

Volatilized extraterrestrial Zn isotope signatures in marine and terrestrial K-Pg boundary sites

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Zn isotopes and concentrations were measured in four well-studied K-Pg boundary sites in both terrestrial and marine settings. Higher Zn isotope values occur in the boundary sediments in comparison to the surrounding sediments. Interpretation of the Zn isotope values in the marine sediments is complex but can be explained by a variety of hypotheses because the values lie within the mean value for continental crust. However, the Zn isotope values measured from terrestrial depositional environments are slightly greater than carbonaceous chondrites and trend toward tektites. No Earth-derived process imparts this signature onto rocks. A simple binary mixture of two end-member compositions that most likely compose the majority of Zn in the boundary sediment, a carbonaceous chondrite component and tektites, explain the measured value. Therefore, the evidence supports the notion that sediment within the boundary originated from extraterrestrial sources mixed with materials that changed due to volatilization induced by the meteor strike.