



**Water Safety and the Dairy Farmer;
Are Your Cows Giving Quality Milk?
Only If You Are Giving Them Quality Water!
The Buck Will Soon Be Stopping at You for Water Safety!
Here Are Some Facts and Answers You Need to Know**

If you see **red** when multiple governments hold you responsible for sustainable water quality, get ready for more shades of it in ‘techno-colour’. The fallout legislation from the Walkerton Inquiry is coming to a small dairy operation near you!

There are two main bills about nutrients and drinking water that apply to you plus all the regulations connected to milk quality, like annual testing for zero-tolerance of E.coli (mandatory in 2006) and coliforms (mandatory by 2008).

- The Nutrient Management Act, which came into effect on July 1, 2003 for larger, intensive operations over 300 nutrient units and new barn building sites; BUT will apply to smaller operations starting in 2008
- The Clean Water Bill, introduced in 2005 which passed second reading in 2006 and is having public hearings now. It will empower local authorities to monitor and take action to any threats to drinking water safety and require plans and strategies for all those in a designated water source area.

Remember when the word nutrient still meant “any substance that provides essential nourishment for the maintenance of life”¹ Now political terminology uses it to refer to animal manure, fertilizers containing nitrogen, phosphorus and potassium, pulp and paper sludge, brewery waste, and human waste (a.k.a. biosolids). The provincial government in response to Justice O’Connor’s Report of the Walkerton Commission of

¹ Canadian Oxford Dictionary

Inquiry enacted nutrient management regulations to address source water protection. It established 300 nutrient units/operation as the immediate benchmark for compliance. One beef cow equals one nutrient unit of waste so any herd operation over 300 cows must have an approved nutrient management plan and strategies. Any new barn building must also have a permit connected to an approved plan. Smaller operations will have to do the paperwork starting in 2008 PLUS have their plans and strategies approved every 5 years. As often happens, the process is “nested” or embedded among several ministries. For instance the Ontario Ministry of Agriculture and Foods will have people to train farmers in the process and the Ministry of the Environment will monitor and enforce the rules; while the local government will have Local Advisory Committees and panels to investigate any citizen’s complaint about perceived water quality infringements.

As you well know, these two bits of legislation will only add to your bureaucracy of ensuring milk quality. Guy Sequin, Farm Management and Farm Systems Specialist for the Dairy Farmers of Ontario, reported that Ontario dairy farmers will be required to develop written standard operating procedures (SOPs) for pre-milking, milking, post milking, livestock medicines, and animal identification. SOPs should be completed no later than when a time temperature recorder is installed on the farm and will be a Grade A requirement as of January 1, 2007. The TTR project costs \$10 million with combined government dollar help to individual farmers at a maximum of \$1150. So far 60% of Ontario dairy farmers have complied. Hence, you may be seeing red, as in red tape².

Admittedly there is a need to be vigilant and there is data to support the importance of cooperative efforts. Reports show that Ontario’s current 3.4 million hogs produce as much raw sewage, or nutrients, as the 10 million Ontarians do. Our capacity seems to be close to maxing out. Other reports claim that 34% of rural wells have elevated levels of coliform bacteria and 14% have elevated levels of nitrate pollutants.³ That means that close to 1 out of 2 rural wells could have water safety issues and will face costs connected to remediation.

That brings us to the Clean Water Act proposals. Environment Minister Laurel Broten wants to empower local authorities to monitor and take action for any threats to

² http://services.milk.org/services/producer/quality_assurance-index.html

³ Canadian Environmental Law Association, 04/09/2004

water safety. The new act is touted as a “science-based approach” and democratic. Communities must conduct plans and studies and every plan must have full consultation, including farmers, before approval will be granted. Dr. Greg Flynn of the Ontario Medical Association says that legislation is needed because water sources need better protection from pathogens and other contaminants. Some, like odour and colour, are detectable to our senses; but most, like microbes and bacteria, are not. However, many groups complain that the provincial government is merely downloading costs and responsibilities to the municipal levels; and that is unsustainable.

The Ontario Farm Environmental Coaliton said “if farmers were provided with both solid scientific reasons plus some incentives for needed changes, farmers would be willing, long-term co-operators. There would be no need for confrontational and costly regulatory administration and enforcement.” Chris Attema concluded that the main concerns were too little cost-sharing on the part of the provincial government and the possibility of unilateral “permit officials” running roughshod onto farms that have perceived threats to water safety.⁴ The fear about costs is real too. The provincial government is offering \$67.5 million over 5 years for technical **studies** and staff. But studies have already been done and so far there is no assistance being offered for upgrading water quality (only TTRs)!

