

Procedures for Developing a Depth-to-Ground Water Database. Spurlock, F. EH 00-02. 2000.

Abstract

The Environmental Hazards Assessment Program of the Department of Pesticide Regulation (DPR) has developed statistical procedures for identifying soil and climatic characteristics of sections of land that are vulnerable to ground water contamination by pesticides (Troiano et al., 1998). Analysis of historical ground water monitoring data has also shown that depth to ground water (DGW, distance from the ground surface to first unconfined water, if any) is related to frequency of pesticide detection in ground water, especially for shallower DGW (Fig. 1). Consequently, EHAP's proposed CALVUL model to describe California's spatial vulnerability to ground water contamination includes DGW as one condition for determining spatial vulnerability. The CALVUL model has been used to focus EHAP's monitoring efforts (Troiano et al., 1999) and as the basis for identifying areas where modification of pesticide use practices will be required to mitigate ground water contamination by pesticides.

The depth-to-ground water (DGW) data in the EHAP DGW database are a relative measure of the depth-to-ground water at any given time. The relationship to vulnerability (as indicated by detection frequency) is based on the relative DGW of different sections. The current EHAP California DGW database (November 1999, Fig. 2) was developed from approximately 260,000 spring DGW measurements collected since 1987. These raw data were geostatistically analyzed to determine spatial autocorrelation so that optimum interpolation methods could be applied to generate sectional average DGW estimates. The data in the DGW database represent relative spring average sectional DGW estimates; they are not necessarily equal to actual measurements at any particular point in time and space due to the seasonal and annual variations in depth to ground water; however, the data should approximate the local depth to ground water in spring months.