# ASSESSING THE OCCURRENCE OF PESTICIDES AND VOCS IN GROUND WATER IN A HUMAN-HEALTH CONTEXT

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A State-scale pilot effort was conducted to enhance the understanding of the potential human-health importance of ground-water-quality data collected as part of the U.S. Geological Survey's National Water-Quality Assessment Program. Ground-water samples collected from 30 public-supply, 82 domestic, and 108 monitoring wells in New Jersey were analyzed for 97 pesticides and 85 volatile organic compounds (VOCs). For 32 of the 98 compounds detected, no U.S. Environmental Protection Agency (USEPA) drinking-water standards or guidelines exist. However, new Health-Based Screening Levels (HBSLs) were calculated for 12 of these 32 compounds using USEPA toxicity values and USEPA Office of Water methodologies. The new HBSLs increased the number of detected compounds with human-health benchmarks from 66 to 78 (of 98), thereby improving the basis for determining the potential importance of the water-quality data to human health. Measured concentrations of regulated and unregulated compounds were compared to Maximum Contaminant Levels (MCLs) and HBSLs, respectively. Benchmark Quotients (BQs), defined as ratios of measured concentrations to MCLs or HBSLs, were calculated for compounds detected in each well type. Compounds were identified as being of potential human-health concern if maximum detected concentrations were within a factor of 10 of the associated MCL or HBSL (that is, BQmax $\geq$ 0.1) in any well type. Most (78 of 98) pesticides and VOCs were detected at concentrations well below these levels (BQmax < 0.1). However, BQmax was greater than or equal to 0.1 (range, 0.1 - 3,000) for 6 pesticides and 14 VOCs. Of these 20 compounds, 4 compounds (dieldrin, 1,2-dibromoethane, tetrachloroethylene, and trichloroethylene) (1) had measured concentrations that met or exceeded MCLs or HBSLs and (2) were detected in more than 10 percent of samples collected from raw ground water used as sources of drinking water (public-supply and (or) domestic wells), and therefore are the most relevant to human health.

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