Public Health Assessment for

LITTLE VALLEY
LITTLE VALLEY, CATTARAUGUS COUNTY, NEW YORK
EPA FACILITY ID: NY0001233634
DECEMBER 26, 2000

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Agency for Toxic Substances and Disease Registry
This Public Health Assessment was prepared by ATSDR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) section 104 (i)(6) (42 U.S.C. 9604 (i)(6)), and in accordance with our implementing regulations (42 C.F.R. Part 90). In preparing this document, ATSDR has collected relevant health data, environmental data, and community health concerns from the Environmental Protection Agency (EPA), state and local health and environmental agencies, the community, and potentially responsible parties, where appropriate.

In addition, this document has previously been provided to EPA and the affected states in an initial release, as required by CERCLA section 104 (i)(6)(H) for their information and review. The revised document was released for a 30-day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The public health assessment has now been reissued. This concludes the public health assessment process for this site, unless additional information is obtained by ATSDR which, in the agency's opinion, indicates a need to revise or append the conclusions previously issued.

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PUBLIC HEALTH ASSESSMENT

LITTLE VALLEY

LITTLE VALLEY, CATTARAUGUS COUNTY, NEW YORK

EPA FACILITY ID: NY0001233634

Prepared by:

New York State Department of Health
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry
FOREWORD

The Agency for Toxic Substances and Disease Registry, ATSDR, was established by Congress in 1980 under the Comprehensive Environmental Response, Compensation, and Liability Act, also known as the Superfund law. This law set up a fund to identify and clean up our country's hazardous waste sites. The Environmental Protection Agency, EPA, and the individual states regulate the investigation and clean up of the sites.

Since 1986, ATSDR has been required by law to conduct a public health assessment at each of the sites on the EPA National Priorities List. The aim of these evaluations is to find out if people are being exposed to hazardous substances and, if so, whether that exposure is harmful and should be stopped or reduced. If appropriate, ATSDR also conducts public health assessments when petitioned by concerned individuals. Public health assessments are carried out by environmental and health scientists from ATSDR and from the states with which ATSDR has cooperative agreements. The public health assessment program allows the scientists flexibility in the format or structure of their response to the public health issues at hazardous waste sites. For example, a public health assessment could be one document or it could be a compilation of several health consultations; the structure may vary from site to site. Nevertheless, the public health assessment process is not considered complete until the public health issues at the site are addressed.

Exposure: As the first step in the evaluation, ATSDR scientists review environmental data to see how much contamination is at a site, where it is, and how people might come into contact with it. Generally, ATSDR does not collect its own environmental sampling data but reviews information provided by EPA, other government agencies, businesses, and the public. When there is not enough environmental information available, the report will indicate what further sampling data is needed.

Health Effects: If the review of the environmental data shows that people have or could come into contact with hazardous substances, ATSDR scientists evaluate whether or not these contacts may result in harmful effects. ATSDR recognizes that children, because of their play activities and their growing bodies, may be more vulnerable to these effects. As a policy, unless data are available to suggest otherwise, ATSDR considers children to be more sensitive and vulnerable to hazardous substances. Thus, the health impact to the children is considered first when evaluating the health threat to a community. The health impacts to other high risk groups within the community (such as the elderly, chronically ill, and people engaging in high risk practices) also receive special attention during the evaluation.

ATSDR uses existing scientific information, which can include the results of medical, toxicologic and epidemiologic studies and the data collected in disease registries, to determine the health effects that may result from exposures. The science of environmental health is still developing, and sometimes scientific information on the health effects of certain substances is not available. When this is so, the report will suggest what further public health actions are needed.
Conclusions: The report presents conclusions about the public health threat, if any, posed by a site. When health threats have been determined for high risk groups (such as children, elderly, chronically ill, and people engaging in high risk practices), they will be summarized in the conclusion section of the report. Ways to stop or reduce exposure will then be recommended in the public health action plan.

ATSDR is primarily an advisory agency, so usually these reports identify what actions are appropriate to be undertaken by EPA, other responsible parties, or the research or education divisions of ATSDR. However, if there is an urgent health threat, ATSDR can issue a public health advisory warning people of the danger. ATSDR can also authorize health education or pilot studies of health effects, fullscale epidemiology studies, disease registries, surveillance studies or research on specific hazardous substances.

Community: ATSDR also needs to learn what people in the area know about the site and what concerns they may have about its impact on their health. Consequently, throughout the evaluation process, ATSDR actively gathers information and comments from the people who live or work near a site, including residents of the area, civic leaders, health professionals and community groups. To ensure that the report responds to the community's health concerns, an early version is also distributed to the public for their comments. All the comments received from the public are responded to in the final version of the report.

Comments: If, after reading this report, you have questions or comments, we encourage you to send them to us.

Letters should be addressed as follows:

Attention: Chief, Program Evaluation, Records, and Information Services Branch, Agency for Toxic Substances and Disease Registry, 1600 Clifton Road (E56), Atlanta, GA 30333.
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SUMMARY

The Little Valley site is in a rural area between the Village of Little Valley and the City of Salamanca in Cattaraugus County, New York. Groundwater is contaminated with trichloroethene (TCE) and people using private well water have been exposed to TCE in their water. Contamination was discovered in 1982 (levels did not exceed the drinking water guideline that existed at that time) and treatment systems were installed starting in March 1997 to reduce levels of contamination in drinking water. As of December 1999, the United States Environmental Protection Agency (US EPA) is maintaining ninety (90) individual air stripping treatment units on residential wells that are contaminated with TCE above the Federal and State maximum contaminant level standards (MCL) of 5 micrograms per liter (mcg/L). Also, about twenty-five drinking water wells are contaminated with TCE at levels below the MCL of 5 mcg/L and many more are potentially threatened.

