

**The MITHE Strategic Network:**  
**How Can It Demonstrably Contribute to Environmental**  
**Policy for Trace Elements in Soils, Water, and Air?**

**Château Cartier  
1170 Chemin Aylmer  
Gatineau, Québec**

**January 22, 2009 (12.30 - 4 p.m. Frontenac A/B)**

**Meeting Notes from 'Round-table' Discussion.**

**1. Introduction and Opening Remarks** (*Hale/Penn*)

Beverly Hale, the scientific director of MITHE-SN, introduced herself. The purpose of this meeting is to explore strategies for communicating the products of MITHE-SN (now starting its 5<sup>th</sup> and final year) to policy makers (those who inform policy). The products from MITHE-SN are ultimately intended to improve human health and ecological risk assessments for metals, going beyond journal publications, scientific presentations, and training of highly qualified personnel.

Participants introduced themselves.

Alan Penn, a member of the MITHE-SN Board of Directors who led this workshop, explained that this workshop is the start of a process to develop a communication strategy for MITHE-SN. The workshop involved representatives from the federal government and from industry. Provincial representatives will be involved in later discussions / workshops.

**2. General Discussion** (*Penn/participants*)

Key individuals policy decision-makers include Program Chiefs both federally and provincially, ADMs and the Ministers themselves. The level of detail that is of interest / will be read decreases the higher up one goes on the policy-maker hierarchy. The USEPA and the IJC are also important players given that many

metals issues are trans-boundary. The key point is that ***different communication vehicles are needed for different levels of policy-makers.***

Three current areas of high-profile science-policy interactions are: tripartite (Canada, US, Mexico) – interviews to identify needs; the IPCC – which produced a policy document on climate change; Inter-American Global Change Research (19 countries in the Americas including Canada). These science-policy interactions have resulted in dialogues between scientists and policy makers and the production of policy documents (through many iterations) based on relevant science. There are lessons here for MITHE-SN.

In addition to these high-profile interactions, there are a variety of national and international interactions (for instance between the metals industry and governments via the Mining Association of Canada). Further, the general public needs to be included. ***A good means to include the general public is via science journalists.***

There has to be a way to link to government priorities. Policy is intended to inform, and provide clarity and predictability, and is often based on extensive stakeholder involvement. ***Science that links with current priorities will receive attention from policy-makers.*** However, it was noted that priorities can change faster than the science (governments respond to public perceptions of the “issue of the day”).

There are two issues related to the above: (1) how does science keep track of policy priorities?; (2) how should communication be optimized to government and within government? In relation to the above, it was noted that all regulations proposed by government have public input periods and in many cases, prior multi-stakeholder inputs. It is best to get ***involved in setting the policy agenda through the appropriate advisory/stakeholder group, but at least understand the policy agenda.***

Communication of issues from priorities and identification of data gaps is generally good (e.g., Tl, Se). Clearly, understanding of issues could be improved. But ***the process should be circular, where policy makers request research as well as scientists taking the initiative.*** There is no well defined mechanism for getting the science back into policy. Clearly, ***iterative dialogue is desirable.***

There was discussion regarding one committee or group representing the range of issues / science / policy that apply both nationally and internationally. Rather

than one big meeting, multiple smaller meetings may be more appropriate. Attending and participating in briefing sessions with parliamentarians may be useful. For example, attending and participating in “bacon and eggheads” (The partnership Group for Science and Engineering (PAGSE), see: [www.pagse.org/en/breakfasts.htm](http://www.pagse.org/en/breakfasts.htm). breakfast meetings with policy makers may be useful.

***Senior science managers across the natural resources departments (NRCan, DFO, EC) are the most important policy-makers to interact with.***

However, there is no framework for such discussions, which depend on the individuals involved. Science-communication discussions which are risk-adverse are not distinguished from basic science discussions, which are not risk-adverse.

There is a great deal of research potential that is not being harnessed – ***scientists need to “understand the agenda and play to it”***. Adaptive management was discussed. So too was the desirability for feedback loops to determine the effectiveness of regulations, in other words performance measurements (see [www.regulation.gc.ca](http://www.regulation.gc.ca)).

