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## Many farm wells contaminated, new study confirms

By Jim Romahn  
Record staff

A second province-wide survey of 1,245 farm wells has confirmed that more than a third are contaminated with coliform bacteria at levels that health officials consider a threat to human health.

Health officials say coliform bacteria are not the main threat, but their presence is a warning of other, more dangerous disease-causing bacteria and viruses that could be in the same water.

While the percentage of contaminated wells has remained about the same, some of the wells that were fine in the first survey, in the late fall and early winter of 1991, were contaminated by the time of the second survey last July.

The survey included wells in Waterloo Region, and the counties of Wellington, Perth, Bruce, Grey and Huron.

"We like to think people took action" after they got the results from the first round of tests, said Harold Rudy of the Ontario Soil

and Crop Improvement Association.

Only 60 per cent of those wells contaminated in the first survey were still contaminated with coliform bacteria this time around.

Michael Goss of the University of Guelph said some farmers drilled new wells and others who had two on the farm switched after the 1991 results came out.

Based on that, Goss felt the second survey would have shown a decline to about 20 per cent of the wells.

But in fact a lot of wells that were fine the first time showed up as contaminated with coliform bacteria last July. Goss said that also "tells us the incidence of bacterial contamination is rather ephemeral" and serves as a warning to rural people to keep checking the quality of their well water.

According to the World Health Organization, water is unfit for human consumption if it contains 10 colonies of total coliform bacteria in 100 millilitres of water. Some wells tested at 80 colonies per 100 ml, the maximum upward limit for the test.

There are two types of coliform bacteria, one associated with rotting plants, the other called fecal coliform that are associated with manure from livestock, poultry and people.

This time, 26 per cent of the farm wells exceeded national tolerance levels for fecal coliform, up from 20 per cent in the first survey.

The rate of nitrate contamination remained about the same – 14 per cent compared with 13 per cent – but the concentration increased.

Goss said he's not surprised that the incidence remained the same because nitrates move slowly through the soil, but he said it is worrisome that concentration levels increased. It remains to be seen whether that's a seasonal difference or reflects a long-term trend, he said.

Rudy said the survey results continue to confirm what experts expected, based on similar surveys in the U.S. and parts of Ontario.

The article EM9316 reprinted above is used in Chapter 17 of the STAT 231 Course Materials and in Figure 2.19a of the STAT 332 Course Materials.