The New York State Department of Health (NYS DOH) completed a Health Consultation in March 1996 (ATSDR 1996) under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). The consultation concluded that the site posed a public health hazard because of past, present, and possible future exposures to volatile organic compounds in private water supplies, and that without efforts to remediate the groundwater, the contaminant levels in private water supplies may increase. The consultation also recommended that actions should be taken to dissociate people from the contaminated water and that monitoring of the affected and threatened private wells should continue. This public health assessment concurs that past exposures represented a public health hazard; however, the site currently presents no apparent public health hazard because treatment systems were installed and are being maintained by the US EPA to reduce exposures to below levels of public health concern. Moreover, future exposures could occur if groundwater is not remediates and TCE migrates to and contaminates additional wells, if new wells are installed in the contaminated plume, or if treatment systems are not maintained. The US EPA periodically monitors potentially threatened wells.

The primary community health concerns at the site are the potential health risks from being exposed to TCE in drinking water. Also, the community is concerned about efforts to reduce exposure by treating water or providing alternative water supplies and about efforts to clean up the contaminated groundwater. Since 1989, and before treatment systems were installed, the Cattaraugus County Health Department (CCHD) issued health advisories to residents exposed to contaminants in drinking water in the form of letters accompanying laboratory data. In addition, state and county health officials have explained potential health risks and conveyed health-related recommendations at several community meetings. As evaluated in this public health assessment, the chance that someone would get a cancer or non-cancer adverse health effect from their past exposures to TCE in drinking water is low and minimal, respectively. There is insufficient information on the effects of trichloroethene in humans to conclude definitively that children or the developing fetus are at a greater or lesser risk for health effects than adults.
Current recommendations include: maintaining the installed treatment systems and monitoring the quality of the treated water; installing additional treatment systems when TCE levels in tap water exceed the MCL; pursuing a more permanent, long-term groundwater remedy; and possibly extending municipal water service to site residents. Residents who were exposed in the past to VOCs in drinking water will be asked to participate in the New York State Volatile Organic Exposure Registry. The NYS DOH will continue community health education activities people whose drinking water supplies are contaminated with trichloroethene in the Little Valley study area. These activities will include meeting with the public and providing information on ways to reduce exposures to trichloroethene in drinking water.
PURPOSE AND HEALTH ISSUES

The purpose of this public health assessment is to evaluate human exposure pathways from contaminants at the Little Valley site. This health assessment fulfills the congressional mandate for a public health assessment for each site being proposed to the National Priorities List (NPL). This public health assessment (PHA) will focus primarily on exposure to trichloroethene in private drinking water supplies, the only known potential exposure pathway at the site. No source of the contamination has yet been identified, so information on source-related exposures, such as contaminated soils, cannot be evaluated. The actions taken to date to identify those potentially exposed and provide an alternate source of drinking water for the homeowners with wells contaminated above the maximum contaminant level standards (MCL) will be discussed in this document.

The primary community health concerns at the site are potential health risks from being exposed to trichloroethene (TCE) in drinking water. Also, the community is concerned about efforts to reduce exposure by treating water or providing alternative water supplies and about efforts to clean up the contaminated groundwater.

BACKGROUND

A. Site Description and History

The Little Valley study area (site) lies between the Village of Little Valley and the City of Salamanca in Cattaraugus County. The site area is rural and agricultural with a number of active and inactive small industries within one mile. There are over 200 residential properties in the study area along Route 353, the main transportation route between communities. The study area is underlain by a groundwater contaminant plume of TCE which extends approximately six miles from the Village of Little Valley to the northern edge of the City of Salamanca (and likely beyond), which is partially within the boundary of the Seneca Nation of Indians, Allegany Reservation. Since 1982, chemical analyses confirmed the presence of TCE in groundwater samples collected from monitoring wells and private residential wells throughout the study area. Between January 1989 and January 1997, sampling by the Cattaraugus County Health Department (CCHD), New York State Department of Health (NYS DOH), and United States Environmental Protection Agency (US EPA) found TCE in approximately 100 residential drinking water wells. Potential sources of this groundwater TCE contamination are still under investigation.

In 1982, the New York State Department of Environmental Conservation (NYS DEC) and CCHD investigated trichloroethene contamination around Luminite, a small manufacturing facility along Route 353 (refer to Figure 1, Appendix A). The company used trichloroethene. Trichloroethene was found in nearby private wells; however, the levels did not exceed the NYS DOH drinking water guideline of 50 micrograms per liter (mcg/L) in effect at that time. In January of 1989, the US EPA and NYS DOH established a drinking water standard of 5 mcg/L for trichloroethene in public water supplies.
In February 1989, groundwater monitoring wells on and near the Luminite property were sampled. In addition, the NYS DEC sampled the process wastewater effluent and septic system at Luminite. The data indicated groundwater contamination both upgradient and downgradient of the Luminite facility, suggesting other possible sources of contamination.

Possible sources of groundwater contamination in the Little Valley area include active and inactive industrial sites such as the former Envirotech drum storage area, a private disposal site, and an inactive municipal landfill (refer to Figure 2, Appendix A). These facilities were investigated as possible sources of trichloroethene contamination in groundwater. There is little information about the former Envirotech drum storage area except that it was a temporary drum storage area. A private disposal site next to the former Envirotech drum storage area contains junk truck parts, machinery and rock debris and previously contained fifty-five gallon drums. Reports indicated that the drums contained waste oils. These drums were removed and properly disposed of by the NYS DEC. The 9th Street Landfill, an inactive municipal landfill, accepted industrial waste.

Other facilities that were investigated include King Windows and Bush Industries. Former employees of King Windows allege that chemicals were improperly disposed at the facility. An abandoned well was found at the site that contained a thick oil. The NYS DEC sampled this well and only trace levels of trichloroethene were found. Bush Industries is a wood and metal furniture manufacturer. Mineral spirits, toluene, acetone and methyl ethyl ketone, but not trichloroethene, are used at the site. Bush Industries occupies an area where an old cutlery manufacturer once operated. During a 1992 environmental assessment of the facility, significant concentrations of trichloroethene and its degradation products were detected in on-site groundwater monitoring wells. No volatile organic compounds (VOCs) were in the upgradient well.

