Soil-Geology Selenium Relationships in Disturbed and Native Ecosystems. (S11-vance215150-Poster)

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Abstract:

Soil-geology Se relationships were evaluated at Fort Carson Military Reservation located east of the Rocky Mountain Front Range in southeastern Colorado. The military base covers approximately 56,000 ha (138,000 acres) with assorted Se-containing geological formations. We studied soil-geology relationships that potentially contribute to Se distribution and transport by developing 43 descriptive mapping units (DMUs) that included similar GIS coverages for geology, soils and vegetation. Soil samples collected from 92 sites represented DMUs that covered 99% of the study area. Identification of specific geologic formations and related soil series indicated that soils with Se levels above the 0.5 mg/kg extractable Se suitability criteria were formed on parent materials primarily of Cretaceous-aged shales and Quaternary-aged alluvium underlain by Cretaceous-aged shale. Seleniferous soils were predominately calcareous clays, silts and loams, or sediments derived from shales and eolian deposits. Identification of areas likely to support seleniferous soils (e.g., low-lying areas within the landscape, soils formed in Cretaceous-aged fine-texture shales in close proximity to water) would be useful for making management decisions regarding revegetation and/or remediation programs.

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