

TDEC MISC

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TN Department of Environment and Conservation
Environmental Assistance Center – Nashville

Date: September 25, 2000

To: Commissioner Hamilton, John Leonard, Tracy Carter & Kim Olson

From: Chuck Head *Chuck Head 9/25/00*

Concerning: Dickson County Landfill/ Trichloroethylene Contamination

The Dickson County Landfill is located southwest of Dickson on Eno Road. The location is denoted on Map 1 (attached). The landfill was originally opened in the early 1960's, well before the advent of the first Solid Waste regulations in 1972. When the Solid waste regulations came into affect, Dickson County applied for a solid waste landfill permit.

In 1991, the Environmental Protection Agency (EPA), CERCLA Group, conducted a Preliminary Assessment/Site Investigation for the Dickson County Landfill. The report indicates that trichloroethylene was detected in the well of Harry and Lavenia Holt (see Map 2; attached). The Holts live on Eno Road less than 1/2 mile southeast of the landfill. The first well sample analytical results from January 1991 reported 26 parts per billion TCE. Two follow-up samples were taken with the TCE results in the 4 part per billion range. The level of TCE was approximately 4 parts per billion. EPA decided there was no need for further action at this location.

In 1996, the TN Division of Superfund (DSF) was briefly involved with the Dickson County Landfill. At that time, the TN Division of Solid Waste Management (SWM) was working with Dickson County to resolve issues at the older portion of the landfill. Since SWM was working with Dickson County on this matter, it was agreed that SWM would serve as the TN Department of Environment and Conservation (TDEC) lead agency for this project.

In December 1996, the City of Dickson activated its lake/well source (noted on Map 2) near the landfill to supplement their water source. Dickson uses the Piney River as its primary water source. During the dry portions of the year, it is difficult for Dickson to meet demand. The City sampled source water from this well in December 1996, it was discovered to have chlorinated hydrocarbons, dichloromethane and trichloroethylene (TCE). Thirty-two (32) parts per billion of TCE were found in the well on February 24, 1997. The Division of Water Supply (DWS) informed the City of Dickson that the well could not be used as a water source unless the raw water was treated, using aeration to remove the TCE. On April 18, 1997, the City of Dickson decided not to use the well.

On September 21, 2000, Louis Burnett with DWS visited the City of Dickson Water Treatment Plant. During this visit, he investigated any other use of this well. Mr. Burnett discovered that in March 2000, the City decided once again to use this well. Dickson had added aeration to the water treatment process. DWS approved this treatment system in October 1998. The City of Dickson used the well from March 6 to March 19, 2000. At that time, the pump in the well broke. The City has not used the well since then. The well is still usable, pending repair of the pump. DWS has contacted Dickson to determine if source water and finished water for TCE were taken during the March 6 through March 19, 2000 time frame.

SWM is working with Dickson County to resolve problems at the older portion of the landfill. Monitoring wells installed at the landfill indicate that ground water contamination has occurred. The monitoring wells (noted on Map 2) indicate higher than normal levels of Fluoride, Arsenic, Chromium, Zinc and Barium. No volatile organics have been detected in the monitoring wells. However, a nearby spring - Sullivan Spring on the Sullivan property, has been found to be contaminated with TCE, in the 100 to 200 part per billion range. Mr. Sullivan also has a water well. The well was sampled by Dickson County. The well was found to be contaminated with TCE. Dickson County has connected Mr. Sullivan's home to the Dickson Water Supply. Dickson County is developing a plan to cap the landfill and to pump leachate into the City of Dickson waste water treatment system.

Ms. Betty Mekdeci contacted TDEC, through an e-mail message to me at the Nashville EAC, in early August 2000 inquiring about the number of children born with cleft palates, information regarding the quality of water in the public water supply system, the location of hazardous waste disposal sites, areas with ground water contamination, and companies with air emissions; all in Dickson County. Ms. Mekdeci was referred to the specific Divisions to get this information. I referred Ms. Mekdeci to Bonnie Bashor, TN Department of Health (TDH) for information regarding cleft palate.