The NYS DOH and the CCHD surveyed the countryside around Little Valley to investigate possible illegal dump sites. No obvious sources of trichloroethene contamination were found; however, numerous small, isolated areas of junk disposal were observed.

To define the extent of groundwater contamination in the Little Valley area, the CCHD and the NYS DOH sampled private drinking water supply wells between Little Valley and Salamanca for trichloroethene and other organic chemicals in 1990. Trichloroethene was the only volatile organic compound detected in these wells at levels above the NYS drinking water standards for public water supplies. Some of the highest concentrations were found south of the Village of Little Valley near the triangle formed by the intersections of Route 242, Route 353 and Baker Road (refer to Figure 2, Appendix A). Trichloroethene concentrations generally decrease southward, toward Salamanca. The highest trichloroethene levels are found in the northern portion of the study area. The Village of Little Valley municipal wells to the northwest are not affected by the trichloroethene contamination.

Since 1990, the state and county health departments have continued to sample private wells on a regular basis. Trichloroethene concentrations vary slightly between sampling events, however, the data do not show any significant trends.
In September 1995, the ATSDR and New York State requested that the site be added to the NPL. On October 2, 1995, the Little Valley site was proposed for addition to the NPL by the US EPA. The site was listed on the NPL as Little Valley Superfund Site in June 1996.

In August 1996, the US EPA developed a focused feasibility study report which identified and evaluated remedial alternatives to treat the affected private water supplies. A Superfund Record of Decision was signed in September 1996 for the first operable unit to install water treatment units (individual air strippers) on private drinking water wells (residences and businesses) where the TCE concentration exceeds the MCL of 5 mcg/L. Between January and February of 1997, the US EPA sampled 149 private wells to determine the number of homes and businesses requiring treatment units to remove contaminants from the drinking water. Water samples from 73 wells exceeded the MCL for TCE. Another 23 wells contained TCE, but at levels below the MCL of 5 mcg/L. Since then, TCE levels have surpassed the MCL in an additional 16 wells. The maximum concentration detected was 50 mcg/L.

To reduce exposures, the US EPA is maintaining 90 individual air stripping treatment units on the affected private water supply wells that are contaminated with TCE above the MCL. A source identification and control remedial investigation and feasibility study (RI/FS), which was initiated in September 1996, is currently underway. It is anticipated that the RI/FS will be completed in late 2000.

B. Site Visit

Representatives of the NYS DOH have visited the Little Valley site area on numerous occasions since contamination of private wells was initially detected. The most recent visit of the site area was completed by Mr. Cameron O’Connor of the NYS DOH in April 1999. Site conditions have not changed significantly since investigations began.

C. Demographics

The NYS DOH estimated from the 1990 Census (US Bureau of the Census 1991) that 3,116 people live within one mile of the site. This population is 92.8% white and 6% American Indian. The percent of persons of Hispanic origin is 1.2%. Of the population 11.5% is under 6 years of age, 19.4% is 6-19 years of age, 55.2% is 20-64 years of age, and 14% is 65 years or older. In 1990 there were 646 females of reproductive age (ages 15-44) in the area. The median household income was $19,778 in 1989, with 18.1% of the population living below the poverty level (US Bureau of the Census 1992).

The following chart compares these demographics with statewide averages. There are several schools and no nursing homes in the area.
<table>
<thead>
<tr>
<th>Age Distribution</th>
<th>NYS</th>
<th>Little Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6</td>
<td>8.3%</td>
<td>11.5%</td>
</tr>
<tr>
<td>6-19</td>
<td>18.4%</td>
<td>19.4%</td>
</tr>
<tr>
<td>20-64</td>
<td>60.2%</td>
<td>55.2%</td>
</tr>
<tr>
<td>&gt;64</td>
<td>13.1%</td>
<td>14.0%</td>
</tr>
<tr>
<td>Race Distribution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>74.4%</td>
<td>92.8%</td>
</tr>
<tr>
<td>Black</td>
<td>15.9%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>3.9%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Am Indian</td>
<td>0.3%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Other</td>
<td>5.5%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Ethnicity Distribution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent Hispanic</td>
<td>12.3%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Median Income</td>
<td>$32,965</td>
<td>$19,778</td>
</tr>
<tr>
<td>% Below Poverty Level</td>
<td>13.0%</td>
<td>18.1%</td>
</tr>
</tbody>
</table>

**COMMUNITY HEALTH CONCERNS**

On July 28, 1992, a public meeting was held to discuss the history of the investigation and to answer questions and address health concerns that residents had about contamination of their wells. Residents expressed concerns about the possible source(s) of contamination, remediation of the problem and responsibility for costs associated with the clean-up or supply of an uncontaminated drinking water source to well owners.

Several public meetings have been held since July 1992 to address community health concerns about trichloroethene contamination in drinking water in the Little Valley study area. The most recent public meeting was held on September 11, 1996. The purpose of this meeting was to update residents and citizens in the Little Valley area on the status of the US EPA efforts to provide a source of safe drinking water to residents whose private water supplies were contaminated. The primary community health concern expressed by citizens at this meeting was related to exposure to trichloroethene in their water supplies. Additional public meetings will be scheduled as new information is obtained.

