



David Creamer/Sower

"It's kind of embarrassing to be sitting here after 40 years of nitrate problems and not be able to say anything about it," she said.

Health concerns about nitrates are not confined to humans. Twenty to 30 percent of cattle owners have problems with nitrate poisoning of their animals, said Paul Guyer, beef specialist with NU's Cooperative Extension Service.

Guyer said that nitrates in water alone are rarely a problem when the level is below 100 ppm. Combined with high levels in feeds, however, nitrates can cause abortions and death in livestock.

Nitrates can get into the groundwater from many sources. At Glen Huebert's farm, the source of the nitrate pollution can be traced to one place — the lagoon for hog manure just 150 feet from the well.

Natural plant decay, animal and human wastes and nitrogen fertilizers all can produce nitrates. But human practices, not natural sources, cause most nitrate pollution, said Beth Rowan, a hydrogeologist with the state Department of Environmental Control.

According to a 1984 DEC study of groundwater pollution, septic tanks and feedlots are the major causes of "point-source" nitrate pollution. In Elmwood, for example, nitrates in the town's wells were traced to a barnyard on the east edge of town.

Nitrate levels in the groundwater in southeastern Nebraska vary widely among neighboring wells. The DEC study found that point-source

pollution causes most of the nitrate contamination in the area.

Along the Platte River valley, between Kearney and Columbus, and in Rock and Holt Counties in north-central Nebraska, nitrate levels in groundwater are high throughout the region.

In these two areas, the DEC study says, applied nitrogen fertilizers are the source of nitrate pollution.

Extensive use of fertilizers, combined with irrigation, is the main cause of high nitrate levels in groundwater, said Bill Lock, a legislative research assistant.

Ideally the fertilizer applied to crops would be used by the growing plants and it would re-enter the natural cycle. However, if the amount of fertilizer applied is more than the plant can use, rain or irrigation water can wash the fertilizer into the ground below the plant's roots.

Then it is only a matter of time before the nitrates are carried into the groundwater.

Nebraska's present system of farming depends on the use of fertilizer. The problem of nitrate pollution arises from the numbers of farmers who use fertilizer, especially those who use too much fertilizer, Lock said.

Until recently farmers assumed that if a little fertilizer worked well, a lot would be even better, said Gordon Kissel, executive director of the Nebraska Association of Natural Resources Districts. Often the cost of adding that "little bit extra" is less than the possible loss of yields from using too little fertilizer. And it is cheaper to put on a lot at once, even if some is washed away,

than to apply lesser amounts several times.

Agricultural experts were of little help to farmers who wanted to know how much fertilizer to use. In 1983, the University of Nebraska-Lincoln agronomy department compared fertilizer recommendations from different laboratories for four test plots. Some recommendations called for twice as much fertilizer as others.

In addition, farmers often get advice on fertilizer application from their fertilizer supplier, said Scott Moore, aide to state Sen. Rod Johnson of Sutton. The supplier may have an interest in heavier use, Moore said.

The rate of build-up in groundwater depends on the type of soil and the groundwater level in an area. The nitrates appearing in Nebraska wells today may have been building up for 10 or 20 years, Rowan said.

The solutions to such nitrate pollution are controversial. Once into the groundwater, experts agree, nitrates are hard to get back out.

A common misconception about groundwater, Rowan said, is that there is some pool of water lying in an underground cavern. In a few states that is true, but Nebraska doesn't have any underground rivers or lakes. Instead, groundwater fills the spaces between the particles of soil, sand or gravel or squeezes into cracks in the bedrock.

It's basically "saturated earth," Lock explained.

Given enough time, said Gale Hutton, chief of the DEC's water division, groundwater will clean

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