

Successful Municipal Practices: Responding to New Challenges



Tools for Change

BETTER MUNICIPAL PRACTICES: Improving Water Quality The RM of Victoria

The community of Holland is located in the RM of Victoria, 125 kilometres southwest of Winnipeg. For years, the water in Holland was characterized by its bad taste, staining effect, and unpleasant odor. Large amounts of chlorine had to be added to the water supply to make it safe to drink, however residents and visitors alike commonly bought bottled water.

The taste, odor and staining properties of the water occurred because Holland's water supply depended on a deep aquifer where the water is high in manganese, iron and ammonia. When it came time to upgrade the existing water treatment system, the council of the RM of Victoria decided to use the opportunity to improve overall water quality as well. When investigating its options, council found that membrane filtration was commonly used to treat water high in manganese, iron and ammonia, but would have required a capital investment of \$1.5 million and was very costly to operate. Council needed another option.

Council approached an engineering consultant to see if there were other treatment methods that would address water quality concerns at a lower cost. An option to replace pure chlorine with chlorine dioxide to address the poor taste of the water supply was proposed. Chlorine dioxide would also disinfect the water as well as remove the elements that were causing the odor and staining problems. This method is used for residential water treatment and was first introduced in Belgium in 1956, but had never been used in Canada.

Council engaged the expertise of provincial government officials from the Manitoba Water Services Board and the Office of Drinking Water to further discuss chlorine dioxide treatment. After much consultation among provincial government officials, the engineering consultant, the technology provider, and council, it was decided to undertake a pilot project for a 6 month period. The pilot project would determine if chlorine dioxide could replace chlorine as the main disinfectant, and also address water quality issues. The pilot project was funded, in part, with grants obtained from the National Research Council of Canada and the Province of Manitoba's Technology Commercialization Program.

Good quality water is a high expectation of municipal customers, and council felt it was imperative to provide better quality water at a reasonable price.

Partnering with the Province, the Federal Government and the private sector allowed council to tap into expertise and funding.

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During the pilot project, the chlorine was gradually lowered to a level that still met regulatory requirements, while at the same time, the dosage of chlorine dioxide was increased. The levels of chlorine dioxide were monitored constantly during this time, to ensure requirements were met for drinking water safety. Eventually, the chlorine dioxide completely replaced chlorine as the primary disinfectant. Test results and user feedback showed that the chlorine dioxide was effective in removing the staining effects of the water and dramatically improved the taste and odor of Holland's water supply. On the basis of these results, the RM of Victoria implemented chlorine dioxide as its primary disinfectant on a permanent basis at a cost of \$325,000, of which a contribution of \$75,000 was made by the technology provider as their share of the cost for market introduction.

The RM of Victoria estimates it achieved a cost-savings of \$1.25 million since the chlorine dioxide method was implemented without a large capital investment requirement for membrane technology and lagoon infrastructure. An added benefit is that chlorine dioxide is generated on site, thereby eliminating the need for site storage and / or transportation of chlorine. Ratepayers noticed a dramatically improved water taste, and are confident that their water supply is safe since chlorine dioxide is superior to chlorine in the destruction of spores, bacteria, viruses and other pathogen organisms.

From a regional context, visitors who come into the community are surprised that the taste and odor of the water has so dramatically improved – the once infamous Holland tap water is now good drinking water. In a wider context, the council of the RM is proud that a technology first introduced in Belgium has found its way into Canada by way of the community of Holland, which drew many early immigrants from Belgium. Holland is now the first community in Canada to use chlorine dioxide in the treatment and primary disinfectant of its potable water supply. Both council and the community are proud to be on the leading edge of technology for residential water treatment, especially in an area as important as drinking water.

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After a successful pilot project, chlorine dioxide was implemented on a permanent basis.

For more information on Successful Municipal Practices, and the Tools for Change program, see the Association of Manitoba Municipalities' website, at www.amm.mb.ca.