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# The Dickson Heri

FRI 9/22/00

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## Study points to cleft defect cluster

Landfill, business could have triggered deformities via chemical solvent release

By KIM CONNER  
Staff Writer

A national birth defects research group has identified two major toxins in Dickson County that may be the cause of an inordinate number of cleft deformities.

Toluene and trichloroethylene (TCE), both manmade chemical solvents, are triggers for the birth defect

that occurs during the first trimester of pregnancy. Both have been found in Dickson County, said Betty Mekdeci, director of Orlando-based Birth Defect Research for Children.

According to information presented to parents of children with the oral cleft defects, TEC was found in a private well in 1991 and in a public well and the public water supply of Dickson in

1997. The chemical is of main concern because studies have indicated a possible association between TCE in drinking water and increases in oral clefts and other birth defects, Mekdeci said.

"In my opinion, from the documents I have seen, the landfill should be closed," Mekdeci said. "It (the studies) certainly doesn't make you feel good."

If TCE is found to be the etiology behind the cleft defects, said Mekdeci, "then the likelihood is that it is causing more."

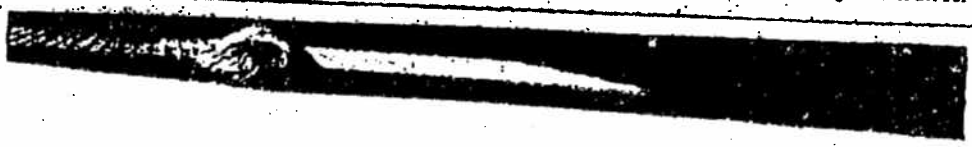
Though drinking water is thought to be the major conduit for TCE into a

pregnant woman's system, more than 50 percent of exposure comes from showering or bathing.

"TCE is lipophilic; it soaks up in your body fat," Mekdeci said. "During pregnancy, your body draws down on your reserves and uses that body fat."

Before any potential cause-effect relationship between TCE and the oral cleft cluster in Dickson can be determined, however, the community would have to prove that each mother was "exposed to contaminated water during the first three months of her pregnancy."

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## Fields turning down shoots

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## Cleft

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cy," said Mekdeci in her report. "The amount of TCE in the water would also have to be high enough to be associated with oral clefts."

"We are aware that there have been minute amounts of TCE found in a spring and have been working towards finding the source," said Jim Linn, director of the county's sanitary landfill. "As of this point, we have not connected a source back to the landfill."

The second chemical of concern is toluene, an industrial solvent. Quebecor Printing, located in the industrial park, is releasing approximately 1.4 million pounds of toluene into the air each year, according to Mekdeci's report. That amount, however, is within the applicable standards for the company, said Ann O'Brien, director of environmental affairs for the U.S. firm's operations.

"We're in compliance with all state and federal regulations, and that includes the most recent and most stringent MAC standards," she said. "Those [MAC] standards were specifically designed to protect community health."

But neither O'Brien, nor Benoit Brasseur, corporate director of environmental affairs for Quebecor Printing, had been informed of the study, nor had they been told toluene could be a trigger for oral cleft deformities.

Toluene, listed as a developmental toxin, can also cause birth defects. Toluene is heavier than air, Mekdeci said in her report to the parents, so releasing it from a smokestack may mean it's not remaining in the upper air.

According to the Environmental Defense (Fund) scorecard, toluene was the major pollutant discarded in Dickson County in 1997, with almost 1.5 million pounds being released. According to the scorecard, Quebecor ranked 90-100 percent as being the "dirtiest" or "worst" of facilities for total environmental releases; at 100 percent for noncancer risk score for air and water releases; and 90-100 percent for air releases of recognized developmental toxins.

A county resident contacted BDRC in March after she noticed "an unusual number of cases of cleft palate" reported in Dickson County. BDRC sent questionnaires to distribute to the families whose children had been identified and began researching the possible links between cases.

Oral cleft defects are expected at a rate of about 1 per 1,000 births, which would suggest two children born with cleft lip or palates, or both. Since 1997, 14 of the 1,700 children born to parents in Dickson County have had cleft lip or palate.

"This is an 800 percent increase over the expected amount," said Mekdeci. "That is impressive. Though it doesn't mean they all have the same cause, it does raise speculation."

After plotting the locations of

each family, Mekdeci said BDRC found they were clustered in the southwestern quadrant of the county.

Oral cleft defects are caused by at least dual factors, Mekdeci said — a genetic predisposition coupled with a triggering factor. The defect, located in the structures of the mouth, is a split or separation in the infant's lip and/or palate. Cleft lip means the two sides of the upper lip did not grow together properly, while a cleft palate is a split or opening in the roof of the mouth.

The defect occurs during the first trimester of pregnancy, usually between the sixth and ninth weeks, Mekdeci explained. During that time, parts of the roof of the mouth and upper lip normally join together. When this joining doesn't take place, a child develops a cleft lip and/or palate. "With birth defects," said Mekdeci, "the most acute defects happen when there is sudden exposure during the critical weeks for a particular development."

While families that have a history of oral clefts are more likely to have children with the defect, it can also occur in families without such a background.

Mekdeci said.

Oral clefts are among the most common birth defects, with more than 250,000 Americans having a cleft condition. Of those, 25 percent have a cleft palate alone; 25 percent only a cleft lip; and 50 percent having both cleft lip and palate.

Parents of children in Dickson

County who were born with oral clefts should send a letter with contact information to "Information," P.O. Box 411, Buras, TN 37029, or one can send an e-mail message to dickson-cleftinfo@aol.com. Parents are encouraged to make contact so further research can be completed.

Researchers believe many factors contribute to oral clefts, with environmental factors interacting with specific genes to interfere with the patterns of normal palate closure and lip development. Besides chemical interactions, scientists are considering reactions to certain drugs, maternal smoking, radiation and vitamin deficiencies as possible triggering agents.

Parents of these children are understandably concerned, Mekdeci said. "They are coming to grips with the increase in clefts in this community," she said. "Finding these triggers puts a different spin on things."

Mekdeci said parents have several choices, including civil litigation and applying for environmental justice grants or Superfund to correct the problem if it is determined. But residents' main objective is to rectify the problem, she said.

"We have to come up with solutions," Mekdeci said. "What kinds of legacy are we going to leave our children if they can't function in normal society?"

The Environmental Protection Agency is slated to investigate the situation within the next month.