Before treatment systems were installed, residents with contaminated water supplies were advised by state and county health department officials of the health effects of prolonged exposure to low levels of trichloroethene. These health department officials recommended that residents could boil their drinking water using adequate ventilation, seek an alternative drinking water source (bottled), install carbon filtration systems, and limit showers to minimize dermal and inhalation exposures to trichloroethene.
A source or responsible party for the Little Valley site has not been identified, nor has the presence of "hazardous waste", as defined by Part 375 of the New York State Environmental Conservation Law, been documented. Because of this, New York State Superfund monies cannot be used for further investigation or to provide affected residences with alternate drinking water supplies. However, because of differences in the state and federal Superfund Laws, investigation of the site could be conducted by the US EPA if the site were listed on the NPL. The site was nominated to the NPL in October 1995 and adopted onto the NPL in June 1996. Public health concerns include continued exposures to trichloroethylene in private water supplies in the Little Valley study area. Residents of the Town of Salamanca petitioned the town board to investigate the feasibility of extending the public water supply from the City of Salamanca; however, to date this has not been done. The US EPA is proceeding with its investigation of potential contaminant sources.

The public was invited to review a draft of this public health assessment during the public comment period, which ran from July 13, 2000 - August 15, 2000. We received two responses: one from a public agency and one from a local resident. Further information is presented in Appendix D, Summary of Public Comments and Responses.

PATHWAYS ANALYSIS

This section of the PHA identifies completed exposure pathways associated with past, present and future use of the site. An exposure pathway is the process by which an individual may be exposed to contaminants originating from a site. An exposure pathway is comprised of five elements including: (1) a contaminant source, (2) environmental media and transport mechanisms, (3) a point of exposure, (4) a route of exposure, and (5) a receptor population.

The source of contamination is the source of contaminant release to the environment (any waste disposal area or point of discharge); if the original source is unknown, it is the environmental media (soil, air, biota, water) which are contaminated at the point of exposure. Environmental media and transport mechanisms "carry" contaminants from the source to points where human exposure may occur. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (i.e., ingestion, inhalation, dermal absorption). The receptor population is people who are exposed or may be exposed to contaminants at a point of exposure.

For the Little Valley site there is one completed exposure pathway, exposure to trichloroethylene in private drinking water. Exposure to contaminants in drinking water supplies can occur via ingestion; dermal contact and absorption during showering, bathing, or other household uses; and inhalation of aerosols and vapors during showering, bathing or other household uses. For an undetermined period of time, well owners have been exposed to trichloroethylene in their drinking water supply. Prior to 1989, it is not known how long or at what concentrations people were exposed to these contaminants. However, trichloroethylene was first detected in one private well (48 mcg/L) as early as 1982. Therefore, residents may have been exposed to volatile organic compounds in drinking water for 15 years or more years before treatment systems were installed in 1997.
There are no other known exposure pathways at this site because no specific source of the contamination has been identified. The only known contaminated medium is the groundwater.

**PUBLIC HEALTH IMPLICATIONS**

Trichloroethene causes cancer in laboratory animals exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals may also increase the risk of cancer in humans who are exposed to lower levels over long periods of time. Some limited data from studies of people who ingested this and other chemicals in drinking water are suggestive, although inconclusive, that exposure to trichloroethene in drinking water may increase the risk of cancer in humans. The highest TCE level in wells at this site is about 50 mcg/L. Based on the human and animals studies and limited sampling of private wells, people drinking water over a period of 30 years containing trichloroethene at levels ranging from 5 mcg/L up to 500 mcg/L may have a low increased risk of developing cancer.

Trichloroethene also produces noncancerous toxic effects, primarily to the liver, kidneys and nervous system. Chemicals that cause effects in humans and/or animals at high levels of exposure may also pose a risk to humans who are exposed to lower levels over long periods of time. Although the risks of noncancerous effects from past and present exposures are not completely understood, the existing data suggest that they would be minimal for exposure to trichloroethene.

For additional information on how the NYS DOH determined and qualified health risks applicable to this health assessment, refer to Appendix B.

**A. Health Outcome Data**

The Little Valley site has been selected as one of the initial sites for inclusion in the NYS VOC Exposure Registry. Residents of households who were exposed in the past to VOCs from private well drinking water supplies are being asked by the NYS DOH to participate.

Following contact by mail and a brief interview to determine eligibility, potential registrants are being asked to complete a mailed questionnaire seeking information about exposures during the time period before contamination was detected and before intervention occurred to prevent exposure. Information about other health risk factors such as alcohol and tobacco use, detailed information about registrant health status before and after potential exposure, and basic demographic information such as age, education and occupation will be collected. Health status questions seek information about cancer as well as respiratory, neurological, cardiovascular, gastrointestinal, musculo-skeletal, endocrine and reproductive symptoms and diseases. Enrollees will be contacted approximately every two years regarding their health status.

The exposure registry allows long-term follow-up on the health status of persons with documented exposures to VOCs from this site as well persons exposed to VOCs at other selected sites in New York State. An exposure registry such as this one is a resource for research that may help us learn whether exposures to VOCs are related to health effects. People who are enrolled in the Registry will be kept informed of any research results that come from the Registry data.
B. ATSDR Child Health Initiative

The ATSDR Child Health Initiative emphasizes examining child health issues in all of the agency activities, including evaluating child-focused concerns through its mandated public health assessment activities. The ATSDR and the NYS DOH considers children when evaluating exposure pathways and potential health effects from environmental contaminants. We recognize that children are of special concern because of their greater potential for exposure from play and other behavior patterns. Children sometimes differ from adults in their susceptibility to hazardous chemicals, but whether there is a difference depends on the chemical. Children may be more or less susceptible than adults to health effects from a chemical and the relationship may change with developmental age.

The possibility that children or the developing fetus may have increased sensitivity to trichloroethene was taken into account when evaluating the potential health risks associated with the site. The potential for trichloroethene to cause adverse effects in children and/or the offspring of laboratory animals has been assessed in several studies.

When pregnant laboratory animals are exposed by ingestion and/or inhalation to large amounts of trichloroethene, adverse effects on the normal development of the offspring are observed (ATSDR, 1997). In most, but not all of these studies, the high amounts of trichloroethene also caused adverse health effects on the parent animal. The estimated levels of exposure to trichloroethene in private drinking water supplies near the Little Valley site were compared to the exposure levels in the animal studies in which adverse health effects were observed, and were lower.