I spoke with Bonnie Bashor on September 22, 2000. Bonnie explained that 10 or 11 children born with cleft palate since 1997 have been identified in Dickson County. Two children live northeast of Dickson, one child within three miles of the landfill and seven or eight children live in Dickson County, southwest of the landfill. This number is significantly higher than would be expected given the population of Dickson County. TDH is working with the Center for Disease Control in Atlanta, primarily Dr. Cynthia Moore, to determine if the number of children with cleft palate constitutes a "cluster". Also, TDH has contacted all hospitals in the Dickson area asking for records of children born with cleft palate. If it is determined that a cluster is present, then research work will begin to determine if there is a specific cause such as (1) medication taken during pregnancy, (2) work environment, (3) genetics, (4) exposure, etc. TDH has met with the parents of nine children with cleft palate to answer questions and provide information concerning cleft palate and its causes. This week Dickson County sampled the well of the Piland family (location noted on Map 1). The Pilands live on Baker Road approximately three (3) miles southeast of the Dickson Landfill. The Pilands have a child with cleft palate. TCE was not found in the water from the well.

Ms. Mekdeci is the Director of the Orlando based organization, Birth Defect Research for Children. Ms. Mekdeci has contacted EPA concerning the number of children with cleft palate in the Dickson County area. This has prompted EPA CERCLA to visit the Dickson County Landfill again.

I have attached an article from the Dickson Herald, published on September 22, 2000. The article, written by Kim Conner, has an interview with Ms. Mekdeci and gives the details regarding the number of children born with Cleft Palate in Dickson County since 1997. According to the article 14 children have been born with Cleft Palate since 1997 out of approximately 1700 births. According to the article, cleft palate occurs once in every 1,000 births.

Brenda Apple was contacted by Derrick Matori, EPA CERCLA in Atlanta, concerning the Dickson County landfill approximately two (2) weeks ago. Mr. Matori's call was in response to a call from Ms. Mekdeci regarding the number of children born in Dickson County with cleft palate. Because of the number of children born with cleft palate, EPA plans to visit the site in early October. Mr. Matori has contacted Brenda Apple with DSF about their plans to visit the site. Mr. Matori contacted Brenda because he is the EPA Regional contact for Tennessee in the CERCLA Program. Once Brenda knows the date EPA plans to visit, she will coordinate a meeting with EPA, SWM, DWS and DSF. This will allow an opportunity for all parties to discuss the site and share information before EPA visits the site. SWM remains the lead TDEC agency for the Dickson County Landfill post closure work.

Dicksoncounty-cleftpalate.doc

The Dickson Her

Fri 9/21/90

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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, TCE 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 major 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."

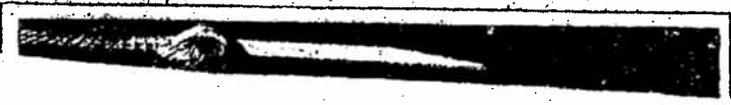
Though drinking water is thought to be the major conduit for TCE into a

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

"TCE is lipophilic. It stores 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."

SEE CLIPP, PAGE A5



Fields turning down shoots

...Cleft FROM PAGE A1

ey," 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 Luhn, 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 Brassac, 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, Burns, TN 37029, or one can send an e-mail message to dicksoncleftinfo@aol.com. Parents are encouraged to make contact so further research can be completed.

Parents of these children are understandably concerned, Mekdeci said.

