

MOUNTAIN-PLAINS CONSORTIUM

RESEARCH BRIEF | MPC 18-363 (project 499) | September 2018

Reuse of Aqueous Waste Streams in Transportation Related Applications



the **ISSUE**

South Dakota has a variety of industries that produce aqueous waste streams including municipal drinking water and wastewater treatment processes, food and beverage processing, ethanol production, and oil and gas extraction activities. Many of these waste products potentially can be used for pavement anti-icing and deicing, dust control, cement production, or as filling materials. Beneficial reuse of waste streams in transportation applications requires a comprehensive evaluation of the effectiveness, safety, economics, environmental benefits and risks, and adherence to local, state, and federal regulations.

the **RESEARCH**

This research identified potential transportation - related applications for the waste streams generated from commercial, industrial, and municipal processes in South Dakota. Guidance was developed for SD Department of Environment and Natural Resources to produce formal guidelines for regulating beneficial reuse of aqueous waste streams in South Dakota. The guidance considers the effectiveness, safety, processing requirements, economics, and environmental benefits and risks of the aqueous waste streams. A case study was conducted to evaluate the feasibility of beneficial reuse of the MIEX® brine waste stream generated by the Watertown Municipal Water Treatment Plant for transportation - related applications according to the guidance developed for reusing waste streams.

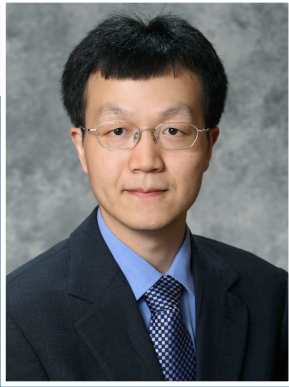


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Project Title

Reuse of Aqueous Waste
Streams in Transportation
Related Applications

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the FINDINGS

The analysis of MIEX® brine showed that it can be used as a feed solution for brine making at the SDDOT maintenance shops, and the final brine product can be used for anti-icing and deicing during the winter.

the IMPACT

The results of this research could help transform waste streams that are now environmentally hazardous and financially expensive to dispose of into valuable materials for transportation-related applications. This research developed guidance to describe best practices for evaluating and regulating the use of waste streams in transportation applications in South Dakota. This guidance can be used by state agencies to manage the reuse of waste streams for transportation applications. Beneficial reuse of the MIEX® brine and other waste streams for transportation applications will reduce the consumption of natural resources and reduce the costs associated with waste management, treatment, and disposal.

For more information on this project, download the entire report at <http://www.ugpti.org/resources/reports/details.php?id=923>

For more information or additional copies, visit the Web site at www.mountain-plains.org, call (701) 231-7767 or write to Mountain-Plains Consortium, Upper Great Plains Transportation Institute, North Dakota State University, Dept. 2880, PO Box 6050, Fargo, ND 58108-6050.



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