There are other science networks than MITHE-SN; the issues / problems related to communicating good science to decision-makers are common to all networks. It is not clear how one can track the success of a network in influencing policy. A “demonstrable impact” on policy is a measure of success of a network required by NSERC.

The idea that MITHE-SN should link its products (package them) not only for established procedures for risk assessment and for specific metals / metalloids, but also for policy was discussed. It was noted that ***policy is generally based on four pillars: risk assessment, risk management, research, and monitoring. The last two inform the first two as risk assessment also informs risk management.***

A good example of science informing policy should be risk assessment of metals and metalloids (inorganics). Methodology is being developed within MITHE-SN. The Existing Substances branch has been working on this issue but there has been minimal engagement with MITHE-SN. There is ***a disconnect***.

There is a need to assess the impact of any proposed regulation, including socio-economic analysis. Similarly, there is a need to assess the impact of MITHE-SN on policy. The question was asked what rulers are used to measure success of

the regulations. The response was that such measures would vary depending on the regulation and could, for example, be improved air quality.

Policy instruments come in many forms (e.g., regulations, guidelines, site-specific standards or objectives). These different forms and examples were reviewed. Instruments such as the CCME guidelines, which are not “set in stone” but rather have the capacity to grow based on the science, were discussed.

Examples of adaptation / evolution over time were provided including non-prescriptive regulations that recognize that industry is often best positioned to determine how to achieve specific goals such as emissions reductions (targets and timelines are set for specific substances but implementation is left to industry).

There was **general agreement that the best possible science needs to be brought to bear on all aspects of policy development and implementation. The policy instrument should be commensurate with the certainty in the science** (e.g., high certainty = criteria; low certainty = interim guidelines).

It was suggested that evidence of technology transfer would provide measurable evidence of the relevance of the MITHE-SN to policy. David Mount’s (Chair of the EAP) “lessons learned” were cited. There is a **need to identify key science needs related to policy**, for instance the appropriate means to develop metal speciation models.

There was discussion regarding the USEPA with an example given of science being applied via an industry group to the development of a national Se WQC. It was suggested that **the engagement of MITHE-SN participants in activities such as the USEPA Se WQC development comprises a measure of success of the network in influencing policy.**

It was noted that Canada always consults with the US and EU prior to finalizing regulations and that discussions with these entities continue. It was also noted that there are differences between the US and Canadian approaches in terms of consultation and types of interactions within those consultations. It was **argued that Canadian science may have more influence outside Canada (e.g., the US and the EU) than within the country.** The example was given of the BLM, which is now being considered for use in Canada but has already been applied in the US and EU, with large inputs from Canadian science.

It was also noted that ***both MITE-RN and MITHE-SN have had great influence on research creativity in Canada related to metals.*** It was suggested that a ***metals research institute*** that maintains that level of creativity (the ***intangible “how to think” that really has made a difference***) should be proposed. It was also suggested that ***an anniversary symposium should be held documenting what has been done in MITE-RN and MITHE-SN that has really advanced the science and policy including intangibles such as creativity.***

A good example of science influencing policy was given as follows. Historically, within HC 100% metals bioavailability was always assumed. The Contaminated Sites Program led by Mark Richardson identified this value as overly conservative, and initiated research that began to address the issue of a realistic bioavailability number. Research had already occurred in Europe. Canadian research began with MITHE-SN – an infrastructure already in place. The importance of having ***a research infrastructure in place to address future policy needs was emphasized relative to the previous suggestion for a research institute.*** Funding is, of course, an issue

Another example was provided as follows. Late in 2008, a government-requested report was tabled with advice on nanotechnology. A similar report regarding metals in the human environment could be very useful to government – but would best be requested by government rather than initiated by the network. Government attendees were asked for advice in this regard.

It was also noted that there is an issue with getting products to those who need them (e.g., key products from MITHE-SN to those looking for that information but not finding it where they are looking). Connectivity with other research expertise is also an issue (e.g., metals effects on the N cycle).

The concept of a centralized knowledge repository was discussed further in terms of both coordination and success stories that provide “lessons learned”. Government cannot do everything; there is a need for outside input on an as required basis – but that input needs to be credible. The 100% metals bioavailability issue noted above was used as an example where government went to an academic-based institution to address a research need. This outreach was based on one individual and does not appear to be common.

