"A Nice Fracking Solution," Phase III: The Implementation of a Testing Protocol to Test De-Icing Qualities of Fracking Salt Pellets When Compared to Road Salt (NaCl) and to Test Plausibility of Implementation of Fracking Salt Pellets as a Possible Northern Road De-Icer

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The process of fracking, although very beneficial to our lifestyle and economy, can be harmful to the environment and aquatic ecosystems (Dindorf, 2008). Hagen (2015) reports that chloride salts, found in fracking flow back water, can be solidified into salt. The goal of this project was to create a testing protocol to test the de-icing quality of fracking salt pellets when compared to road salt (NaCl) and to test the plausibility of implementing fracking salt pellets as a possible northern road de-icer. For the first experiment, brine and solid salts were mixed with ice cubes in a modified and insulated martini shaker in order to compare the amount of ice melted by fracking and road salts. For the second experiment, a liquid deicer was sprayed onto an ice coated concrete surface in order to test its dissolving ability in relation to the coefficient of kinetic friction between rubber and concrete. The original hypothesis was if fracking brine and solid deicers are compared to road salt, melt-ability of ice and coefficient of kinetic friction of fracking and road salt brine and solid deicers will be similar. The hypothesis was partially supported. The coefficient of friction was significantly higher for fracking brine when compared to road brine. Fracking salt solid was significantly higher in mass ice melted than all other de-icers. Overall, the data from our project supported the use of these salts along with or instead of road salts as an environmentally friendly and cost-effective way to reuse and recycle them.

Awards Won: