

## **Flowing through the Cracks The CTS Site in Skyland, North Carolina**

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The 57-acre CTS Asheville site on Mills Gap Road in Skyland, Buncombe County, North Carolina (just outside of Asheville), is a prime example of a hazardous waste site where the problem slipped through the cracks of the regulatory system. Large quantities of trichloroethylene (TCE) and other contaminants were released into the environment from the 1950s through the 1980s, and residents reported serious health consequences—that they believe are connected with toxic exposures—at least as early as 1990. In the early 2000s, new housing was built on a portion of the original property. However, no cleanup actions were taken until 2006. Since then, investigation has accelerated, but the response still appears fragmented and insufficient.

On September 17, 2008, I toured the area impacted by the releases and met with a small number of local activists. In the evening I conducted a briefing and led a discussion among about 25 people, including local officials, scientists from a local university, and a newspaper reporter who has covered the site. I concluded that this site should be elevated to the “Superfund” National Priorities List (NPL) as soon as possible.



**CTS from the Mills Gap Road Entrance**

### **Site History**

International Resistance Corporation, later absorbed by Northrop Grumman, operated an electroplating plant on the site from about 1952 to 1959. CTS of Asheville, a subsidiary of Elkhart, Indiana-based CTS Corporation, manufactured switches and other electronic parts there from 1959 until 1985. In 1987 local investors, Mills Gap Road Associates (MGRA), purchased the property, reportedly leasing it to former CTS employees (Arden Electroplating) for electroplating, then for the manufacturing of corn-burning stoves, and later for warehousing. In 1997 they sold about 45 acres,

outside the fenceline surrounding the factory, to a local developer (the Biltmore Group), even though the entire property had been designated a hazardous waste site. The resulting residential development, Southside Village, now contains dozens of homes near or below the elevation of the CTS factory.

During its operation, the plant facility released TCE, heavy metals, and petroleum products into the environment. According to a 1990 North Carolina Department of Environment and Natural Resources (DENR) memorandum:

Prior to 1978, CTS had no wastewater treatment system, only a gravel filter bed was used. In 1978, they installed a wastewater pretreatment system where the gravel filter was previously located. Wastewater went from the plant to a holding pit to a pretreatment system and then to a clarifier. Sludge was dewatered and shipped off site as a hazardous waste. The water went back to the holding pit.



**The Spring at the Eastern Edge of the CTS Property**

The 70,000 square-foot single-story plant sits at a saddle-point, atop a rise on Mills Gap Road. Springs emerging from site's groundwater serve as sole sources for creeks heading both to the east and the west. They eventually pour into the French Broad River. Groundwater plumes have not been mapped, but contamination has been documented in private wells to the northeast. Groundwater contamination is also suspected to the west.

In 1990, a local resident called Buncombe County to express concerns about chemical releases on site, reporting health problems among the family that owns an adjacent residential parcel. This triggered a review by the DENR and a Site Inspection by Region IV of the U.S. EPA. The EPA team identified the heavy metal contamination, high levels of polyaromatic hydrocarbons, and high levels of volatile organic compounds such as TCE and its breakdown products at the site. It summarized:

The surface water pathway is of concern because it is used for fishing, boating, and swimming, and high concentrations of contaminants were found in sediments and surface water samples.... The groundwater pathway is of concern, however, because there are approximately 397 private wells within 3 miles of the facility. The air pathway is of concern because 3,887 people live within 1 mile of the facility, and high concentrations of metals and organic compounds were found in surface soil samples.

Without explanation, EPA only sampled one of those private wells, nearly a mile to the northeast and, not surprisingly, found no contaminants that could be attributed to CTS. It did not test any of the dozens of drinking-water wells and springs that were closer and downgradient from the plant. It did not even test the spring, 350 feet downhill from the factory building, that provided drinking water to CTS's next-door neighbors. The condition of that spring had prompted the call that triggered the investigation, but the neighbors' concerns were never addressed. To date, EPA has provided no explanation of its decision to test only one well, so far from the site.

The EPA Team found, "The on-site exposure pathway is not of concern because access is limited by a fence," even though high levels of the contaminants of concern were found, outside of the fenced-in area, in the stream and wetlands basin on the northwest portion of the property. Inexplicably, their report concluded, "Based on this evaluation, it is recommended that no further remedial action be planned for CTS of Asheville, Inc."

Despite EPA's decision, in December 1992 a DENR Engineer recommended further investigation. In late 1993, DENR scored the site, and in February 1994 DENR added it to its Inactive Hazardous Waste Sites Priority List. Though DENR sent annual notices to the property owners confirming that listing, neither the state nor any of the property owners, past or present, conducted further investigation or remediation.

In July 1999, after spotting a foul-smelling "oily mess" emerging from the springs east of CTS, another friend of the same neighboring family called EPA, triggering a new investigation. Surface water from the springs, then used for drinking water, tested at 21,000 parts per billion (ppb) of TCE, while the neighbors' own tests in February 2007 showed 293,000 ppb. In 2007 a surface-water sample just northwest of the plant, on the edge of Southside Village, showed 408 ppb of TCE, and reportedly the concentration a quarter-mile downstream in Dingle Creek measured 630 ppb.

Also in 1999, EPA tested a private well on Concord Road, across Mills Gap Road from CTS. Finding TCE at 280 ppb, it shut down the well, supplied bottled water, and paid to connect the two homes it served to municipal water. In 2008 the shuttered well re-tested at 900 ppb.



**Site of First Private Well Where TCE Was Found**

EPA tested the soil beneath the facility in June 2000. Several boreholes showed TCE levels in the hundreds of thousands of  $\mu\text{g}/\text{kg}$  (micrograms per kilogram) under or adjacent to the building, including one where the concentration was 830,000  $\mu\text{g}/\text{kg}$  at about 30 feet below the floor of the plating area in the building.

In 2007, a private water well further to the northeast in the Oaks Subdivision reached 57 ppb of TCE. Community activists reported that 30% of the homes in that neighborhood were served by contaminated wells. For that reason Buncombe County and the City of Asheville paid an estimated \$450,000 to extend the Asheville municipal water system to that area, even though there was no assurance that the polluters would cover the cost.

### Vapors of Concern

EPA, under a January 2004 Administrative Order on Consent with CTS and the owners of the plant property, began removal activities in June 2006. To knock down TCE levels in the soil, it started up a soil vapor extraction system in July 2007. By October 2008 it had removed more than 3,600 pounds of TCE.

In December 2007, EPA brought in the Trace Atmospheric Gas Analyzer (TAGA), a van-mounted instrument that measures low vapor concentrations of volatile organic compounds. The TAGA found significant *outdoor* air concentrations of TCE both to the east and west of the plant. Of greatest concern: The TAGA registered readings of 13 and 21 part per billion by volume at a schoolbus stop near the eastern spring. 1.0 part per billion by volume or ppbv of TCE is equivalent to 5.37 micrograms per cubic meter, or  $\mu\text{g}/\text{m}^3$ . In August 2008, EPA measured ambient air using Summa canisters. Just to the northwest it found TCE at .975 ppbv. To the east, TCE in the outdoor air reached an astronomic 277 ppbv.

In addition, EPA took “18 soil gas measurements, 10 passive air samples, and 10 sub-slab measurements in crawlspaces of homes.” EPA scientists concluded that the vapors were being released from the springs with high TCE levels in surface water, which in turn represented the daylighting of groundwater flows from the plant. In October 2008 EPA announced plans to cleanse the eastern spring by injecting ozone underground.

Other than the 277 ppbv reading near the eastern spring, EPA reported, in a September 2008 fact sheet, that TCE levels were acceptable.