Human studies on exposure to trichloroethene in drinking water during pregnancy suggest that there may be an association between oral trichloroethene exposure and childhood leukemia and birth defects, such as neural tube defects (e.g. oral cleft defects and congenital heart defects) (ATSDR, 1997). In each of these studies, the mothers were exposed to chemicals other than trichloroethene; therefore, the observed effects on the developing fetus have been from some factor other than trichloroethene. Thus, these studies suggest, but cannot prove, that the developing fetus may have increased sensitivity to the effects of trichloroethene. The estimated levels of exposure to trichloroethene in private drinking water supplies near the Little Valley site are similar to the exposure levels in these studies. The actions taken to reduce exposure to trichloroethene in private wells will help ensure that the potential risks are minimized.

The area encompassing the Little Valley site includes homes that have children in their household who may ingest contaminated drinking water, bathe in contaminated tap water, or inhale contaminated vapors from water use in the home.

CONCLUSIONS

The site posed a public health hazard in the past because persons were exposed (via inhalation, ingestion, and dermal absorption) to VOCs in private water supplies, above the Federal and State
drinking water standards, which required action to reduce or eliminate these exposures. Residents drinking contaminated groundwater have been exposed for up to 15 years or possibly longer. The chance that someone would actually get a cancer or non-cancer adverse health effect from their past exposures is low and minimal, respectively. There is insufficient information on the effects of trichloroethene in humans to conclude definitively that children or the developing fetus are at a greater or lesser risk for health effects than adults. The site currently presents no apparent public health hazard because treatment systems were installed to reduce exposures to below levels of public health concern. However, future exposure could occur if groundwater is not remediated and trichloroethene migrates to additional wells, new wells are installed in the contaminated plume, or if treatment systems are not maintained.

Analytical data indicate a plume of trichloroethene that stretches from the southern end of the Village of Little Valley to the northern portion of the City of Salamanca. The groundwater contaminant plume may extend further since groundwater south of the northern portion of the City of Salamanca has not been sampled due to the lack of groundwater monitoring points. The highest contaminant concentrations in groundwater are in the area bounded by Routes 242 and 353 and Baker Road known as the triangle area. A single source of contamination has not been found, and there may be multiple sources. Trichloroethene concentrations in private wells range from 1 mcg/L to 50 mcg/L, and are generally lower southward, toward the Allegheny River. In some cases, there are individual water supplies that show no trichloroethene contamination in areas where their neighbors have high levels of trichloroethene. Such differences may be due to differences in the depth and construction of individual wells.

The primary community health concerns at the site are the potential risks from being exposed to TCE in drinking water. Also, the community is concerned about efforts to reduce exposure by treating water or providing alternative water supplies and about efforts to clean up the contaminated groundwater. Since 1989, and before treatment systems were installed, the CCHD issued health advisories to residents exposed to contaminants in drinking water in the form of letters accompanying laboratory data. In addition, state and county health officials have explained potential health risks and conveyed health-related recommendations at several community meetings.

**RECOMMENDATIONS**

1. Actions taken to reduce exposures to contaminated water should continue.
2. Installed treatment systems must be maintained and the quality of the treated water monitored until contamination stops or an alternative water supply is provided.
3. Monitoring of potentially affected private wells should continue, with treatment systems added, when trichloroethene levels in tap water exceed the MCL.
4. A more permanent, long-term remedy for groundwater users should be sought (i.e., public water line extension).
5. Continue with periodic public meetings or public informational fact sheets to keep the community informed of local, state, and federal activities.
6. The remedial investigation should be completed and remedial alternatives evaluated.
PUBLIC HEALTH ACTION PLAN

The Public Health Action Plan (PHAP) for the Little Valley site contains a description of actions to be taken by ATSDR and/or the NYS DOH following completion of this health consultation. For those actions already taken at the site, please refer to the Background section of this public health assessment. The purpose of the PHAP is to ensure that this health consultation identifies public health hazards and provides a plan of action designed to mitigate and prevent adverse human health effects resulting from the past, present and/or future exposures to hazardous substances at or near the site. Included is a commitment on the part of ATSDR and/or the NYS DOH to follow up on this plan to ensure that it is implemented. The public health actions to be implemented by ATSDR and/or the NYS DOH are as follows:

1. The NYS DOH will coordinate with the appropriate environmental agencies to develop a plan to implement the recommendations contained in this public health assessment.
2. ATSDR will provide follow-up to this PHAP, as needed, outlining the actions completed and those in progress. This report will be placed in repositories that contain copies of this public health assessment and will be provided to people who request it.
3. Residents who were exposed in the past to VOCs in drinking water will be asked to participate in the New York State Volatile Organic Exposure Registry.
4. The NYS DOH will continue community health education activities to people whose drinking water supplies are contaminated with trichloroethene in the Little Valley study area. These activities will include meeting with the public and providing information on ways to reduce exposures to trichloroethene in drinking water.

ATSDR will reevaluate and expand the PHAP when needed. New environmental, toxicological, or health outcome data, or the results of implementing the above proposed actions, may determine the need for additional actions at this site.
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CERTIFICATION

The Public Health Assessment for the Little Valley site was prepared by the New York State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the public health assessment was initiated.

[Signature]
Gregory V. Militello
Technical Project Officer, SPS, SSAB, DHAC

The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Public Health Assessment and concurs with its findings.

[Signature]
Acting Chief, SSAB, DHAC, ATSDR
REFERENCES


APPENDIX A

Figures
FIGURE 2. Investigation Areas

KEY

Railroad
Stream

A = Bush Industries
B = 9th Street Landfill
C = Public Water Supply
D = King Windows
E = Korn Cutlery

Private Disposal Area
Former Envirotech Storage Area

State Highway 253
Little Valley Creek
First St
State Hwy 242
Baker Road
APPENDIX B

New York State Department of Health Procedure for Evaluating Potential Health Risks for Contaminants of Concern
To evaluate the potential health risks from contaminants of concern associated with the Little Valley site, the New York State Department of Health assessed the risks for cancer and noncancer health effects.

