

Global Lessons on Water Reuse for Industrial Applications in Alberta

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Heavy industrial water users have cited water scarcity and quality as key risk factors impacting operations and revenue. However, water scarcity is no longer the sole driver for water reuse and related recycling strategies. Industries are increasingly challenged to reduce their environmental footprint, adhere to more stringent wastewater discharge standards and be held accountable to the public for their overall water management.

This presentation will discuss global trends in water reuse, examine the risks and opportunities they pose to industry and how these are applicable to the Alberta market.

The market has evolved

The North American market for water reuse has undergone an evolution from landscape and agricultural irrigation, to an increased focus on indirect potable and industrial reuse. Several large reclamation facilities such as the West Basin Water Recycling Facility in California are providing customized recycled water that meets the unique needs of municipal, commercial and industrial customers, including Reverse Osmosis water for industrial applications.

Industries are increasingly facing water related risks including physical, regulatory and reputational risk. Water scarcity and a lack of quality water are significant physical risks that can disrupt production, alter industrial processes, or even cease operations. Success stories have emerged, as in the case of Kraft Foods who have managed to reduce water use by 21 percent since 2005. However, several large bottling facilities worldwide, such as Coca-cola, have had to shut down production facilities due to a lack of a reliable, quality water supply. Industries around the world are being faced with more stringent regulatory standards both on the amount of freshwater used and the quality of the wastewater discharged. Compliance to these standards has significantly raised the cost for water management in the industrial sector. Additionally, the public is becoming more conscious of the social and economic costs associated with water and the global water supply crisis. Industries are accountable for their water usage and are facing increased public pressure to minimize usage and maximize efficiency.

Lessons from mature reuse markets

If we consider mature reuse markets for an indication of how we should manage water supplies in Alberta, we can uncover some key lessons. Regions like Australia and the Southwestern United States are examples of areas that have been forced to implement reuse initiatives to ensure sustainable water management. Technology in some cases has proven to be the answer. As new reuse technologies are implemented over time, these solutions are becoming more affordable. The price of membrane technology for example decreased significantly over the last 10 years while improving in efficiency.

Reuse in Alberta

Alberta is already facing water concerns that directly impact industry. Water scarcity challenges in the southern region are forcing municipalities and industry to look for new ways to manage water. Water quality issues are prevalent in Northern Alberta, prompting government to propose a water management framework for the North Saskatchewan River that will regulate both water diversion and discharge. This presentation will discuss these concerns and explore solutions to enhance sustainable development in Alberta.

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Dr. Stanley holds a B.Sc. in Civil Engineering, a M.Sc. in Water Resources Engineering and a Ph.D. in Environmental Engineering all from the University of Alberta.

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Prior to joining EPCOR, Steve was a professor at the University of Alberta in the Department of Civil and Environmental Engineering.

He is the author of two books and numerous journal articles, conference papers and technical reports. He is the principle investigator on two AWWARF projects related to the automation of water treatment plant operations.