Low levels of TCE vapors were detected in some crawl spaces of homes, but all of the measured values of TCE vapors were within an acceptable, health-based, risk range currently being used by EPA.... The initial study presented some data gaps, most notably 24-hour ambient samples in the neighborhood. Also, elevated values in one home, located near the spring, warranted further sampling.

But EPA's reassurance was misleading. EPA regions associate 1.0  $\mu\text{g}/\text{m}^3$  (.186 ppbv) with a one in a million ( $10^{-6}$ ) excess lifetime cancer risk in a residential exposure scenario, a goal supported by activist groups and numerous states. There were multiple TCE hits above that level, but EPA's risk range can be extended to consider any cancer risk up to one in 10,000 ( $10^{-4}$ ) acceptable. Furthermore, these standards ignore EPA's 2001 Draft Human Health Risk Assessment for TCE which, before it was discarded for largely political reasons, found that .017  $\mu\text{g}/\text{m}^3$  (.003 ppbv) was associated with a one in a million ( $10^{-6}$ ) excess lifetime cancer risk. (Note, however, that much of the outdoor air across the country contains TCE above that abandoned 2001 guideline.)

## Groundwater Unknowns

It is difficult to evaluate air, surface water, and soil gas measurements in the absence of an accurate map of groundwater contamination. It's conceivable that outdoor air contamination is high near springs where the contaminated groundwater daylights, while vapor intrusion is possible in areas where the plumes remain underground. Yet, other than analysis of water from 66 private wells within a mile of the plant (and other wells, further away, tested by the County), little is known about the plume or plumes emanating from the site.



### Monitoring Wells are Installed on Site

DENR is now responsible for groundwater monitoring at the plant site. It is installing 6 monitoring wells on the property, with sampling taken at two depths, but off-site monitoring lies in the future. In May 2008 the *Asheville Citizen-Times* reported that CTS's environmental consulting firm was "preparing a proposal for a groundwater study."

Upon preliminary review, recent studies of CTS pollution appear to have been conducted professionally, though it is apparent that the overall project suffers from fragmentation. All pathways—groundwater, surface water, ambient air, and indoor air—should be fit into a single conceptual site model. That is, only when the fate and transport of all the TCE from the site is generally understood can investigators make sense of the ambient air, soil gas, crawlspace, and indoor air testing. Until groundwater flows are fully understood, a comprehensive remedy cannot be designed.

Still, it's clear that high levels of TCE are oozing off the site, contaminating groundwater and surface water in multiple directions. Enough is known now to install barriers to prevent additional groundwater migration offsite. In fact, to protect public health this is essential.

### Subdivision

Beginning early 1994, DENR has regularly notified CTS and MGRA that the entire 57-acre property was on the state's Inactive Hazardous Waste Sites list. In particular, the Mills Gap Road Associates were notified explicitly in 1995 that no portion of the site was going to come off the hazardous sites inventory until it was demonstrable that the site was no longer a threat to human health or the environment.

Nevertheless, MGRA and the Biltmore Group appeared before the Buncombe County Board of Adjustment on August 13, 1997, claiming to have achieved the status that would make the CTS property eligible for removal from the state's list. The Board did not ask the owners to produce documentation of this change in status, nor did MGRA volunteer to provide it. Within two weeks the Biltmore Group purchased almost 45 acres, which it developed into Southside Village. On December 8, 2008, Dexter Matthews, the head of DENR's Waste Management Division, confirmed that DENR had never granted "no further action" status for the site. To compound matters, DENR mandated that MGRA re-record the deed on December 15, 1997 to reflect the property being a hazardous waste site.

In 1997 without achieving *no further action* status, and without the state's permission or apparent knowledge, the site's owners subdivided the property. The purchaser of the 45 acres outside the factory fence cleared the wooded areas in 1998. Development approvals were granted in that year. High-end townhouses were built on the property, including in areas above shallow contaminated groundwater and near polluted surface water. In 2007 the TAGA found high levels of TCE in outside air near these homes, but it did not test Silk Tree Lane, the street most likely to be impacted because it is closest to the contaminated stream.



