Summary from Workshop 1, September 10-11, 2007, Walkerton Clean Water Centre

Lead Researcher: Ed McBean, University of Guelph

Risk assessment and risk management tools which are focused on public health should address this question: is the water safe or not?
What information should be in the 'tool' and who should complete it?

Small drinking water systems are unique

Small treatment plants are not typically engineered systems, so there is no standardization (eg; longevity of the system and situations of lack of specifications for operation exist). There is insufficient funding for online monitoring systems in pumping stations or in distribution systems (eg; especially for continuous chlorine residual in First Nations systems).

Examples of issues include the fact that engineering firms need to understand water systems from a health point of view (e.g; workers in the plant). When focused only from an engineering perspective, there is not necessarily a consistency when putting in distribution lines; chlorination is often only in main lines, not in the individual lines. Should we have water specialists in public health departments? (eg; BC health departments have water engineers at the provincial level.

Capacity

Inspectors at the workshop agreed that they didn't have the capacity and resources required to do their jobs effectively. There are insufficient numbers of circuit riders in various regions.

Risk assessment requirements: Tools

Participants indicated that any risk assessment tool would be helpful and could increase consistency, especially if (i) well-supported by upper management, (ii) provided with long-term funding (independent of political changes), and with (iii) improved communication and coordination across facilities, jurisdictions and governments, including First Nations.

Across Canada, risk assessment tools for safe drinking water are not standardized, and the *WaterTrax* electronic database is not available in all provinces. Colilert data are entered manually. Boil Water Advisories (BWAs) are communicated based on an inspector's information and weekly assessments are sent through *WaterTrax* (depending on whether the inspector is from the Ministry of Environment or the Ministry of Health). Colilert tests [for detection of coliforms and E.coli] can assess microbial risk, but non-First Nations samples must be sent to a certified lab. As a consequence, this relies heavily on sampling and laboratory analyses, which continue to be difficult for remote communities when a test should be analyzed within 48 hours, and there is lack of funding to implement an online system. CAEAL (Canadian Association for Environmental Analytical Labs) has not accredited the colilert test, as it is not lab-based (though US-EPA has). The colilert test is approved as per Standard Methods.

Currently, tools to undertake the risk assessment are limited, there is heavy "red tape" or no emergency funds at all, there is a lack of resources and training, and a lack of technical operations details for public health inspectors. A proper risk assessment tool, information management technology and standardization of data collection and interpretation (eg; what is "high risk" vs "low risk") would demonstrate better accountability, as would a reporting mechanism to the Treasury Board. Standardization would help in communication with operators and policy makers. Often there is no checklist or tools, except through experience; many experienced inspectors have a mental checklist as their 'tool' but this means that it is not transferable and non-standardized. Ontario, Alberta, and First Nations (INAC) are working on their own tools and hence there is considerable but individual efforts being undertaken. Variability exists, province-to-province, in terms of what can be accomplished quickly (eg; directives; order; ticket; etc). However, without enforcement and risk management options as follow-up, the benefits of a risk assessment tool will be limited.

A tool would require more resources at the front-end to get the tool in place and to input data, but after the period of initial development, would require less effort / resources. The tool would be helpful as an information database for inspectors when doing risk assessments, and could be expanded over time. A good risk management tool would improve communication, training, awareness, education, action, and assist in the development of a proactive stance.

Risk assessment requirements: Support and Access to Resources
Ongoing access to information is a key requirement; supporting documentation is needed to show where to look for specified types of information on a system.

Access to accurate and up-to-date data is critical – there is no data on vulnerable aquifers, well information may be confidential, and sometimes information is not available except through the operator (eg; different types of pipes; no map exists of a campground system, etc).

Increased lab capabilities and access to experts (legal, policy, etc) who are knowledgeable about inspection are critical parts of a support system. Inspectors need access to experts to whom they can email questions and photographic evidence, and look for guidance and feedback.

Risk assessment requirements: Focus / Role
Ideally, the focus should be on building relationships, partnerships, ownership and responsibility. In implementation in Ontario, is this tool a "stick" or a "carrot?" The role of the inspector needs to be clear – it is difficult to be both the regulation enforcer and a support / educator. It makes a difference if the inspector emphasizes, "I'm here to help you provide the safest water possible… let's use this tool." There needs to be a clarification of inspector roles and responsibilities, and buy-in from management. Incentives and policies for compliance from owners would be helpful.

Risk assessment requirements: Hardware
Inspectors need appropriate equipment and access to equipment, training, Internet (some remote communities still use dial-up modems), and capacity-building opportunities. Knowledge of chemical ordering would be helpful to public health inspectors to accurately answer questions. Conditions in the field can be harsh for the technology. Laptops in the field may not be practical but complex spreadsheets can be a problem with palm technology. A tablet should be efficient, interactive, integrated, and easy to use.

Risk assessment requirements: Risk Management
A tool may help focus an investigation on water. Many hazards develop after the protected source, through the distribution system, potential power outages, and a drop in pressure (eg; no regulation for legislation on backflow preventers). However, an initial risk assessment should be part of an ongoing risk management plan. A good risk management tool would improve communication, training, awareness, education, action, and assist in the development of a proactive stance.

Inspectors need to identify where a water system is vulnerable, to compare to previous incidents, and to recommend improvements. This should be communicated in writing (and a copy kept), and the effects on public health should be made clear to politicians. There is often poor source water characterization (eg; GWUDI – "groundwater under direct influence of surface water"; wells; seasonal changes). Possible causes of adverse results could be due to lack of maintenance, recording, etc.