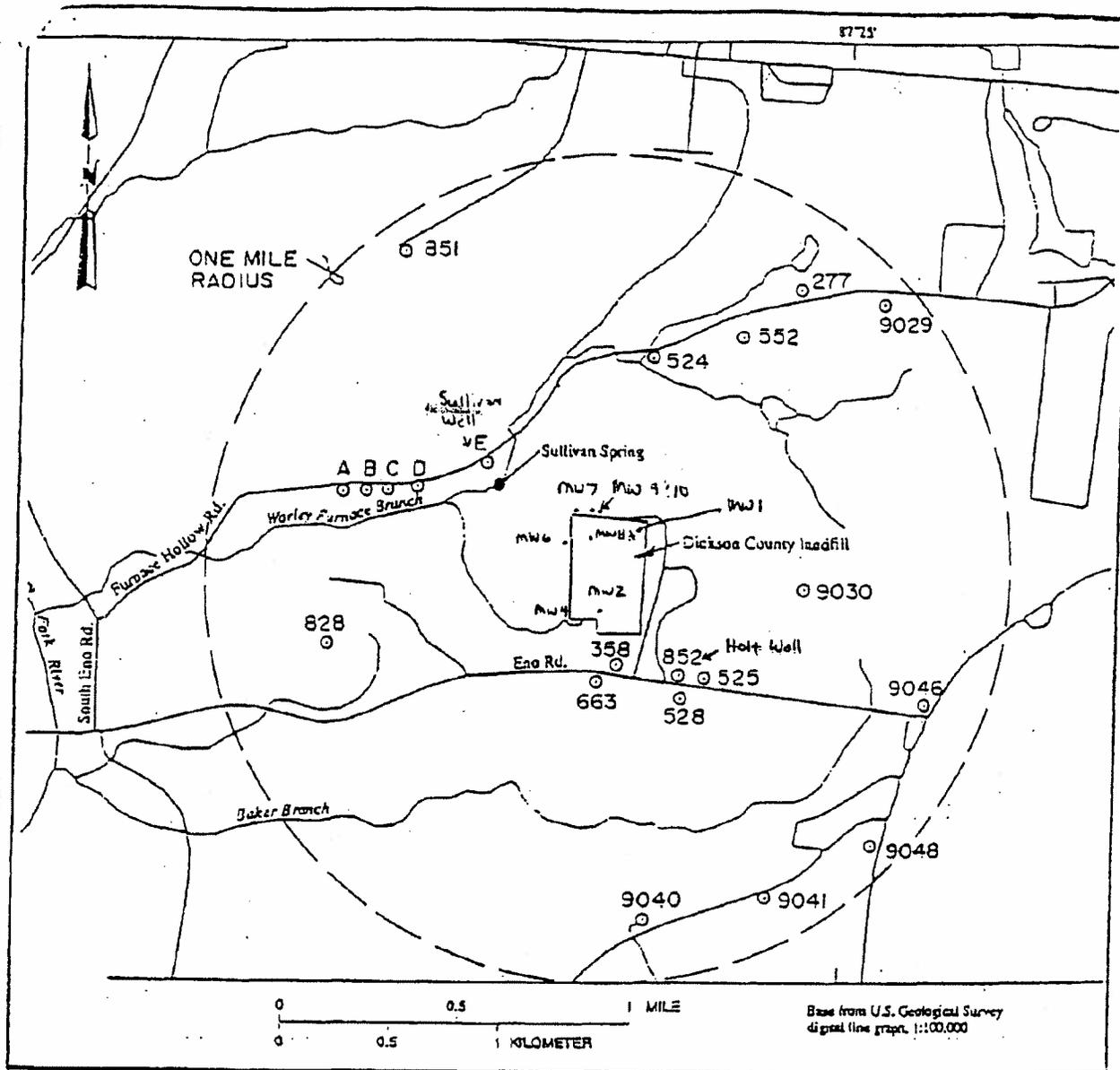
"They are coming to grips with the increase in clefts in this community," she said. "Finding these triggers puts a different spin on things."

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.

