

**PESTICIDE AND DEGRADATE CONCENTRATIONS IN A CLOSELY LINKED  
GROUND WATER–SURFACE WATER SYSTEM IN A SAND AQUIFER:  
INITIAL COMPARISONS**

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Significant hydraulic exchange occurs between ground water and lakes on the Lake Wales Ridge, a 700-square-mile region in central Florida that contains more than 200 seepage lakes<sup>3</sup>. Due to seasonally high precipitation, extensive citrus agriculture, and highly permeable sandy soils, the Ridge is particularly vulnerable to leaching of agrichemicals. Pesticide concentrations in both ground- and surface-water in this region relative to national monitoring data confirm this vulnerability. Sampling of four Ridge lakes in 2003 and 2004 and of ground water (surficial aquifer) from 31 wells from 1999 through 2004 indicated regional patterns in concentrations of several pesticides, including simazine, norflurazon, and aldicarb, and their degradates. Median concentrations of both pesticides and degradates were typically lower in lakes than in ground water. This pattern is likely due to increased opportunity for biogeochemical degradation (including photolysis), sorption, and dilution of pesticides within the lakes compared to the ground-water system. The ratios of pesticide degrade-to-parent concentrations were higher in lakes than in ground water, which is consistent with degradation occurring as ground water moves through the subsurface into the lakes and with chemical breakdown and sequestration within the lake systems. Consistent detections of parent compounds in the lakes indicate incomplete chemical breakdown in the lake systems, relatively rapid ground water transit times, and possible atmospheric deposition. The next phase of study will include quarterly sampling in additional lakes to further explore the seasonal and spatial consistency of these relations in the Ridge ground water – lake systems.

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<sup>3</sup> Lakes which are fed predominantly by ground-water inflow as opposed to surface-water inflow.