

Water research shows positive results for courses

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Of 906 database entries for surface water, nitrate was found in 706 instances at an average concentration of 0.5 ppm.

Further, in ground-water monitoring for pesticides, Cohen said researchers found 160 detections in 12,214 data entries. "The typical detection limit," he said, is 1 part per billion (ppb), while some detection limits were at 1/10th ppb. Nine of the detections exceeded HALs or MCLs.

"We have wells next to tees. We have tests from drains under greens. These are not drinking-water wells in bedrock," Cohen pointed out.

Surface-water monitoring discovered that in 2,731 entries, pesticide

levels exceeded MCLs or HALs five times, or 0.02 percent. Nineteen of the entries (0.7 percent) exceeded aquatic MACs (Maximum Allowable Concentrations for aquatic organisms). The average concentration was 0.07 to 6.8 ppb, Cohen said, depending on how non-detections were counted.

The most frequently detected chemicals in ground water were 2,4-D, fenamiphos/f. sulfoxide (found in Namacur) and arsenic, he said. Atrazine, fenamiphos, diazinon and 2,4-D were the most-often detected chemicals in surface water.

The 2,4-D levels are not a concern because, although it is very mobile, it has a very short half-life and con-

centrations are usually very low, Cohen said. "And, in some cases, it may not have been from golf course use. In two places where it was detected those courses do not even use 2,4-D. And it can easily be misidentified by labs."

Saying the current study is based mostly on worst-case locations for wells and other test areas, he said, "One could infer that similar golf course studies would indicate a significantly reduced impact relative to agriculture."

Cohen intends to make his recommendations to the GCSAA and publish his findings in a peer-reviewed journal as well as in the GCSAA's *Golf Course Management*.

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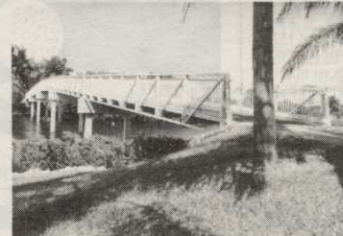
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