Lake herbicides reach onshore wells

Each year, Michigan officials grant permits for treating some 10 percent of the state's 11,000 lakes with herbicides. One chemical, commonly applied to eliminate Eurasian milfoil and other invasive weeds, is 2,4-D. This toxicant gained notoriety as a defoliant used by U.S. troops in Vietnam and as a possible carcinogen (SN: 9/13/86, p. 167).

In late 1996, researchers with Michigan's Department of Environmental Quality in Lansing monitored three wells for herbicides immediately after a nearby, small lake was treated with the chemicals in amounts allowed by state law. On the basis of the findings of an earlier study, "we thought we would be lucky to see anything," recalls Joseph L. Lovato, a geologist on the team.

Commercial herbicide applicators and owners of lakes also expected to see no residues. Indeed, before the new study, they had asked the state to eliminate the mandatory several-hundred-foot setback for wells near treated areas of a lake.

As it turned out, the herbicides 2,4-D and endothall tainted the well water within just a few days in amounts that continued to climb for another 7 weeks. The pollutants remained detectable for 200 days. More importantly, 2,4-D peaked at 595 micrograms per liter of well water—seven times the maximum allowed by the U.S. Environmental Protection Agency. Brant O. Fisher, a coauthor of the new study, reported the findings last month at a National Ground Water Association meeting in Chicago.

Though the monitored wells weren't deep and were relatively near the lake, the soils around them were less porous than those in many Michigan areas, notes Lovato. So, where the ground is more gravelly, the chemicals might migrate even faster and further. However, he adds, lakelanders shouldn't panic. Subsequent tests in wells near other lakes treated with 2,4-D showed no similar tainting with the chemical. Clearly, Lovato says, local geology can play a big role in a well's vulnerability to pollution. —*J.R.*

Power lines rewire avian hormone

Birds roosting along high-power electric-transmission lines may get more than a lofty perch. A new study suggests they may also undergo a shift in biochemical signals controlled by melatonin, the nighttime hormone that sets their biological clocks.

Kimberly J. Fernie of McGill University in Quebec City observed that several conservation groups had begun providing platforms on transmission-line towers for roosting raptors. She and her colleagues duplicated the conditions on the platforms by exposing captured American kestrels to electromagnetic fields (EMFs) of 30 microteslas throughout two breeding seasons.

Ordinarily, the concentrations of melatonin in males' blood drop gradually during the roughly 70-day breeding season. However, a decline that normally takes 10 weeks in unexposed males happened in 6 weeks in the EMF-exposed birds, Fernie reports. Although adult females appeared unaffected by the fields, fledglings of pairs that had roosted for two breeding seasons in the EMFs also produced less melatonin than normal, her team reports in the November ENVIRONMENTAL HEALTH PERSPECTIVES.

Fernie says her findings suggest that "the birds might be responding to the EMFs as if they were light." Although the degree of melatonin suppression was only moderate, she would like to investigate whether it's shifting the birds' calendar in ways that might affect migration or other seasonal changes. —*J.R.*