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# Origin of Magnesium Clays from the Amargosa Desert, Nevada

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**Abstract:** Deposits of sepiolite, trioctahedral smectite (mixed-layer kerolite/stevensite), calcite, and dolomite, found in the Amargosa Flat and Ash Meadows areas of the Amargosa Desert were formed by precipitation from nonsaline solutions. This mode of origin is indicated by crystal growth patterns, by the low Al content for the deposits, and by the absence of volcanoclastic textures. Evidence for low salinity is found in the isotopic compositions for the minerals, in the lack of abundant soluble salts in the deposits, and in the crystal habits of the dolomite. In addition, calculations show that modern spring water in the area can precipitate sepiolite, dolomite, and calcite following only minor evaporative concentration and equilibration with atmospheric CO<sub>2</sub>. However, precipitation of mixed-layer kerolite/stevensite may require a more saline environment. Mineral precipitation probably occurred during a pluvial period in shallow lakes or swamps fed by spring water from Paleozoic carbonate aquifers.

**Key Words:** Dolomite • Kerolite • Mixed layer • Precipitation • Sepiolite • Smectite • Stevensite

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