Education
New inspectors coming from school do not have sufficient knowledge. Treatment plants are diverse, therefore challenging on a technical level. Training requirements need to be determined (eg; an assessment of a Bed & Breakfast vs a restaurant). The person completing these reports needs to be knowledgeable in the area of drinking water; a tool does not replace knowledge, experience and comprehensive training. Inspectors need training to use this type of tool. In a small public health unit, everyone needs to do all the jobs. Perhaps there could be a Circuit Rider Programme for water and

health inspectors. People skills and interviewing skills are also important. Consistency also needs to be addressed: you can't have someone levying the maximum fine, and someone giving only a warning, for the same circumstances.

Water treatment operators are frontline public health protectors. Operators, especially those uncertified for very small systems, do not have adequate training about the range of technologies which exist. Operators are often a "master of several trades," wages are low, and there is an issue of retention of water operators. Inspectors may not have technical expertise, and technical experts may not have public health expertise. An intermediate person with technical and public health knowledge, and full understanding of both risk and technology, is critical.

Education needs to go back to the operator regarding requirements and obligations. Enough well-trained inspectors must be in place for regular visits, to establish emergency plans, and emergency funds must be readily available. There should be redundancy in experienced personnel, consistency in timing of visits (eg; public health officers go every week; circuit riders in a 6-8 week cycle), and consistency in response to situations.

Databases
A database of water system assessments to reference, in case of an outbreak, would be helpful. Adverse results are acted upon by Health Canada, but information is not compiled by a single source and not currently made available.

Confidentiality
Confidentiality issues can create major stumbling 'blocks'. This may involve not being able to share data, but setting up some quid pro quos and having to make sure that it remains secure, etc. Innovative ways around barriers need to be found. When identifiers are stripped before passing on data, in some cases, the data are difficult to use for some applications.

First Nations
First Nations face political and governance issues, limited resources, and directed funding. Water operators multi-task, and there is a gap between technical staff and public health staff. There is often opposition to chlorination. In some circumstances, Band leaders and members of the community need to be informed about the importance of the drinking water system.

A risk assessment tool for small drinking water systems needs to:

- Offer a checklist of information required prior to the visit, so data compilation can be prepared in advance of any site visit
- Access to electronic / downloadable information prior to field visit (advance preparation; an "information support hub")
- Online link for inspectors and engineers to pertinent section of Regulations (a database)
- Be interactive, user-friendly, low tech, easy to fix, and appropriate for use in the field, with links to a central database
- Capture operational information and engineering information – specifications on equipment; durability and visibility are important; is sampling done when it should be?
- Capture technical data, lab data, electronic data and photos (eg; to identify changes / concerns that could be sent to an expert for comment), with a common definition of location
- Have a place for comments (eg; type of operator, etc), as well as private comments that do not show in the report
- Generate clear, useful reports on the status of system, appropriate for different users
- Link the type of system and level of compliance in order to assess risk
- Provide quick feedback to allow directives to be distributed rapidly
- Have a random locator supplied by the computer to protect confidentiality
- Prioritize features in order to reduce risk – based on an understanding of vulnerability
- Help to develop a Plan of Action: corrective actions to take after the risk assessment

- Help to increase operator's awareness and informal education (eg; could pilot test information such as , "*If [_ _ blanket statement _ _], the risk goes up.")* → but would this create any liability issues?
- Be linked to post-risk assessment funding and incentives to operators to fix identified problems – linking risk assessment to ongoing risk management
- Allow flexibility – inspectors using the tool need to be able to suggest changes to the tool, so that it prevents premature failure of the tool; new training when changes are made
- Foster communication and education between environmental health officers, water operators, public health inspectors, circuit riders, policy makers, First Nations Councils and Band members, etc – all parties involved
- Be linked to an emergency response plan and response contact list

COMMENTS ON MOH-LTC DRAFT RISK ASSESSMENT TOOL

Unfortunately, only a few screenshots of the draft Ontario Ministry of Health and Longterm Care tool were shared at the Workshop, and participants could not provide very specific feedback. Concerns were that the tool appears more like a data gathering tool, but that information about the water treatment plant does not necessarily assess risk. Is the system working properly? Is attention being paid to standards and levels, even if people are not yet sick? The tool is a good starting point, but it may need more, such as engineering and other background information, operation detail, downloadable records, operator response to events (eg; high turbidity; high or low chlorine, etc), and easy access to well records (confidentiality issues). Two other major concerns were whether the tool included a decision-making strategy ("what now?"), and that full details of the assessment – the number given – would be shared neither with the inspector nor the operator. This was perceived as a missed opportunity for education and sense of ownership by the water operator. A consistent method is needed to get feedback to the operator, community, and other agencies involved with drinking water who should be informed of results generated by this tool.

Questions about the Ontario MOH-LTC draft risk assessment tool:

- Who would be the best person to administer the tool / fill out the forms? --Suggestions were made that it not be the operator, consultant nor operating authority; not INAC (which holds the "purse strings"), but a third party, perhaps an environmental health officer or public health inspector, depending on personal technical expertise
- If you trigger lower boxes in the tool, do you access extra questions of pertinence?
- Is the risk assessment report legally defensible? (eg; there is a 5-day window in Alberta to enter data and to make changes to a report; administrator's privilege; this is a time management issue, and also ensures information is added when well-remembers, which increases reliability)
- Does the tool cover risk assessment and risk management (eg; identifying risk, and determining solutions and corrective actions)?
- If a public health outbreak occurs, could the tool provide additional information to inspectors for an investigation?
- Where is the funding coming from? (will other public health funding need to be cut to do this?)
- How will government policies and priorities change to support safe drinking water?
- How can roles and responsibilities, and First Nations issues, be clarified and addressed?
- What process can be developed for educating / gaining support of involved agencies and communities, so they are part of the process and aware of its importance, its goals and uses?