwater and surface water resources that are cleaned-up and protected from further contaminations; benefits in the form of reduced health risks and concerns for on-site workers and residents who live on and near previously-contaminated sites; and benefits in the form of parcels of land that have been returned to the possibility of making an active economic contribution, in communities large and small across the region.

Atlantic PIRI produces its results though the ongoing contribution of human and financial support of the four Atlantic Provinces, Environment Canada, and stakeholder organizations, as well as the knowledge of topic experts. In 2012, these contributions will enable Atlantic PIRI to push forward with its beneficial mandate, by:

- Requesting pre-release public input on the new *Ecological Receptor Screening Guidance*
- Releasing the Atlantic RBCA v 3.2 software and updated *User Guidance*
- Actively promoting the updated online training for Atlantic RBCA v3.2
- Presenting technical and non-technical information sessions in three Provinces
- Encouraging the involvement of Corresponding Members on specific projects
- Continuing its support for the evolution and development of regulations in the region
- Maintaining its facilitation of regional harmonization and collaboration.

Overview

Atlantic PIRI brings together regulators from Provincial Government Departments of Environment in each of the four Atlantic Provinces and Environment Canada, with stakeholders from the petroleum industry and environmental engineering firms with regional operations. In existence since 1997, the group has established a collaborative approach to developing workable guidelines and science-based analytical tools for the management and remediation of sites contaminated with petroleum hydrocarbons (PHC). Its first effort was adaptation of the Risk-Based Corrective Action software, developed in the U.S., for conditions in Atlantic Canada. For example, because many Atlantic Canadians rely on wells for drinking water, in 1998, Atlantic PIRI became the first to develop guidelines to assess human health risks from groundwater in contact with hydrocarbon contamination in soil[1]. In 2006 the Atlantic RBCA process was first to integrate assessment of soil vapour impacts on indoor air, and in 2011, through Environment Canada's participation and working with international eco-toxicology experts, Canada's first criteria to assess the toxicity of PHC in aquatic sediments were developed, tested and validated.

Implementation
Accomplishments in 2011

- Files for 609 contaminated sites in the region were closed in 2011 using the Atlantic RBCA process
- Since 1999 Atlantic RBCA has been used to remediate more than 6,000 sites.

With a commitment to meet or exceed Canada's national Canada-Wide Standards (CWS)[2], Atlantic PIRI continues to proactively respond to updates to CWS by participating in working groups, by incorporating target levels in the Atlantic RBCA software and *User Guidance*, and by adding new chemicals to its risk assessment toolkit.

The Atlantic RBCA process is recognized across Canada, and is preferred for contaminated site remediation in the four Atlantic Provinces including for over 85% of federal contaminated sites in the region. In 2011, more than 600 sites in the region were assessed and remediated if necessary, removing them from the region's inventory of current contaminated sites and opening the way for these parcels of land to be redeveloped and thus contribute to economic well-being in the region. Since its initial implementation in 1999, the risks to human health and the environment on more than 6000 such sites had been assessed and addressed.

Continuing Technical Improvement

Atlantic PIRI is committed to continuous improvement to the Atlantic RBCA software and associated tools, which are at the center of Atlantic PIRI's work. In addition to meeting national guidelines, Atlantic PIRI works to address real-world problems for Atlantic Canadians. Prior versions of the Atlantic RBCA process primarily assessed risks to human health, although a basic ecological screening checklist was included at first implementation in 1999. Because aquatic resources are critical for Atlantic Canadians, in 2006 Atlantic PIRI formed a Task Group including experts in the field of ecological risk assessment.

[1] This human health risk was included in the 2008 revision of the *Canada Wide Standards for Petroleum Hydrocarbons (PHC) in Soils*, developed by the Canadian Council of Ministers of the Environment (CCME).

[2] CCME, 2008. *Canada-Wide Standards for Petroleum Hydrocarbons in Soils*.

The EcoRBCA Task Group[3] reviewed Canadian and international approaches for assessing the risks to non-human organisms of PHC in soil, sediment, surface and groundwater. The pathways by which organisms might be exposed to PHC toxicity are illustrated in Figure 1. These concepts contributed to development of a new, more comprehensive, *Ecological Receptor Screening Guidance* document.

Based on scientifically defensible methodologies and processes, the group also developed new benchmarks to assess the ecological risks associated with PHC in aquatic sediments. The criteria were successfully tested in 2011. When EcoRBCA is released as part of the Atlantic RBCA v3.2 implementation in 2012, these criteria for assessing ecological risks associated with aquatic sediments will be the first established in Canada.

