Rural Water Quality and You – Community Sources

(Tank Loaders and Community Wells)

If you own or operate a water system, you are responsible for the quality of the water. Regular water quality testing is recommended.

Water Quality on the Canadian Prairies

On the Canadian Prairies, water is obtained from surface sources (dugouts, lakes, reservoirs, ponds, rivers, etc.) and groundwater sources (wells and springs). Water from a particular source has its own unique quality characteristics. These characteristics can change slowly over time, or rapidly (sudden contamination event). The characteristics may also change in a cycle that matches the changing of the seasons. Surface water and shallow wells are more susceptible to seasonal changes and sudden contamination events than properly sited and constructed deep wells. Water quality within the same pipeline, household or farm distribution system may be different at various locations within each system (water quality can deteriorate in the pipes).

Water Quality Characteristics and Effects

Water quality is characterized by the organisms, chemicals and minerals that are suspended or dissolved in the water. Water that appears to be pristine may contain organisms, chemicals and/or minerals in concentrations that can be harmful to human health. Such concentrations can make the water unsuitable for domestic use, food processing or industrial applications, and be detrimental to farm applications (affecting livestock health and weight gain, pesticide performance, clogging animal misters and boilers, etc.). Thus, regular water testing is essential.

The Importance of Regular Water Quality Testing

Regular testing is required to ensure the quality of the water from any source is appropriate for its intended use. The frequency of testing, and the characteristics of the water to be tested, depend on many factors (source quality, source variability, distribution system impacts and intended use). Any change in the odour, taste or appearance of your water may also be a signal to test your water.

Tank-loading facilities provide people with access to community projects supplying drinking water or raw water. Responsibilities differ for both kinds of water.

Water can only be considered safe for drinking if it is tested on a regular basis for the appropriate organisms, chemicals and minerals. If the water has been contaminated, a more detailed water analysis will be required and testing frequency may increase. Water used for applications other than human consumption may have considerably different water testing requirements (e.g. testing for hardness for use in boilers).

Owners/operators of water systems will need to test the source water to determine the appropriate treatment for the water's intended use, and regularly test the water to ensure the source water quality has not changed and treatment is achieving the desired results. You should test the water throughout your distribution system to ensure the quality has not deteriorated. How a water quality sample is obtained is as important as how it is tested. For more information on water quality sampling and testing, please contact your local provincial health authority, or view PFRA's water quality fact sheets at**:**
http://www.agr.gc.ca/pfra/water/quality_e.htm

Water Quality in Community Projects

The quality of water obtained from a community system depends on the source water quality and the type of treatment (if any). Water obtained from a community source is not considered safe for drinking unless it is adequately treated and regularly tested.

Protection of Water Supplies

The protection of water supplies is the first step in improving or maintaining the quality of water obtained at the source. Proper protection of the water supply can greatly reduce treatment and monitoring requirements, as well as the risk of surface and groundwater contamination. Wastewater from humans or animals, hazardous chemicals, fuel, oil, pesticides and cleaning products must be properly managed to avoid contaminating a water supply. Other potential sources of contamination can be avoided by the safe application of fertilizers and proper management of soil erosion. Wells and dugouts should be strategically located to minimize the potential for contamination, and be operated and maintained properly.

For more information on the protection of water supplies, please see the Water Quality Matters – Agriculture Best Management Practices fact sheet located at**:** **http://www.agr.gc.ca/pfra/water/quality_e.htm**. The same web site can be used to obtain information on wells, dugouts and/or to obtain a copy of Quality Farm Dugouts.

Water Quality in Community Projects – Owner's Responsibility

The owner is responsible to ensure that all those who may use the water understand the quality of the water and its intended use.

For situations where the water is to be used domestically, the owner is responsible for ensuring the water quality meets provincial water quality regulations. The regulations require that a water quality sampling and testing program be established and followed.

For situations where the quality of the water cannot be guaranteed, the owner must ensure that anyone who may use the water understands it is not safe for drinking. The owner must be sure that representatives do not make explicit assertions or implicit representations to the contrary. The owner should install signs indicating the water is not intended for human consumption.

Because water treatment systems and devices are presently not regulated in Canada, people should seek expert advice before making any decisions.

Water Quality in Community Projects – Individual's Responsibility

On a community project that provides drinking water, the individual has no responsibility with respect to the quality of the water obtained from the project. Individuals wishing to drink water from the community project are responsible to operate and maintain their in-house system so it does not have an adverse impact on the quality of the water received from the community project.

On community projects that deliver raw water or do not guarantee the quality, the individual is responsible for the quality and any treatment that may be required to make the water suitable for its intended use.

Selection of Water Treatment Equipment

A water treatment system must be designed to remove or control the undesirable organisms, chemicals and minerals that are found in water.

In order to deliver safe drinking water, owners that have a raw water source will need to have their source water quality evaluated and have a treatment system designed by a consulting engineer.

Individuals who obtain their water from a community project that supplies raw water are responsible for the quality of the water and any treatment required to make sure the water is suitable for their intended use. Before water treatment equipment is purchased, water should be tested and expert technical advice sought from several competent suppliers. One device will not solve all potential problems, and there are no universal treatment systems. The recommendations should be compared and the best process selected.

Water treatment systems and devices are presently not regulated in Canada. If certified water treatment equipment is desired, check for certification by National Sanitation Foundation (NSF) International. NSF International is an independent non-profit organization that is respected around the world. The NSF International web site is located at: **http://www.NSF.org**

Operation and Maintenance of Community Water Systems

All water systems must be properly operated and maintained to obtain desirable water quality. This requires regular inspections, backwashing and replacement of filters and worn parts in accordance with the recommendations of the supplier. Follow the recommendations of your consulting engineer or supplier. There is no universal operation and maintenance regime.

Testing water obtained from a treatment system on a regular basis is required to ensure the system is achieving the desired results. Treatment systems that are improperly designed or not operating properly can have a detrimental effect on the quality of water and put the user at risk.

Water Quality Guidelines

Information on water quality guidelines for irrigation and livestock can be obtained from the Environment Canada Internet site at: **http://www.ec.gc.ca/CEQG-RCQE/English/Ceqg/Water/default.cfm**

Information on drinking water quality guidelines can be obtained at the Health Canada Internet site at**:** **http://www.hc-sc.gc.ca/hecs-sesc/water/dwgsup.htm**

Provincial governments are mandated to set drinking water quality standards. If you have questions regarding the safety of your drinking water, you should contact your local provincial health authority.

Role of Agriculture and Agri-Food Canada -PFRA

PFRA provides funding and technical assistance to rural clients for dugouts, wells, pipelines, other water supplies, water source protection and rural water quality. PFRA does not operate or maintain water supplies, test water or ensure the safety or adequacy of water for its intended use. Information on rural water quality and testing can be obtained at PFRA Offices, or on the Internet at**:** **http://www.agr.gc.ca/pfra/water/quality_e.htm**

Remember, if you own or operate a private water system, you are responsible for the quality of the water and any treatment that is required to make the water suitable for its intended use. Regular water quality testing is recommended.

Water quality can vary at different locations within the same pipeline, household or farm distribution system. Consequently, water systems need regular testing to ensure the source water quality has not changed and treatment is achieving the desire results.