MITHE-SN has made a commitment to provide a series of papers in the international journal *Human and Ecological Risk Assessment*, as was done for MITE-RN, to summarize key advances. This vehicle is primarily addressed to

scientists. There is a need to translate this information to science managers. And ***if there is a final symposium, there needs to be an invitation to science managers*** – how to get them to attend was discussed.

The question was raised as to whether there are political issues that MTHE-SN and scientists in general should be sensitive to. In this regard, it was noted that federal-provincial (inter-jurisdictional) discussions are always an “interesting” issue. The best way to address these is to be inclusive not exclusive of federal and provincial policy makers, and to be an asset to both (all) groups.

The importance of scientists not getting involved in risk management was emphasized. The choice of regulatory instruments is not dictated by scientists, who simply provide input to those instruments. Scientists should be informed but not directing policy. ***There is a need to monitor federal and provincial departments regarding who is doing what, what is up-coming, what are the data gaps, etc.***

Care is needed regarding the language approaching the regulations when science is trying to have an impact. It was agreed that ***Press Releases addressing policy briefs can be very useful.*** The issue is how to communicate these. It was suggested that, ***in addition to sending these to government, they be sent to science writers, to the CBC, etc. as appropriate. The importance of sending these to member companies, associations, NGOs, to websites, etc. was emphasized. Both hard copy and e-copy are required.***

Mike Dutton shared three things: environmental policy has a political (votes) and scientific aspect, only the latter can be influenced by scientists; ultimately it is high quality, peer reviewed science that will influence policy – reviews would be useful; one way that work done by MITE has been brought to the attention of policy makers – a recent Ontario court decision that recognized metals bioavailability that will change policy (a circuitous but effective way to cause change).

Government is expected to be the conduit between science and policy. Two-way dialogues with appropriate individuals have been effective. Such dialogues need to go in both directions.

The importance of the Canada Gazette was noted, but it was also noted that not many individuals read it. Government is setting up a web portal that will include

the Canada Gazette but much more – lay-person friendly summaries, etc. The **importance of appropriate websites** was emphasized.

It was noted that the public comment period is not appropriate (60d) for research to occur, only for available research to be input. To this end, it would be more effective and useful for government to seek research input well ahead of the public comment period (more engagement with scientists = better and more effective knowledge transfer when it needs to occur). A knowledgeable Secretariat could be instrumental in this regard.

It was also noted that very many people blog. It is important to be accessible via Google. **The web is “where it’s at”.**

It was noted that the **MITHE-SN is relatively unique in terms of combining basic science in a risk assessment framework**. Essentially, the yearly Symposia are evolving Problem Formulations. Typically, this is when risk managers (policy makers) should be involved, not just at the end, per the RA paradigm: adaptive science (and risk assessment) and adaptive management.

The RA paradigm is well established, but the components (e.g., how you evaluate exposure) continue to evolve. Thresholds of Toxicological Concern (TTC) are being developed – concentrations of chemicals below which risks are considered to be negligible. Uncertainties are continually being addressed. And the science is continually evolving, including revisiting the existing science, e.g., what are appropriate toxicity reference values (TRVs) for chemicals?; linking obesity, vascular effects, etc. with metals exposure.

It was reiterated that there is increased emphasis these days on evaluating the effects of Networks. It needs to be borne in mind that the audience is not just risk managers.

Bev Hale gave the example of offering on behalf of MITHE-SN to review the science behind proposed new soil guidelines. Similar offers would be appropriate and would involve MITHE-SN in providing input / feedback to policy. Such review would occur before formal peer review.

**Intelligence gathering is critical – what is being followed by stakeholders, what proposals are out or coming out, what is in the Canada Gazette, etc?**

The Cadmium and Nickel guidelines are being revised. In retrospect, the MITHE-SN's data would have been useful for updating these guidelines. This is justification for improving communications between the Network and CCME.

Zinc was put out as an external contract for input to CCMA. There is Nickel and Cadmium that work internally. It is difficult to know where CCME is in the review process when they post an RFP. The Standards and Guidelines office do interact with the academic community. The Network should attempt to make communications with this group even a bit better.

### **3. Deliverables and Further Work**

The Network's RA consultants will be working with MITHE-SN researchers to produce papers for a special issue of HERA.

