

# Health Consultation

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PATHAN CHEMICAL SITE

PHILADELPHIA, PHILADELPHIA COUNTY, PENNSYLVANIA

EPA FACILITY ID: PAD067399378

MARCH 17, 2004

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

**Health Consultation: A Note of Explanation**

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members.

This document has previously been 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 health consultation has now been reissued. This concludes the health consultation 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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# HEALTH CONSULTATION

PATHAN CHEMICAL SITE

PHILADELPHIA, PHILADELPHIA COUNTY, PENNSYLVANIA

EPA FACILITY ID: PAD067399378

Prepared by:

Pennsylvania Department of Health  
Under a Cooperative Agreement with the  
Agency for the Toxic Substances and Disease Registry

## Summary

At the request of the U.S. Environmental Protection Agency (EPA) in Region 3, the Pennsylvania Department of Health (PADOH), working under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR), prepared this Health Consultation (HC #2) for the Pathan Chemical Site to evaluate the most recently collected soil and air data. ATSDR and PADOH previously completed a Health Consultation (HC #1) in January 2002 that reviewed EPA sampling at the site to help determine whether the site posed a public health hazard or whether more information was needed. Based on recommendations in the HC #1, soil sampling of the surface soil (0 to 3 inches) was completed in January 2003 at eight on-site locations for selected metals (antimony, arsenic, and lead) and polycyclic aromatic hydrocarbons (PAHs) analyses. In June 2003, air samples were collected for asbestos fiber analysis and analysis of particulate matter with a diameter less than or equal to 10 microns in size (PM10), as well as potential analysis for selected metals and PAHs. Air samples were collected at four on-site locations (five locations in the case of asbestos fibers analysis).

The chemicals of health concern selected for evaluation in this HC #2 include arsenic and PAHs. These chemicals were detected in surface soil (0 to 3 inches) at maximum concentrations of 5.1 milligrams of arsenic per kilogram of soil (mg/kg) and 9.18 mg/kg (total EPA B2 carcinogens), respectively. Lead was also detected at the site but is well below EPA screening levels; exposure to the maximum lead concentration found at this site is not likely to cause an elevation in blood lead levels of children.

The site is currently a vacant lot that is readily accessible to anyone. On the basis of the most recent data and current on-site activities, however, PADOH concludes that the site currently does not pose a public health hazard for the selected metals and the PAHs. *PM10 results were all below the analytical detection limit and the site currently poses no apparent public health hazard, though validated analytical results for asbestos fiber air data are not yet available and will be reviewed at a later time.*

## Background and Statement of Issues

### Site History

The former Pathan Chemical Site (the site), once a 40,000 square foot, four-story warehouse and loading yard, was located in a residential area at 427 Moyer Street, Philadelphia, Pennsylvania (Figure 1 and Figure 2). The building was originally a textile facility that was bought by a former employee in 1972 who converted the building into a fabric softener and detergent manufacturing facility. From the documents gathered for this HC, there is no information as to when the business was closed [1]. After the closure, the site became an abandoned unsecured building with most of the windows and some of the doors broken out, and showed evidence of trespassing and fires.

EPA initially conducted a removal assessment in 1995. The removal assessment identified

approximately 10 vats, several hundred drums, and approximately 1000 small containers which contained hazardous substances within the building. Many of the drums and small containers were unlabeled, were in deteriorating conditions, and were leaking their contents. Materials were stored incompatibly, and sections of the floors where materials were stored were in deteriorating condition. The owner of the site attempted to conduct the removal effort but was unable to do so for financial reasons. Three roll-off dumpsters that EPA filled with crushed drums and small containers were removed from the site. When the action was completed, approximately twenty-five drums and several bags of chemicals were left on site because the property owner declared them as assets. Before leaving the site in 1996, EPA placed these items on the third floor of the building [1].

As of August 1998, these drums and paper sacks still remained on site. However, the EPA Regional Response Center received information in July 1998 indicating that people were breaking into the building and spilling chemicals on the floor. This initiated a removal assessment being performed by EPA in August 1998 in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300. Some of these drums and paper sacks had their contents spilled on the floor and down the stairwells, constituting a release or threat of release into the environment. Evidence existed of trespassing and vandalism which created an imminent and substantial endangerment to public health and the environment [1].

