

Evergreen E. coli outbreak traced to elk droppings

By **Bill Scanlon**, Rocky Mountain News (Denver)
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The mystery behind the E. coli outbreak southwest of Denver started clearing up when all eight sickened children said they liked playing outdoors — in elk country.

The medical enigma culminated in a decision by some coaches to cancel last week's midget football games in Evergreen — on fields close to where elk graze.



A pile of elk droppings neat the football field, on Buchanan Field, Evergreen Parkway, Tuesday afternoon.



Elk droppings on the grass at Buchanan Field, Evergreen Parkway, Tuesday afternoon, November 11, 2008, Evergreen. The mystery behind the E. coli outbreak southwest of Denver started clearing up when all eight sickened children said they liked playing outdoors -- in elk country. The medical enigma culminated in a decision by some coaches to cancel last weeks midget football games in Evergreen -- on fields close to where elk graze.

Photos by Ken Papaleo © The Rocky

"We track every case of E. coli 0157:H7," Gayle Miller, senior epidemiologist with Jefferson County Health and Environment, said. Usually, the outbreaks are so sporadic that no useful links can be made.

This time, though, she found eight cases of the same strain. All eight kids were between 4 and 12 years old — six from Jefferson County and one each from Park and Clear Creek counties.

"We knew we had a cluster," she said.

Next, she and her staff used a relatively new test, Pulse Field Gel Electrophoresis, and found that not only was the strain the same, but each child's E. coli had almost identical genetic markers.

She and her staff interviewed the kids to see if they could find a pattern.

"All did say they spent some time in the Evergreen area," Miller said. They all were close to elk country, either through sports teams or spending time in parks.



Elk droppings in the Evergreen area tested positive for the same strain of *E. coli* that sickened eight children.

Photo by Dennis Schroeder © The Rocky

Trouble is, there has never before been a direct link between deer a human's *E. coli* to deer and elk. The closest has been cases in which humans get waterborne *E. coli* after deer or elk have contaminated streams or lakes.

Still, Miller decided to test the elk feces in Evergreen close to where the kids said they played.

"We were looking for a needle in a haystack," she said.

"Lo and behold, we found it."

The *E. coli* in the elk had the same genetic markers as the *E. coli* in the sickened kids.

"That means the kids got the *E. coli* from the elk," she said.

How? Who knows, but one likely scenario is that their shoes got smeared with elk feces. Later at home they took off their shoes, then, say, ate an apple before washing their hands.

E. coli is a bacterium that is a leading cause of bloody diarrhea, and kids tend to get sicker than adults. Typical outbreaks are traced to poorly cooked hamburger or unwashed vegetables such as lettuce, or to contaminated water.

"This is the first time all the pieces have been put together — showing the epidemiology, correlating it with an infection and finding the same organism in the elk," she said.

Miller's office didn't insist that the sports teams cancel their games. But since it was toward the end of the season, the coaches decided to cancel last weekend's games as a precaution, she said.

"The best thing is just to be aware of the risks and take precautions," she said. "The main thing is to learn how to live safely together" — human and elk, she said. "Not necessarily to focus on one park or one field."

Jefferson County Health and Environment will continue to preach the sermon of frequent hand-washing, and speak of the extra risk for those in elk or deer country.

Meanwhile, the Evergreen case has generated a lot of interest among epidemiologists nationwide.

It's a favorite topic among members of the Program for Monitoring Emerging Diseases, also known as ProMED-mail, an organization of epidemiologists.

"Today's lab results tell us it is very likely the children acquired the *E. coli* infection from exposure to elk droppings in the environment," Alicia Cronquist, epidemiologist at the Colorado Department of Public Health and Environment, said in a posting to the site. "This is a highly unusual situation, and public health officials are continuing to investigate how the elk in the area may have been exposed."

Others said it is still possible that while the elk were the source, the kids may have picked it up from water that the elk were grazing in that hadn't been thoroughly treated.

The kids have all recovered or are recovering.

The elk carry the *E. coli* but don't get sick themselves.