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## Is the Ogallala a Geochem Villain?

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### ABSTRACT

The most frequently asked question in connection with surface geochemical exploration is "What happens in the overburden to alter the signal at the surface?" Since surface geochemical analysis is coming into the mainstream of oil exploration, the question needs an answer.

The Ogallala aquifer extends across the north half of the Permian basin and varies from zero to 450 ft in water-saturated thickness. This paper addresses one of the facets of the overburden question - What effects do aquifer of varying thickness have on geochemical concentrations at the surface? In particular, how does it affect the distribution of hydrocarbon gases?

A series of profiles were sampled in Dawson County across abrupt changes in water-saturated thickness of the Ogallala aquifer, as documented by numerous irrigation wells. The results proved to be worth the expense of the study.

Subsequent studies by New Paradigm Exploration will address the effects of earth tides on the rate of vertical migration; quantify the sensitivity of geochemical instruments to identify by-passed oil, and virgin pressure in a producing field; and, tack waterflood performance.