Since the building was abandoned, the integrity of the earlier removal efforts conducted in 1996 was threatened. Further removal action was required to eliminate the threat posed by the remaining drums and paper sacks at the site. EPA removed these drums and paper sacks and cleaned up the spilled materials throughout the building from November 3, 1998, through December 14, 1998 [1]. The building caught fire in March 1999 and was destroyed. The city of Philadelphia tore the building down, leveled the site, and covered it with fill (mounded up or crown shaped) from an unknown source; it is thought that at least the top one foot layer is this fill from an unknown source. The building remnants are at about 5 feet below this fill and the pre-existing earth may be found at 10 feet below.

Currently, the site is a vacant lot that is readily accessible to anyone. Row homes are directly adjacent to the west and east boundaries of the site. Located directly north of the site, crossing East Thompson Street, is the Adaire Public School and the Hetzell Playground. Located directly south of the site, crossing Moyer Street, are additional row homes (Figure 3).

### **Site Visit**

Overgrown vegetation and trash had been removed and a small treehouse had been constructed at the northeast end of the site since July 2001 when EPA first collected the soil samples. In October 2001, officials from the PADOH Environmental Health Assessment Program, ATSDR Region 3, EPA Region 3, City of Philadelphia Department of Recreation and City of Philadelphia Risk Management Division conducted a site visit. Since the October 2001 site visit, a chainlink fence has been installed along one perimeter of the site and a silt fence on another

side to minimize fill runoff with storm-water. The site was still open to pedestrians in the Winter of 2003 [2].

### **Site Contamination**

In 2003, PADOH reviewed the most recent sampling data from Pathan Chemical site, which was completed based on the Pathan HC #1 recommendations for additional sampling.

In January 2003, an EPA contractor collected surface soil samples (0 to 3 inches) for selected metals (antimony, arsenic, and lead) and PAHs at eight on-site locations (not including a duplicate sample at one of these locations). The concentration ranges of the surface soil sample results for this Health Consultation may be found in Table 1 and Table 2. Air sampling was conducted in June 2003 at one background location near/along Moyer Street (upwind of the site at the time of sample collection), one central location and two down gradient locations near/along East Thompson Street (downwind at the time of sample collection). An additional background location was established for collection of an asbestos fiber sample. All samples were analyzed for PM10 and asbestos fibers, as well as potential analysis for selected metals and PAHs [3].

### **Discussion**

To determine the possible health effects of site-specific chemicals, ATSDR has developed health-based comparison values (CVs) that are chemical-specific concentrations to help identify environmental contaminants of health concern. We use CVs to determine which contaminants require further evaluation [4]. Chemical concentrations that were below any of the ATSDR's comparison values are not discussed further in this HC.

These CVs include Environmental Media Evaluation Guides (EMEGs) and Reference Dose Media Evaluation Guides (RMEGs) for noncancerous health effects as well as Cancer Risk Evaluation Guides (CREGs) for cancerous health effects. If environmental media guides cannot be established because of a lack of available health data, other comparison values may be used to select a contaminant for further evaluation. While media concentrations less than a CV are unlikely to pose a health threat, media concentrations above a CV do not necessarily represent a health threat. Therefore, CVs are not used as predictors of adverse health effects or for setting clean-up levels.

PADOH also researches scientific literature and uses the ATSDR's Minimal Risk Levels (MRLs), the EPA's Reference Doses (RfDs), and the EPA's Cancer Slope Factors (CSFs). MRLs are estimates of daily exposure to contaminants below which noncancerous adverse health effects are unlikely to occur. RfDs are estimates (with uncertainty spanning perhaps an order of magnitude) of daily oral exposure, in milligrams per kilogram per day (mg/kg/day), to the general public (including sensitive groups) that are likely to be without an appreciable risk of noncancerous harmful effects during a lifetime (70 years). Exposure doses below the MRL or RfD are not likely to cause any noncancerous adverse health effects. Exposure doses above the MRL or RfD require further evaluation to determine if adverse effects are likely to occur. When RfDs and MRLs are not available, a no-observed-adverse-effect-level (NOAEL) or lowest-

observed-adverse-effect-level (LOAEL) may be used to estimate levels below which no adverse health effects (noncancerous) are expected.

Health guidelines such as MRLs and RfDs, however, do not consider the risk of developing cancer. To evaluate exposure to carcinogens, EPA has established CSFs for inhalation and ingestion that define the relationship between exposure doses and the likelihood of an increased risk of cancer, compared with controls that have not been exposed to the chemical. Usually derived from animal or occupational studies, CSFs are used to calculate the exposure dose likely to result in one excess cancer case per one million persons exposed over a lifetime (70 years).

