

Clean water for Holland

Thanks to a state-of-the-art water disinfecting process, the citizens of Holland in central Manitoba are enjoying safe drinking water. The process utilizes chlorine dioxide in conjunction with far lower levels of the more familiar product – chlorine. The chlorine dioxide process certainly isn't new, having been used for 50 years in Brussels, Belgium. Introduced in the United States 15 years ago, chlorine dioxide is now disinfecting tap water enjoyed by 20 million Americans. Worldwide, 400 million people use water treated in this manner, including the 400 citizens of Holland in the RM of Victoria.

The Holland demonstration project was a made-in-Manitoba solution. It was sponsored by Osorno Enterprises Inc. and supervised by J.R. Cousin Consultants Ltd., both Winnipeg-based companies. Winnipeg's Avalon Institute of Applied Science Inc. carried out essential project research, while the project was partially funded by the National Research Council of Canada, IRAP program and the Technology Commercialization Program, Province of Manitoba.

Chlorine dioxide, or ClO₂, is an extremely effective and powerful biocide. It also functions via an oxidative rather than a chlorinating reaction, thus eliminating the formation of chlorinated organic compounds that may increase the risk of cancer in consumers. Since its effects are longer lasting than chlorine, a smaller dosage of ClO₂ is

required. Finally, ClO₂ is generated on site, thereby eliminating the need for site storage and/or transportation of chlorine.

Other advantages of using chlorine dioxide rather than chlorine in municipal water treatment include:

- the bacterial efficiency is relatively unaffected by pH values between 4 and 10;
- ClO₂ is superior to chlorine in the destruction of spores, bacteria, viruses and other pathogen organisms on an equal residual basis;
- the required contact time for ClO₂ is lower;
- chlorine dioxide has better solubility;
- ClO₂ destroys phenols (carbolic acids) and has no distinct smell; and
- chlorine dioxide is better at removing iron and manganese compounds than chlorine.

Ivan Bruneau, CAO for the RM of Victoria, says the system is working very well and the officials and the citizens of Holland are quite happy with the results. The RM is now involved in the licensing process with Manitoba Conservation, having received conditional approval for the system.

Talks concerning the system began back in November of 2002 at the AMM Convention and Trade Show. Yvon says, "That is where **Jerry Cousin** of J.R. Cousin Consultants introduced us to **Peter Hombach** of Osorno. After much discussion and testing, the system was installed during the last

week of July of this year."

Jerry Cousin speaks highly of the simple, self-contained chlorine dioxide system. He says, "In a number of Manitoba municipalities, chlorine is not compatible with the well water in that higher doses are required to achieve the free chlorine residual (making the water safe for consumption). That was the case in Holland. Citizens were complaining about the odor and taste of chlorine, but more chlorine was required to achieve the free chlorine residual required by Manitoba Conservation."

Many tests were carried out whereby differing levels of chlorine and chlorine dioxide was used to disinfect Holland's water – all the time in keeping with provincial guidelines. Even now, there is still some chlorine in the water supply. Jerry adds, "The chlorine may be eliminated entirely if that is the wish of the residents. First, though, licencing must be approved, and then any adjustments of the chlorine level must coincide with provincial regulations."

Osorno's Peter Hombach says the advantages of chlorine dioxide are overwhelming. "The process has really caught on in the US in the past 15 years. Now, it will be benefiting Canadians. An abundance of iron and manganese in well water is a common problem throughout the prairies, so the future for chlorine dioxide looks very promising."

It appears that the residents of Holland, Manitoba agree. ●

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