Increased cancer risks were estimated by using site-specific information on exposure levels for the contaminant of concern and interpreting them using cancer potency estimates derived for that contaminant by the US EPA or, in some cases, by the NYS DOH. The following qualitative ranking of cancer risk estimates, developed by the NYS DOH, was then used to rank the risk from very low to very high. For example, if the qualitative descriptor was "low", then the excess lifetime cancer risk from that exposure is in the range of greater than one per million to less than one per ten thousand. Other qualitative descriptors are listed below:

<table>
<thead>
<tr>
<th>Risk Ratio</th>
<th>Qualitative Descriptor</th>
</tr>
</thead>
<tbody>
<tr>
<td>equal to or less than one in a million</td>
<td>very low</td>
</tr>
<tr>
<td>greater than one in a million to less than one in ten thousand</td>
<td>low</td>
</tr>
<tr>
<td>one in ten thousand to less than one in a thousand</td>
<td>moderate</td>
</tr>
<tr>
<td>one in a thousand to less than one in ten</td>
<td>high</td>
</tr>
<tr>
<td>equal to or greater than one in ten</td>
<td>very high</td>
</tr>
</tbody>
</table>

An estimated increased excess lifetime cancer risk is not a specific estimate of expected cancers. Rather, it is a plausible upper bound estimate of the probability that a person may develop cancer sometime in his or her lifetime following exposure to that contaminant.

There is insufficient knowledge of cancer mechanisms to decide if there exists a level of exposure to a cancer-causing agent below which there is no risk of getting cancer, namely, a threshold level. Therefore, every exposure, no matter how low, to a cancer-causing compound is assumed to be associated with some increased risk. As the dose of a carcinogen decreases, the chance of developing cancer decreases, but each exposure is accompanied by some increased risk.

There is general consensus among the scientific and regulatory communities on what level of estimated excess cancer risk is acceptable. An increased lifetime cancer risk of one in one million or less is generally considered an insignificant increase in cancer risk.
For noncarcinogenic health risks, the contaminant intake was estimated using exposure assumptions for the site conditions. This dose was then compared to a risk reference dose (estimated daily intake of a chemical that is likely to be without an appreciable risk of health effects) developed by the US EPA, ATSDR and/or NYS DOH. The resulting ratio was then compared to the following qualitative scale of health risk:

<table>
<thead>
<tr>
<th>Qualitative Descriptions for Noncarcinogenic Health Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio of Estimated Contaminant Intake to Risk Reference Dose</td>
</tr>
<tr>
<td>equal to or less than the reference dose or minimal risk level</td>
</tr>
<tr>
<td>greater than one to five times the reference dose or minimal risk level</td>
</tr>
<tr>
<td>greater than five to ten times the reference dose or minimal risk level</td>
</tr>
<tr>
<td>greater than ten times the reference dose or minimal risk level</td>
</tr>
</tbody>
</table>

Noncarcinogenic effects unlike carcinogenic effects are believed to have a threshold, that is, a dose below which adverse effects will not occur. As a result, the current practice is to identify, usually from animal toxicology experiments, a no-observed-effect-level (NOEL). This is the experimental exposure level in animals at which no adverse toxic effect is observed. The NOEL is then divided by an uncertainty factor to yield the risk reference dose. The uncertainty factor is a number which reflects the degree of uncertainty that exists when experimental animal data are extrapolated to the general human population. The magnitude of the uncertainty factor takes into consideration various factors such as sensitive subpopulations (for example, children or the elderly), extrapolation from animals to humans, and the incompleteness of available data. Thus, the risk reference dose is not expected to cause health effects because it is selected to be much lower than dosages that do not cause adverse health effects in laboratory animals.

The measure used to describe the potential for noncancer health effects to occur in an individual is expressed as a ratio of estimated contaminant intake to the risk reference dose. If exposure to the contaminant exceeds the risk reference dose, there may be concern for potential noncancer health effects because the margin of protection is less than that afforded by the reference dose. As a rule, the greater the ratio of the estimated contaminant intake to the risk reference dose, the greater the level of concern. A ratio equal to or less than one is generally considered an insignificant (minimal) increase in risk.
APPENDIX C

Public Health Hazard Categories
<table>
<thead>
<tr>
<th>CATEGORY / DEFINITION</th>
<th>DATA SUFFICIENCY</th>
<th>CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Urgent Public Health Hazard</strong></td>
<td>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</td>
<td>Evaluation of available relevant information* indicates that sitespecific conditions or likely exposures have had, are having, or are likely to have in the future, an adverse impact on human health that requires immediate action or intervention. Such site-specific conditions or exposures may include the presence of serious physical or safety hazards.</td>
</tr>
<tr>
<td><strong>B. Public Health Hazard</strong></td>
<td>This determination represents a professional judgement based on critical data which ATSDR has judged sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</td>
<td>Evaluation of available relevant information* suggests that, under site-specific conditions of exposure, long-term exposures to site-specific contaminants (including radionuclides) have had, are having, or are likely to have in the future, an adverse impact on human health that requires one or more public health interventions. Such site-specific exposures may include the presence of serious physical or safety hazards.</td>
</tr>
<tr>
<td><strong>C. Indeterminate Public Health Hazard</strong></td>
<td>This determination represents a professional judgement that critical data are missing and ATSDR has judged the data are insufficient to support a decision. This does not necessarily imply all data are incomplete; but that some additional data are required to support a decision.</td>
<td>The health assessor must determine, using professional judgement, the “criticality” of such data and the likelihood that the data can be obtained and will be obtained in a timely manner. Where some data are available, even limited data, the health assessor is encouraged to the extent possible to select other hazard categories and to support their decision with clear narrative that explains the limits of the data and the rationale for the decision.</td>
</tr>
<tr>
<td><strong>D. No Apparent Public Health Hazard</strong></td>
<td>This determination represents a professional judgement based on critical data which ATSDR considers sufficient to support a decision. This does not necessarily imply that the available data are complete; in some cases additional data may be required to confirm or further support the decision made.</td>
<td>Evaluation of available relevant information* indicates that, under site-specific conditions of exposure, exposures to site-specific contaminants in the past, present, or future are not likely to result in any adverse impact on human health.</td>
</tr>
<tr>
<td><strong>E: No Public Health Hazard</strong></td>
<td>Sufficient evidence indicates that no human exposures to contaminated media have occurred, none are now occurring, and none are likely to occur in the future.</td>
<td></td>
</tr>
</tbody>
</table>

