ABSTRACT

TITLE:	The Environmental Effects of Road Salts: A Focus on Magnesium Chloride and Durango, CO
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ABSTRACT: Roads all over the United States require a considerable amount of maintenance depending on the location and time of year. In particular, during the 1941 winter months the United States began to apply a total of 5,000 tons of road salts all over the country. The effectiveness of road salts was and still is to this day significant in dealing with winter driving conditions and has made roads safer for drivers all over the country. In addition to their use as a deicing agent, they have also been used for dust suppression on non-paved roads as a means of decreasing dust levels in the air. The main salts applied include Magnesium Chloride (MgCl2), Calcium Chloride (CaCl2) and Sodium Chloride (NaCl), all of which have been documented in exhibiting adverse affects towards the environment. Many of them have led to high levels of Chloride, Magnesium, Calcium and Sodium within watersheds, aquatic ecosystems and roadside vegetation. Salinity has increased as well within fresh water systems and may even pose a threat to drinking water resources in certain areas depending on location and geological settings. Although the tribulations exist, the amount of research is minimal and the current research suggests that the level of positive impacts from applying the salts outweigh the negatives. The Environmental Protection Agency (EPA) does not have regulations for road salts, although they encourage proper management of the application of them. In addition, the environmental affects must be strongly considered when using them in large quantities. This paper looks specifically at MgCl2 as a road salt both in the literature research provided and personal sampling. Chosen samples were taken of the water and soil around the snow pile where Durango, Colorado, dumps their annual winter snow. Some levels were noted higher than others particularly magnesium at 5200 ppm in the water sample compared to the water control at 3110 ppm. Due a lack of baseline data regarding natural levels of magnesium and chloride within watersheds, these results could not be compared to or concluded as "toxic" or "alarming". Further research is required to better understand the possible effects road salts may have on the environment and specifically magnesium chloride.