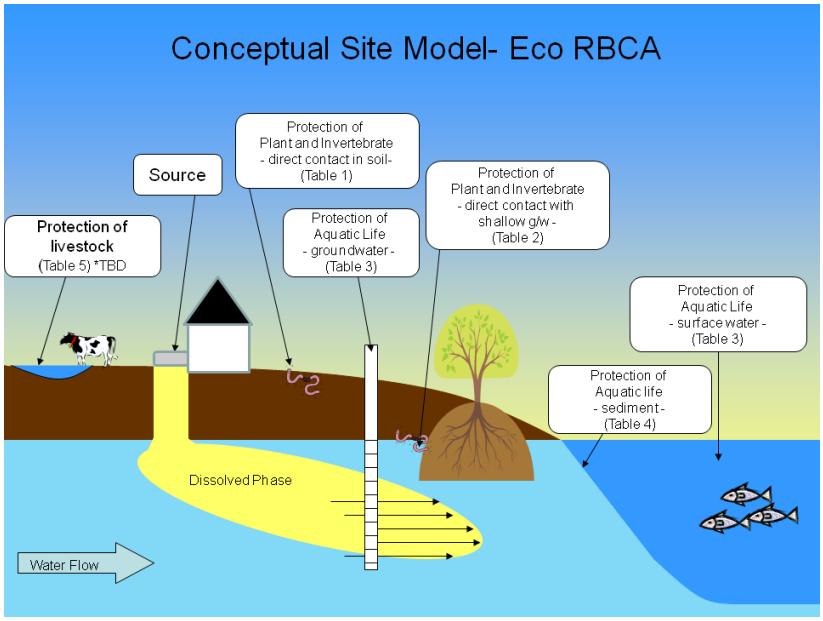

Figure 1. Conceptual site model for EcoRBCA (October 2011).

The significant advancement represented by EcoRBCA was recognized in the form of nomination for a Canadian Brownfields Network "Brownie" Award in the area of Policy and Programs.

Continuous Technical Improvement
Accomplishments in 2011

- Successful completion of EcoRBCA testing of Canada's first criteria for assessing PHC toxicity in aquatic sediments.
- Nomination of EcoRBCA for a "*Brownie*" award
- Release of the updated Atlantic RBCA v3.1 software toolkit and *User Guidance* for public comment

In addition to EcoRBCA, version 3 of the Atlantic RBCA software tool will incorporate a well-bore dilution factor and adds screening targets for lands intended for agricultural and industrial use. Through the forum of Atlantic PIRI, the updated *User Guidance for Atlantic RBCA v3* includes harmonized definitions, and approaches to assessment of free product in soil and groundwater, and of non-petroleum contaminants, that are harmonized between all four Provinces.

For the first time in 2011, Atlantic PIRI posted the new Atlantic RBCA tools for public comment, prior to implementation. Similarly, the EcoRBCA guidance will be made available for public review and comment. The feedback received about both tools will be considered prior to release and implementation of the final release version (v3.2) of the Atlantic RBCA software and *User Guidance,* encompassing the EcoRBCA *Ecological Receptor Screening Guidance* document, in 2012.

[3] The Eco-RBCA Task Group members include experts from the environmental consulting firms of Dillon, Intrinsik, and Stantec, from Imperial Oil and from Environment Canada and Nova Scotia Environment

Harmonization

Harmonization is a key aspect of Atlantic RBCA, promoting a high level of consistency in the assessment, remediation and management processes across the four jurisdictions. Instead of requiring that the private sector (the oil industry and remediation engineers alike) deal with potentially different standards and policies in four different Provinces, the harmonization within Atlantic RBCA facilitates decision-making in favour of assessment, and if necessary, remediation to enable the redevelopment of contaminated properties. Within Atlantic PIRI, harmonization is a continuous process, with ideas, challenges and approaches shared and discussed during meetings and, as a result of the relationships formed within the group, discussions in addition to group meetings, too.

Harmonization
Accomplishments in 2011

- Developed a Harmonization Matrix of policies and programs in the four Atlantic jurisdictions.
- Ongoing support to and technical discussions with provinces developing regulations.

In 2010, the Harmonization Working Group developed a harmonized *Site Closure Submission Form*, which will be included as part of the *Atlantic RBCA v3.2 User Guidance.* In 2011, to support a continuing high level of harmonization, they developed a *Harmonization Matrix* that maps contaminated sites management and brownfield redevelopment program areas across the four Provinces. Because each Province has a distinct mandate with respect to its citizens, and their own unique interplay of regulation and guidance, this tool will help Atlantic PIRI identify where things are being done in the same or similar ways, and where they are not. It will also help identify program areas with potential for harmonization; and smooth the evaluation of benefits, needs, and feasibility of further harmonization and collaboration efforts.

Atlantic PIRI continued to provide support to both Nova Scotia and New Brunswick in 2011, as these provinces continued development of Provincial contaminated site regulations, by providing comments and feedback when requested.

Stakeholder Outreach

In 2011, the newly developed strategy of engaging “Corresponding Members” was implemented, enabling Atlantic PIRI to involve individuals in technical and non-technical sectors (such as insurance, academia, and manufacturing) in its work. This adds strength to the Atlantic RBCA process, and builds understanding with people and organizations who are affected by the outcomes and who want to obtain a more detailed understanding of risk-based remediation. The Atlantic RBCA process benefits, as well, because concerns can be addressed in advance of implementation of new guidelines. In 2011, two Corresponding Members accepted the terms of reference and agreed to provide expert insight and recommendations in the future, by reviewing specific draft documents developed by Working Groups and Task Groups.

A plan for stakeholder outreach and information was developed in support of the release of Atlantic RBCA v3, and will take the form of technical and non-technical V3.2 information sessions slated for 2012 as part of the launch and implementation of the new toolkit.

Members of Atlantic PIRI continued their liaison with the Canadian Council of Ministers of the Environment (CCME) *Soil Quality Working Group* as provincial regulators, joined for the first time by the Regulator Co-Chair of Atlantic PIRI. The Atlantic PIRI perspective proved particularly relevant in discussions of CCME draft protocols for groundwater and surface water – areas where this group has several years of experience. Participation on this national Working Group enables Atlantic PIRI to respond proactively to new approaches that could trigger an Atlantic RBCA software update.

Stakeholder Outreach
Accomplishments in 2011

- Addition of two Corresponding Members
- Presentations to:
  - *Remeast* conference and Brownfield Marketplace Series
  - *Canadian Brownfields* conference
  - *SETAC* North American Meeting
- Participation of Atlantic PIRI in the CCME Soil Quality Task Group.

Public awareness of Atlantic PIRI and the Atlantic RBCA process was heightened in 2011, through members making presentations at the *Remeast* conference and Brownfields Marketplace Series in June, in Halifax; at the Canadian Urban Institute *Canadian Brownfields* conference in Toronto in October; and with a presentation by members of the EcoRBCA Task Group at the *Society of Environmental Toxicology and Chemistry* (SETAC) North American Meeting in Boston in November.
In addition, the nomination for a *Brownie Award* gave both Atlantic PIRI and the Atlantic RBCA process a national spotlight.

The Atlantic RBCA website (www.atlanticrbca.com) provides immediate updates to 441 subscribers and retains a current library of Atlantic PIRI and provincial documents.

The online Atlantic RBCA training program (www.rbcatraining.com), has provided a total of 55 people with education in the fundamentals of Atlantic RBCA since its launch in October 2008.

Membership

Atlantic PIRI members in 2011 included:

- Susan Barfoot, Government of Newfoundland and Labrador
- Normand Benoit, Suncor
- Gordon Check, Government of Nova Scotia
- John Czechowski, Shell Canada Limited
- Dan Hemsworth, Government of Nova Scotia
- Martine Hirou, Shell Canada Limited
- Ulysses Klee, Dillon Consulting Limited
- Bryan Leece, Stantec Consulting Limited
- Danny McGinnis, Stantec Consulting Limited
- Rita Mroz, Environment Canada
- Tania Noble, Stantec Consulting Limited
- Kathleen Riecken, Cobalt Properties Limited
- Michel Poirier (Co-Chair), Government of New Brunswick
- Roger Poirier, Conestoga Rovers & Associates
- Jean-Sébastien Pomares, Ultramar LTEE
- Bill Simpkins (Co-Chair), Canadian Petroleum Products Institute
- George Somers, Government of Prince Edward Island
- George Vincent, Imperial Oil Limited

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Atlantic PIRI Objectives for 2012

Technical Improvements

- Release of the final draft of the *Ecological Receptor Screening Guidance* (EcoRBCA) for public review and comment
- Post responses to public input on both Atlantic RBCA v3.1 and EcoRBCA
- Release and implementation of Atlantic RBCA v3.2and updated online training
- Development of new User Guidance for assessment of chlorinated solvents
- Internal review of the *User Guidance for Soil Vapour and Indoor Air Petroleum Hydrocarbons* with respect to current science and development of new national standards

Harmonization

- Identify effective, feasible ways to respond to opportunities revealed through the *Harmonization Matrix*.
- Ongoing support, when and as requested, for provincial initiatives to develop contaminated site regulations or amend existing regulations and Guidelines.
- Evaluate feasibility of a harmonized regulatory framework to evaluate Tier III Ecological Risk Assessments.

Stakeholder Outreach

- Implement a marketing strategy for Atlantic RBCA v3.2 online training
- Coordination of Atlantic RBCA v3.2 technical and non-technical information sessions in three Provinces
- Identify and evaluate new and emerging contaminated site management issues

This report was prepared for Atlantic PIRI by Julia Bray, Infoplexxus Inc.