

Award Number: PR/J Number: R1344100005

PROJECT ABSTRACT

Colorado Plateau Cooperative Ecosystem Studies Unit (Cooperative Agreement # H1200-09-0005)

Park: Arches National Park

Project Title: Ecological Effects of Magnesium Chloride as a Dust Suppressant

Funding Amount: \$30,355

CPCESU Partner Institution: Utah State University

Principal Investigator: Mark Brunson, Professor & Department Head
Environment and Society
Utah State University, Logan, UT 84322-5215
(435) 797-2458
Mark.Brunson@usu.edu

Co-Investigator: Scott L. Hoffmann, Doctoral Student in Ecology
Utah State University
Ecology Center
5215 Old Main Hill, Logan, UT 84322-5215
Phone: 435-881-1351
scott.hoffmann@aggiemail.usu.edu

NPS Key Official: Jeff Troutman, Resource Management Division Chief
2282 S. West Resource Blvd., Moab, UT 84532
435-719-2130 office, 435-719-2300 FAX
Jeff_troutman@nps.gov

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End Date: September 30, 2012

Abstract: The proposed research will investigate the following: 1) the extent to which $MgCl_2$ and its ionic constituents Mg^{2+} and Cl^- are transported by wind and water away from unpaved roads on which it is applied; 2) the current community composition of vegetation in experimental onsite/roadside areas of $MgCl_2$ application; 3) qualitative and quantitative evaluations of onsite/roadside vegetation health; 4) qualitative and quantitative evaluations of offsite vegetation health at established distances away from the treated roadway, based on extent of transport and on landforms present; 5) the onsite and offsite factors that may influence observed changes in

soil and vegetation health, and develop a state-and-transition model for the experimental system; and 6) laboratory greenhouse studies to quantitatively examine the effects of $MgCl_2$ application in a controlled setting. The final and broader objective this research will meet will be to collaborate with NPS personnel to develop a long-term monitoring protocol and best practices management guidelines for the future application and environmental impact assessment of $MgCl_2$.

Keywords:

Soil- contaminants, Anthropogenic Issues- Land use, Hydrology- contaminants, Hydrology-soil interactions, Vegetation- surveys/monitoring, Vegetation-exotic vegetation