For instance, a 1998 study estimated that Ontario would need \$12.6 billion of investment for water infrastructure maintenance and expansion, an insurmountable and unsustainable difference from the proposed \$51 million earmarked for studies. Another report showed that Hamilton’s 100-year sustainable plan for its decade-old water treatment infrastructure would require \$750,000 each year. But water rates only generate about \$200,000 each year, causing a shortfall of approximately \$500,000 EACH YEAR.⁵ It appears that there are enough studies. Even the Dairy Farmers of Ontario did a study reported in July 2004 that stated strategies for potable water and milk quality and a synopsis of possible methods of insuring water quality.⁶ Over 3 million people in Ontario rely on private wells for their water supply. Guy Sequin said that the Dairy Farmers of

⁴ Milk Producers, August, 2006, pages 33-34

⁵ Pollution Probe submission to the Walkerton Inquiry, April 2, 2001

⁶ Adrian Unc and Claude Wiel, Potable Water, Milk Services,
http://services.milk.org/pdf/quality_assurance-water_resource.pdf

Ontario are about to do an on-site and lab study of technologies related to water quality in Eastern Ontario. The objectives stated are “...to evaluate the efficiencies and cost effectiveness of existing water treatment technologies... to recommend safe operating strategies for water treatment technologies that will ensure inactivation of pathogenic bacteria, viruses and parasites in dairy farm water supply... to recommend safe and reliable maintenance strategies that will provide robust water treatment technologies...” and it will take almost two years to complete. In the meantime, if the governments seem unwilling to give money to water quality upgrading systems for municipal water treatment, what chance do the non-municipal, rural well system users have of any grants?

Cows Can Give Quality Milk Only When The Milk Process Has Quality Water:

Drinking water for dairy cattle as well as water used to wash any milk contact surfaces in the milking process must be completely free for E-coli and coliform bacteria. By law dairy farmers must ensure zero-tolerance according to the Canadian Quality Milk program. Their water source strategies must include:

- Capping a well to prevent frogs, birds and rodents getting in as contaminants
- Well casings at least 16 inches above the soil surface to prevent any fecal micro-organisms getting into the well
- Steel casings at least 18 feet under the soil surface to prevent any leaching into the well
- Farm management skills that include keeping wells away from manure storage and 500 metres away from surface water that could leach giardia and cryptosporidium into well water

These regulations are already in place and as “science-based knowledge” increases, more regulations will follow. For instance, any contaminated water that is pumped will leave biofilms on pipes which are breeding grounds of live and dead organisms. Therefore, if a farm operation has contaminated water, the pipes must have biofilms eliminated too before water can enter the milking system.

Starting in 2008, small operations (under 300 nutrient units) will also have to comply with approved plans and strategies for clean water sustainability. Some requirements for both will be:

- Description of the type of operation and status of the plan (new or renewal);
- Farm unit declaration and sketch;
- Analysis of nitrogen, phosphorous, potassium and total solids;
- A list of nutrient uses with the appropriate agreements;
- Storage facilities – yearly capacity;
- Contingency plan for problems; and
- Certification form
- Regular water testing through Public Health Units (see: www.healthunit.org/aboutus/healthunit.htm) or Ontario Federation of Agriculture (web site: <http://www.ofa.on.ca/site/home.asp>)

What are the water treatment options available to dairy farmers?

Currently, in the Procedure for Disinfection of Drinking Water in Ontario as part of the Safe Drinking Water Act, revised on June 4, 2006, the Ontario Provincial Government recommends both primary and secondary methods of treatment. Chlorine, chlorine dioxide, ozone and ultra-violet rays are mentioned as well as various filtration systems, although in a 2002 publication Ontario only recommended chlorine and ultra-violet treatment options.⁷ A synopsis of the methods is given below:

- Chlorination is the oldest and widest used method but new studies show that it is not always efficient at removing all organisms and can create byproducts that affect milk's taste and smell. Also it is increasingly linked to chloramines, like trihalomethanes (THMs), which cause cancer. 13% of bladder and colon cancers in Ontario were attributable to chloramines which bio-magnify (persistent substances that progressively build up) in the water. Although relatively inexpensive, chlorine can also be ineffective if pipes have biofilm.

⁷ Treatment Options for Owners of Non-Municipal Year-Round Residential Drinking Water Systems, 2002

- UV light systems inactivate micro-organisms flowing along the ultra-violet tubes. UV does not produce toxic by-products but it doesn't always kill bacterial organisms, or eliminate smells and tastes either
- Ozonation, besides removing micro-organisms, improves overall water quality. It makes water taste and smell better, and can reduce the concentration of unwanted and possibly toxic organic compounds such as pesticides. It's a good disinfectant for removing bacteria and protozoa, and is better for virus inactivation than UV light. However organic buildup can occur especially if bromide is in the water and filtration with ozonation is recommended⁸

I interviewed one dairy farmer who had been using hydrogen peroxide as the disinfectant system for their 95 cows. However no regulatory agency in North America recommends it as a disinfectant for drinking water. Concerns for the cows, the milk and their family prompted them to move to a different technology, reasoning that health is at least as important as the cost of a good furnace. This farm has since switched to ozonation and a filtration birm system. They don't have "scientific" prove but noticed the iron brown in the water and the green mold on the water troughs is disappearing, and testing shows clean and odor-free water.

Isn't it time to let dairy farmers choose how to provide quality water to their cows and ultimately quality milk to consumers, according to the several regulations already in place, without the delay of yet another study?

James Ellsworth

Wordsworth Writing Services

⁸ Adrian Unc, Claude Weil, Potable Water, ,op.cit.