*Such as environmental and demographic data; health outcome data; exposure data; community health concerns information; toxicologic, medical, and epidemiologic data; monitoring and management plans.
APPENDIX D

Summary of Public Comments and Responses
Summary of Public Comments and Responses

This summary was prepared to address comments and questions on the public comment draft of the *Little Valley Site Public Health Assessment*. The public was invited to review the draft during the public comment period, which ran from July 13, 2000 — August 15, 2000. We received two responses: one from a public agency and one from a local resident. Minor clarifying changes were made in the text in response to the agency’s comments. The comment from the resident involved a family health issue. A physician from the NYS DOH Center for Environmental Health contacted the resident for follow-up. If you have any questions about this summary, you can contact the New York State Department of Health’s (NYS DOH) Outreach Unit at the toll free number: 1-800-458-1158, extension 27530.
APPENDIX E

ATSDR Glossary
ATSDR Plain Language Glossary
of Environmental Health Terms

Absorption: How a chemical enters a person’s blood after the chemical has been swallowed, has come into contact with the skin, or has been breathed in.

Acute Exposure: Contact with a chemical that happens once or only for a limited period of time. ATSDR defines acute exposures as those that might last up to 14 days.

Additive Effect: A response to a chemical mixture, or combination of substances, that might be expected if the known effects of individual chemicals, seen at specific doses, were added together.

Adverse Health Effect: A change in body function or the structures of cells that can lead to disease or health problems.

Antagonistic Effect: A response to a mixture of chemicals or combination of substances that is less than might be expected if the known effects of individual chemicals, seen at specific doses, were added together.

ATSDR: The Agency for Toxic Substances and Disease Registry. ATSDR is a federal health agency in Atlanta, Georgia that deals with hazardous substance and waste site issues. ATSDR gives people information about harmful chemicals in their environment and tells people how to protect themselves from coming into contact with chemicals.

Background Level: An average or expected amount of a chemical in a specific environment. Or, amounts of chemicals that occur naturally in a specific environment.

Biota: Used in public health, things that humans would eat – including animals, fish and plants.

CAP: See Community Assistance Panel.

Cancer: A group of diseases which occur when cells in the body become abnormal and grow, or multiply, out of control

Carcinogen: Any substance shown to cause tumors or cancer in experimental studies.


Chronic Exposure: A contact with a substance or chemical that happens over a long period of time. ATSDR considers exposures of more than one year to be chronic.

Completed Exposure Pathway: See Exposure Pathway.

Community Assistance Panel (CAP): A group of people from the community and health and environmental agencies who work together on issues and problems at hazardous waste sites.
Comparison Value:
(CVs) Concentrations or the amount of substances in air, water, food, and soil that are unlikely, upon exposure, to cause adverse health effects. Comparison values are used by health assessors to select which substances and environmental media (air, water, food and soil) need additional evaluation while health concerns or effects are investigated.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): CERCLA was put into place in 1980. It is also known as Superfund. This act concerns releases of hazardous substances into the environment, and the cleanup of these substances and hazardous waste sites. ATSDR was created by this act and is responsible for looking into the health issues related to hazardous waste sites.

Concern: A belief or worry that chemicals in the environment might cause harm to people.

Concentration: How much or the amount of a substance present in a certain amount of soil, water, air, or food.

Contaminant: See Environmental Contaminant.

Delayed Health Effect: A disease or injury that happens as a result of exposures that may have occurred far in the past.

Dermal Contact: A chemical getting onto your skin. (see Route of Exposure).

Dose: The amount of a substance to which a person may be exposed, usually on a daily basis. Dose is often explained as “amount of substance(s) per body weight per day”.

Dose / Response: The relationship between the amount of exposure (dose) and the change in body function or health that result.

Duration: The amount of time (days, months, years) that a person is exposed to a chemical.

Environmental Contaminant: A substance (chemical) that gets into a system (person, animal, or the environment) in amounts higher than that found in Background Level, or what would be expected.

Environmental Media: Usually refers to the air, water, and soil in which chemicals of interest are found. Sometimes refers to the plants and animals that are eaten by humans. Environmental Media is the second part of an Exposure Pathway.

U.S. Environmental Protection Agency (EPA): The federal agency that develops and enforces environmental laws to protect the environment and the public’s health.

Epidemiology: The study of the different factors that determine how often, in how many people, and in which people will disease occur.
Exposure: Coming into contact with a chemical substance. (For the three ways people can come in contact with substances, see Route of Exposure.)

Exposure Assessment: The process of finding the ways people come in contact with chemicals, how often and how long they come in contact with chemicals, and the amounts of chemicals with which they come in contact.

Exposure Pathway: A description of the way that a chemical moves from its source (where it began) to where and how people can come into contact with (or get exposed to) the chemical.

ATSDR defines an exposure pathway as having 5 parts:
1. Source of Contamination,
2. Environmental Media and Transport Mechanism,
3. Point of Exposure,
4. Route of Exposure, and
5. Receptor Population.

When all 5 parts of an exposure pathway are present, it is called a Completed Exposure Pathway. Each of these 5 terms is defined in this Glossary.

Frequency: How often a person is exposed to a chemical over time; for example, every day, once a week, twice a month.