**Subdivision on former CTS Property, with Factory in Background**

The full story of this development-without-cleanup is not yet known, but a DENR official said in 2007, "The property was subdivided, and we were not aware of it." The developer (Richard Green of The Biltmore Group) explained why the majority of the site had disappeared from the Inactive Hazardous Waste Priority List: "Because I bought some of it." He claimed that he checked with both the state and the county to see if he needed to conduct remediation before building. He has said that residents are safe because they drink piped-in municipal water. Surface water near the subdivision—collected by *Mountain Xpress News* reporter Rebecca Bowe—contained over 630 ppb of TCE, the limit of the testing firm's instruments.

The homes of the Southside subdivision to the west *look like* a brownfields success, but the land was removed from regulatory oversight and transferred without being given a clean bill of health. This is inexcusable, and it's necessary to find out whether some of the parties broke the law or the law needs to be strengthened.

### **Health**

The family with the contaminated spring and the users of the first closed well both reported serious health problems that, according to the literature, might have been caused by exposure to TCE and other site contaminants. They sued CTS and eventually accepted a small property damage settlement, but they were told that proving medical injury was too difficult. Other people in the area—activists report 67—suspect that their diseases can be attributed to decades of contamination from the site, and activists plan a community health survey.

Proving such causality is extremely difficult. An August 2008 study by the North Carolina Central Cancer Registry found that people near the site did not report higher cancer rates than people elsewhere in the state. Unfortunately, DENR drew a one-mile radius around the CTS site, rather than comparing those exposed to TCE and other contaminants in their water and air to people who were not so exposed. A state health official is now conducting a more in-depth health risk analysis, but it is still based on the same one-mile radius. Furthermore, he will only be using existing data, not collecting new information. The new study is unlikely to show much, but even if performed properly, based upon experience elsewhere, it still would probably prove inconclusive. In any case, health studies should have recurring input from community representatives. What looks like good data from a distance may not wash with local residents, who know when who lived or worked where.

More important, the burden of proof should not fall upon cancer victims in the area to demonstrate that their illnesses were caused, entirely or in part, by contamination from CTS. They have been exposed. Their property is stigmatized. Many are sick. They deserve cleanup and compensation.

### **The Way Forward**

Looking forward, the CTS site needs a full mapping of all contamination pathways in all directions, and then it needs a unified cleanup strategy that prevents additional pollution from flowing off site. Cleanup should also eliminate exposure to pollution that has already escaped. In the interim, subsurface barriers should be installed on the property to prevent the continuing migration of contaminants into springs and off-site groundwater. This is a fairly standard approach, but as far as I know it has never been discussed at the CTS site in Skyland.

Furthermore, the community needs continuing technical assistance to determine if the agencies and responsible parties are finally moving ahead properly, and to check to see if assurances of safety are credible. The best way to assure this is to place the CTS site, including the transferred parcel, on the National Priorities List. Once listed, CTS and the other property-owners will still be liable for investigation and cleanup costs, and DENR can still play a key role in cleanup, but the site would more easily receive the attention it deserves. I have no doubt that CTS Asheville would score high enough today to qualify for the NPL.

Without NPL listing, this site will remain divided between agencies. Public involvement will be limited. Under the statute governing the North Carolina voluntary remediation program, CTS spending on the portion overseen by DENR may be capped at \$3 million, far below what's necessary to investigate, let alone remediate such a complex site. Local activists are concerned that a responsible party that seems to have avoided paying for cleanup for at least 15 years appears to be

signing up for voluntary cleanup now, when it can use that status to hold down its costs at the expense of the public and public health.

It's all a matter of political will. As I suggested on my visit, the residents, their local elected officials, and their Congressional delegation are in a position to make listing, complete investigation, and comprehensive cleanup a reality, nearly two decades after local residents blew the whistle on the contamination.