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Rural Water Quality and You – Rural Pipelines

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 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.

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 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).

Although pipelines can deliver water to rural and remote locations, the water must be adequately treated and the distribution system regularly tested before pipeline water is considered safe for human consumption.

Canada

While provincial governments set drinking water quality standards, PFRA can provide rural clients with assistance for dugouts, wells, pipelines, water source protection and rural water quality.

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 Rural Pipelines

The quality of water within a rural pipeline system depends on the source water quality, the type of treatment (if any), the nature of the distribution system, and the frequency and type of maintenance performed on the system. Water that may be safe to drink when it enters a rural pipeline may not be safe to drink when it reaches a particular subscriber due to changing water quality in the system's distribution pipes. Water obtained from a rural pipeline is not considered safe to drink unless it is adequately treated and regularly tested throughout the distribution system. Provincial and federal guidelines indicate that rural water pipeline utilities need to follow a regular sampling and testing program. Pipeline utilities that want to deliver safe drinking water should review monitoring and testing requirements with their respective provincial regulatory agency.

Water Quality in Rural Pipelines – Responsibilities of the Pipeline Board

The Board that manages the pipeline is responsible for ensuring that its subscribers know the quality of water being distributed through the pipeline and its intended use. This is usually stated in a legal agreement between the Board and the subscriber, referred to as the Subscriber's Agreement. The Board's responsibility with respect to water quality will vary depending on the intended purpose of the water. For situations where the pipeline is providing drinking water, the Board is responsible to ensure the water quality meets provincial water quality regulations/guidelines. The regulations require that a water quality sampling and testing program be established and followed by the Board. In general, the Board will be required to have a certified operator operate and maintain the pipeline, as well as be responsible for the water quality sampling and testing.

For situations where the quality of the water is not guaranteed, the Board must ensure that subscribers are aware the water is not safe to consume. The Board must ensure that it, or any of its representatives, do not make explicit assertions or implicit representations to the contrary. The Board must also periodically remind its subscribers that the water is not intended for human consumption.

Water Quality in Rural Pipelines – Individual's Responsibility

On rural water pipelines that distribute water for domestic use, the subscriber has no responsibility with respect to the quality of water obtained from the pipeline. Subscribers are responsible to ensure no water flows from their system back into the pipeline. Subscribers wishing to consume water from the pipeline 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 pipeline.

On rural water pipelines that deliver raw water and/or do not guarantee the quality of the water, the subscriber is responsible for the quality of the water and any treatment system 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.

Rural pipelines that obtain their water from a raw water source and want to deliver safe drinking water, must have the source water quality evaluated and have a treatment system designed by a consulting Engineer.

Rural pipelines that deliver drinking water may need to add chlorine-boosting stations to ensure they can maintain the required chlorine residuals throughout their distribution system. The need for a chlorine-boosting station can be determined once a chlorine-monitoring program is in place.

Individuals who obtain water from a rural pipeline that distributes raw water are responsible for the quality of water and any treatment system(s) required to ensure the water is suitable for their intended use. Before water treatment equipment is installed, the water should be tested and expert technical advice sought from several competent suppliers. One device will not solve every potential problem, and there are no universal treatment systems. The recommendations should be compared and the best process selected.

Water treatment systems and devices are not presently 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 Private 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 supplier, but be prepared to customize operation and maintenance to suit the water you are treating. There is no universal operation and maintenance regime.

Testing of water obtained from a treatment system 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

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**

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, please 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.

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