Hazardous Waste: Substances that have been released or thrown away into the environment and, under certain conditions, could be harmful to people who come into contact with them.

Health Effect: ATSDR deals only with Adverse Health Effects (see definition in this Glossary).

Indeterminate Public Health Hazard: The category is used in Public Health Assessment documents for sites where important information is lacking (missing or has not yet been gathered) about site-related chemical exposures.

Ingestion: Swallowing something, as in eating or drinking. It is a way a chemical can enter your body (See Route of Exposure).

Inhalation: Breathing. It is a way a chemical can enter your body (See Route of Exposure).

LOAEL: Lowest Observed Adverse Effect Level. The lowest dose of a chemical in a study, or group of studies, that has caused harmful health effects in people or animals.

Malignancy: See Cancer.

MRL: Minimal Risk Level. An estimate of daily human exposure – by a specified route and length of time – to a dose of chemical that is likely to be without a measurable risk of adverse, noncancerous effects. An MRL should not be used as a predictor of adverse health effects.
NPL: The National Priorities List. (Which is part of Superfund.) A list kept by the U.S. Environmental Protection Agency (EPA) of the most serious, uncontrolled or abandoned hazardous waste sites in the country. An NPL site needs to be cleaned up or is being looked at to see if people can be exposed to chemicals from the site.

NOAEL: No Observed Adverse Effect Level. The highest dose of a chemical in a study, or group of studies, that did not cause harmful health effects in people or animals.

No Apparent Public Health Hazard: The category is used in ATSDR’s Public Health Assessment documents for sites where exposure to site-related chemicals may have occurred in the past or is still occurring but the exposures are not at levels expected to cause adverse health effects.

No Public Health Hazard: The category is used in ATSDR’s Public Health Assessment documents for sites where there is evidence of an absence of exposure to site-related chemicals.

PHA: Public Health Assessment. A report or document that looks at chemicals at a hazardous waste site and tells if people could be harmed from coming into contact with those chemicals. The PHA also tells if possible further public health actions are needed.

Plume: A line or column of air or water containing chemicals moving from the source to areas further away. A plume can be a column or clouds of smoke from a chimney or contaminated underground water sources or contaminated surface water (such as lakes, ponds and streams).

Point of Exposure: The place where someone can come into contact with a contaminated environmental medium (air, water, food or soil). For examples: the area of a playground that has contaminated dirt, a contaminated spring used for drinking water, the location where fruits or vegetables are grown in contaminated soil, or the backyard area where someone might breathe contaminated air.

Population: A group of people living in a certain area; or the number of people in a certain area.

PRP: Potentially Responsible Party. A company, government or person that is responsible for causing the pollution at a hazardous waste site. PRP’s are expected to help pay for the clean up of a site.

Public Health Assessment(s): See PHA.

Public Health Hazard: The category is used in PHAs for sites that have certain physical features or evidence of chronic, site-related chemical exposure that could result in adverse health effects.

Public Health Hazard Criteria: PHA categories given to a site which tell whether people could be harmed by conditions present at the site. Each are defined in the Glossary. The categories are:

- Urgent Public Health Hazard
- Public Health Hazard
- Indeterminate Public Health Hazard
- No Apparent Public Health Hazard
- No Public Health Hazard

**Receptor Population:** People who live or work in the path of one or more chemicals, and who could come into contact with them (See Exposure Pathway).

**Reference Dose (RfD):** An estimate, with safety factors (see safety factor) built in, of the daily, lifetime exposure of human populations to a possible hazard that is not likely to cause harm to the person.

**Route of Exposure:** The way a chemical can get into a person’s body. There are three exposure routes:
- breathing (also called inhalation),
- eating or drinking (also called ingestion), and
- or getting something on the skin (also called dermal contact).

**Safety Factor:** Also called Uncertainty Factor. When scientists don’t have enough information to decide if an exposure will cause harm to people, they use “safety factors” and formulas in place of the information that is not known. These factors and formulas can help determine the amount of a chemical that is not likely to cause harm to people.

**SARA:** The Superfund Amendments and Reauthorization Act in 1986 amended CERCLA and expanded the health-related responsibilities of ATSDR. CERCLA and SARA direct ATSDR to look into the health effects from chemical exposures at hazardous waste sites.

**Sample Size:** The number of people that are needed for a health study.

**Sample:** A small number of people chosen from a larger population (See Population).

**Source (of Contamination):** The place where a chemical comes from, such as a landfill, pond, creek, incinerator, tank, or drum. Contaminant source is the first part of an Exposure Pathway.

**Special Populations:** People who may be more sensitive to chemical exposures because of certain factors such as age, a disease they already have, occupation, sex, or certain behaviors (like cigarette smoking). Children, pregnant women, and older people are often considered special populations.

**Statistics:** A branch of the math process of collecting, looking at, and summarizing data or information.

**Superfund Site:** See NPL.

**Survey:** A way to collect information or data from a group of people (population). Surveys can be done by phone, mail, or in person. ATSDR cannot do surveys of more than nine people without approval from the U.S. Department of Health and Human Services.
Synergistic effect: A health effect from an exposure to more than one chemical, where one of the chemicals worsens the effect of another chemical. The combined effect of the chemicals acting together are greater than the effects of the chemicals acting by themselves.

Toxic: Harmful. Any substance or chemical can be toxic at a certain dose (amount). The dose is what determines the potential harm of a chemical and whether it would cause someone to get sick.

Toxicology: The study of the harmful effects of chemicals on humans or animals.

Tumor: Abnormal growth of tissue or cells that have formed a lump or mass.

Uncertainty Factor: See Safety Factor.

Urgent Public Health Hazard: This category is used in ATSDR’s Public Health Assessment documents for sites that have certain physical features or evidence of short-term (less than 1 year), site-related chemical exposure that could result in adverse health effects and require quick intervention to stop people from being exposed.