Because children generally receive higher doses of contaminants than adults under similar circumstances, the DOH uses the higher doses in forming its conclusions about the health effects of exposures to site-related contaminants when children are known or thought to be involved (see Child Health Consideration section). The sampling data evaluated in this section were obtained from the 2003 data validation reports [3]. After contaminants were selected for further evaluation with the use of current ATSDR's Soil Comparison Values, PADOH evaluated the environmental and human components (or exposure pathways) that could lead to human exposure. Exposure pathways are descriptions 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.

PADOH considered exposures to trespassers (mostly middle-school age children) to onsite soil through ingestion of chemicals in surface soil (0 to 3 inches) beginning in 1996 when EPA conducted a removal action at the site through 2003 for a total exposure duration of 7 years. The "worst-case" assumption involves the exposure to the highest levels of contaminants detected by a 1 to 11 year old child (this age child is younger than the middle-school age, but this age group was used for the "worst case" scenario). The child would have been exposed to the soil contaminants through playing at this site 5 days a week for 12 weeks during summer months and who would also have been playing about an additional 24 hours per week for the rest of the school year or 40 weeks. This assumption results in a total of 100 days per year of exposure. It would also be logical to assume that the exposure dose would be less for adults since we do not expect adults to be spending as much time as the children at this site. It is assumed that the soil ingestion rate for children would be 200 milligrams per day (mg/day) and the soil ingestion rate for adults would be 100 mg/day.

Based on the soil samples collected, only the inorganic chemical - arsenic - is above ATSDR CVs (see the following section on ATSDR CVs). Currently there is no ATSDR CV listed for lead, but the levels of lead found are well below the EPA lead screening level; no antimony was detected in the samples. The PM10 sample results were insignificant; all samples came back below detection limits (meaning sample detection limits were below the Pennsylvania and National Ambient Air Quality Standard of 50 micrograms per cubic meter as per the Clean Air Act) [3]. Because previous soil samples results for selected metals and PAHs were very low and the particulate matter with a diameter less than or equal to 10 microns in size or PM10 samples results were nondetects, it was not necessary to analyze air samples for selected metals and

PAHs. *It should be noted that once validated analytical results for asbestos fiber become available from EPA, these data will be evaluated by PADOH.*

## **Arsenic**

As indicated, people who visited the site (especially children) may have been exposed to arsenic through the ingestion of surface soil. Skin contact with arsenic in soil is not an important route of exposure since very little arsenic can enter the body through skin [5].

Arsenic was detected in all surface soil samples (0 to 3 inches of surface soil sampled); levels ranged from 2.4 milligrams of chemical per kilogram soil (mg/kg) to 5.1 mg/kg at the site. These levels are lower than the Pennsylvania's current Act 2 nonresidential cleanup standard of 53 mg/kg for surface soil.

In general, the concentration of arsenic in soil varies widely across the United States, ranging from about 1 mg/kg to 40 mg/kg, with an average value of about 5 mg/kg [ 6]. However, soils in the vicinity of arsenic-rich geological deposits, some mining and smelting sites, or sites where arsenic pesticides have been applied, may contain high levels of arsenic.

ATSDR has developed a chronic oral MRL of 0.0003 mg/kg/day for noncancerous health effects based on epidemiologic studies that demonstrate skin lesions in people exposed to arsenic. If a child (about 30 kg for the "worst-case" scenario) was exposed to arsenic, as described, at the maximum soil concentration ("worst-case" scenario), then the estimated exposure dose would be  $2.01 \times 10^{-6}$  mg/kg/day. This is about 32 times lower than ATSDR's chronic oral MRL. If adults were to be exposed to arsenic, then the estimated oral exposure dose would be about  $8.38 \times 10^{-7}$  mg/kg/day. This is about 360 times lower than ATSDR's chronic oral MRL. Therefore, exposure to arsenic for the scenario described above is not likely to cause any non-cancerous adverse health effects either for children or adults.