A suggestion was made that it may be beneficial to incorporate MITHE-SN findings into a policy-oriented publication. This input could be generated as the result of a special workshop. We could ask consultants about the kinds of consulting they are asked to do. Examples of policy documents were the Canadian Executive and Policy Perspectives. It was suggested that Brian Grey, ADM Science, Environment Canada be asked if they would be interested in receiving these briefs. It would also be useful to have input from the CEPA group, the PMRA, and a new group within NRCan, the Science and Policy Branch. Proceedings from today's meeting should be sent to Karen Lloyd with a cover note asking how we should proceed with knowledge transfer within the Network and Health Canada.

It was suggested that we develop an intelligence communication service with an inventory of contacts and organize a major forum. The Network should showcase what it's done in the past 5 years, report on what research gaps still exist, and identify what future key issues will be relevant to regulators. This input could be gathered using the same process followed when the Network hosted a workshop in Kingston and invited academia, government, and industry representatives to identify research gaps prior to formulating MITHE's research goals.

We need to consider a structure of what life after MITHE (Dec. 31/09) might look like. It was suggested that the Department of Fisheries and Oceans and Health Canada be asked to provide letters of support even if financial contributions are not possible. Various ideas regarding how to invite discussions with Environment Canada were considered. A workshop venue was not recommended.

It was stressed that despite the type of communication instruments which are being recommended, we still need input from participants of this meeting regarding who the key contacts are to receive Network results. It was also pointed out that it is difficult to find monies to support an infra-structure for metals research in Canada in today's economic climate even though it may only amount to a few hundred thousand dollars.

Prior to year 4, we didn't have the science results to communicate. Now, as we start Year 5, our final year, we don't have a lot of time to focus on the most efficient way to communicate the results of the Network. Further input on this initiative will be solicited.

#### 4. Attendees

Ted Bilyea	Ted Bilyea & Associates	<a href="mailto:tedbilyea@rogers.com">tedbilyea@rogers.com</a>
Peter Campbell	INRS-ETE, Univ du Quebec	<a href="mailto:peter.campbell@ete.inrs.ca">peter.campbell@ete.inrs.ca</a>
Greg Carreau	Environment Canada	<a href="mailto:greg.carreau@ec.gc.ca">greg.carreau@ec.gc.ca</a>
Peter Chapman	Golder Associates Ltd.	<a href="mailto:pmchapman@golder.com">pmchapman@golder.com</a>
Nicole Davidson	Environment Canada	<a href="mailto:nicole.davidson@ec.gc.ca">nicole.davidson@ec.gc.ca</a>
Mike Dutton	Vale Inco and MAC	<a href="mailto:mdutton@inco.com">mdutton@inco.com</a>
Beverley Hale	SSC Chair, U of Guelph	<a href="mailto:bhale@uoguelph.ca">bhale@uoguelph.ca</a>
Jim McGeer	Wilfrid Laurier University	<a href="mailto:jmcgeer@wlu.ca">jmcgeer@wlu.ca</a>
Alan Penn	Cree Regional Authority	<a href="mailto:apenn@gcc.ca">apenn@gcc.ca</a>
Pat Rasmussen	Health Canada/ U of Ottawa	<a href="mailto:pat.rasmussen@hc-sc.gc.ca">pat.rasmussen@hc-sc.gc.ca</a> ;
James Riordan	Environment Canada	<a href="mailto:james.riordan@ec.gc.ca">james.riordan@ec.gc.ca</a>
Len Ritter	MITHE-SN Coordinator, U of Guelph	<a href="mailto:lritter@uoguelph.ca">lritter@uoguelph.ca</a>
Steve Sheppard	ECOMatters	<a href="mailto:sheppards@ecomatters.com">sheppards@ecomatters.com</a>
Barry Stemshorn	University of Ottawa	<a href="mailto:barry.stemshorn@uottawa.ca">barry.stemshorn@uottawa.ca</a>
Bernard Vigneault	Natural Resources Canada	<a href="mailto:bvigneau@nrcan.gc.ca">bvigneau@nrcan.gc.ca</a>
Donna Warner	MITHE-SN Secretariat, U of Guelph	<a href="mailto:dwarner@uoguelph.ca">dwarner@uoguelph.ca</a>