

EVALUATION OF NITRATE IN GROUNDWATER SOUTH OF TUCSON, ARIZONA

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Abstract

Levels of nitrates in excess of the US EPA standard of 45 mg/l were found in well water south of Tucson, Arizona. Most groundwater in this area with high nitrate content is beneath lands presently or formerly irrigated. The highest nitrate contents are present in the upper several hundred feet of the aquifer suggesting a source at the land surface. Nitrate contents in water from most wells in the study area were less than 7 mg/l in the late 1940's, but by the mid-1960's the nitrate level exceeded 25 mg/l in most wells. In the summer of 1982, more than 12 wells exhibited water with a nitrate content exceeding 45 mg/l. Analytical techniques included assessment of pollution sources at the land surface, chemical indicators such as chlorides, nitrogen and oxygen isotopes, and evaluation of the hydrogeologic conditions in the study area. Sources of nitrate contamination included sewage effluent disposal into the Santa Cruz River, historical irrigation practices, septic tank area, and an abandoned hog farm.