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MAP 2

LEGEND

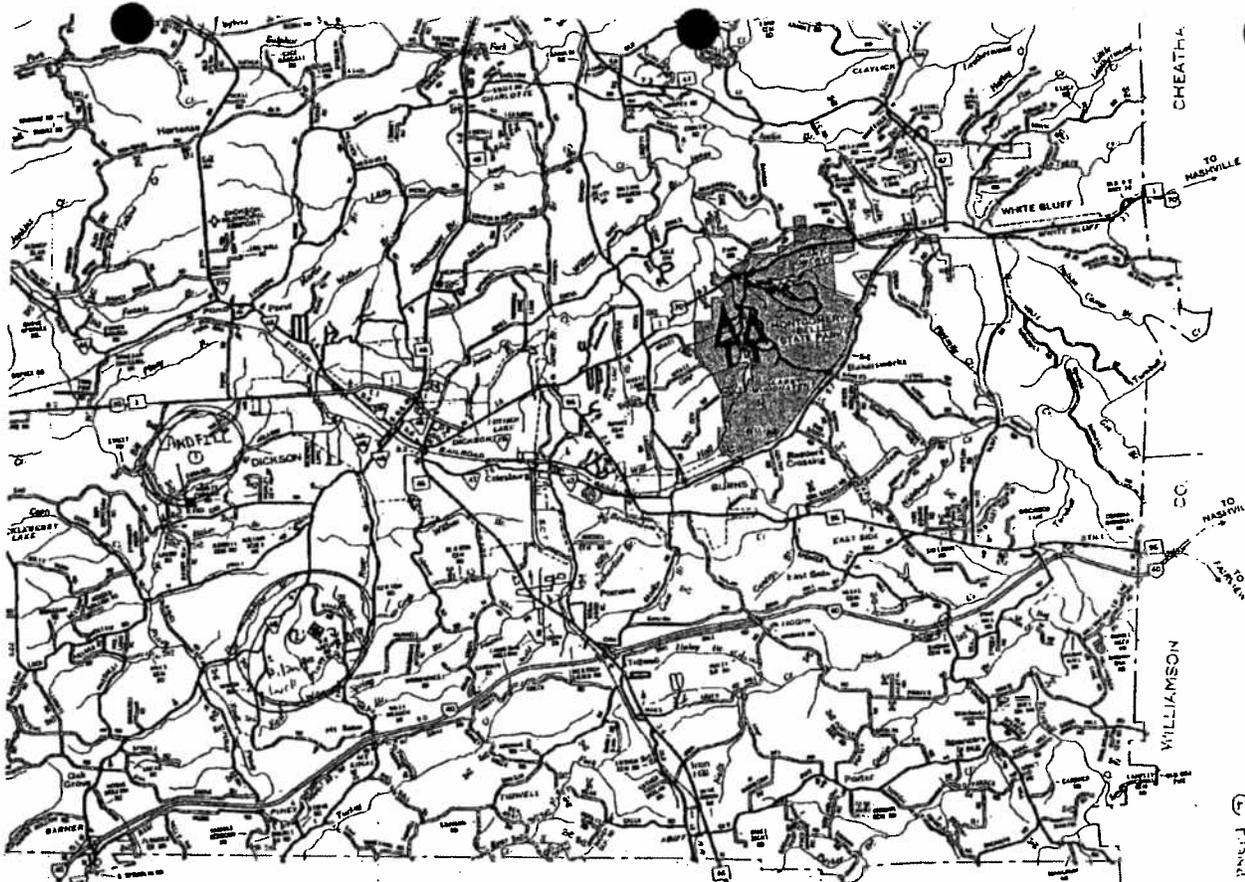
○ 277 DOMESTIC WELL LOCATION

NOTE: MAP ADAPTED FROM USGS REPORT 96-229

FIGURE I
SURVEY OF DOMESTIC WELLS WITHIN A
ONE MILE RADIUS OF THE DICKSON COUNTY LANDFILL
 (UPDATED AUG. 1996)
 PROJECT 143-08



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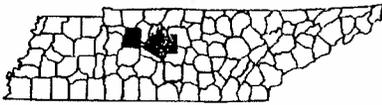


HICKMAN

Dickson County

Located in the north central part of the state, Dickson County was established in 1803. Named in honor of Doctor William Dickson, the county...

Tennessee Legislature from 1799-1801. He then served six years as a member of Congress. Montgomery Bell State Park and State Forest are located in the southeastern part of the county,



MAP #1
 Lynch
 Pland Hill