Arsenic is recognized as a human carcinogen by the U. S. Department of Health and Human Services (DHHS) and the World Health Organization's (WHO) International Agency for Research on Cancer (IARC). The EPA also classifies arsenic as a known human carcinogen [6]. In order to evaluate the possible cancer risk associated with ingestion of arsenic contaminated soil, we calculated the theoretical cancer risk using EPA's CSF of  $(1.5 \text{ mg/kg/day})^{-1}$  for arsenic. PADOH evaluated the theoretical cancer risk associated with a lifetime exposure (i.e., 70 years) to the highest arsenic levels found at this site at a likely increase of 1 cancers per one million). For the corresponding cancer risk associated with exposure to arsenic for the 7 years in this scenario, the risk is very much lower and most likely insignificant (a likely increase of 1 cancer in 10 million people). The cancer estimate was calculated using very conservative assumptions about the frequency and duration of the site use as previously stated and also using the maximum value found. It is unlikely, however, that a person will be in contact with the highest level of arsenic contaminated soil over an entire 7 years. On the basis of existing data, it appears that the current levels of arsenic do not pose a significant health threat to the people visiting the site

because the estimated cancer risk is insignificant. However, since arsenic is a known human carcinogen, exposure to it should be eliminated or reduced to the lowest level possible.

## **Lead**

The maximum concentration of lead on-site for this set of sample results was 204 mg/kg; the range was 37- 204 mg/kg. These results are below the EPA screening level (mean) of 400 mg/kg and 1000 mg/kg for residential areas and nonresidential areas, respectively. PADOH concludes that exposure to the maximum concentration of lead (“worst-case”) detected in the soil at this site is not likely to result in elevated blood lead levels that could cause health problems.

All sources of lead exposure by children should be reduced as much as possible. There are various other sources of environmental lead exposure other than soil and not related to this site that could raise the blood lead level in a child: age of the housing and whether it contains lead paint chips, the solder used in drinking water plumbing, use of pottery containing lead, and hobbies containing lead [7,8].

## **Polycyclic Aromatic Hydrocarbons (PAHs)**

PAHs are a group of chemicals that are formed during the incomplete combustion of organic chemicals such as coal, oil, gas, wood, garbage, or other organic substances, such as tobacco and charbroiled meat. There are more than 100 different PAHs [9]. Studies in animals have also shown that these chemicals can cause harmful effects on skin, body fluids, and the body's system for fighting disease after both short- and long-term exposure. These effects have not been reported in people.

The health effects of individual PAHs are not exactly alike [10]. Studies in animals have shown that these chemicals can cause harmful effects on skin, body fluids, and the body's systems for fighting disease after both short- and long-term exposure. However, these effects have not been reported in people. Of these PAHs, benzo(a)pyrene is the most potent and most extensively studied PAH, and it was detected in the most recent samples at the concentration range of 0.27 mg/kg to 1.1 mg/kg. This level is below the Pennsylvania Act 2 cleanup standard for nonresidential surface soil cleanup standard of 11 mg/kg.

ATSDR has not developed a chronic oral MRL for benzo(a)pyrene. However, the estimated oral exposure dose to benzo(a)pyrene based on the assumptions discussed previously results in a margin of safety greater than 1000 which means that harmful health effects are not expected. Therefore, exposure to benzo(a)pyrene for the scenario described above is not likely to cause any noncancerous adverse health effects for children or adults.

Six other PAHs that have been determined to be probable human carcinogens were also evaluated by PADOH for noncarcinogenic effects (e.g., immunotoxic effects or gastrointestinal effects). The six other PAHs include benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indo(1,2,3-cd)pyrene. No chronic nor intermediate health effect levels have been determined for these PAHs, so the ATSDR

intermediate (less serious) LOAEL for benzo(a)pyrene was used as a conservative substitute. The concentration level at this site for a child for these six PAHs totaled are about six order of magnitude less than the benzo(a)pyrene LOAEL. Therefore, exposure to these six PAHs for the scenario described above is not likely to cause any noncancerous adverse health effects for children or adults.

EPA and the International Agency for Research on Cancer (IARC) have classified benzo(a)pyrene as a “B2” or probable human carcinogen (inadequate or limited human evidence; sufficient evidence in animals). PADOH used EPA’s cancer slope factor (CSF) of  $7.3 \text{ (mg/kg/day)}^{-1}$  for benzo[a]pyrene, to evaluate an increased cancer risk for this chemical. PADOH evaluated the cancer risk associated with exposure to benzo[a]pyrene for a lifetime (using 70 years) at a likely increase of about 1 cancers per 1 million people. For the corresponding cancer risk associated with exposure to benzo[a]pyrene for 7 years in this scenario, the risk is much lower (a likely increase of about 1 cancer in 10 million people). These calculated risks based on animal exposure studies [9] are theoretical and tend to overestimate the risk associated with past exposure to benzo[a]pyrene. Based upon existing data, PADOH determined that the current levels of benzo[a]pyrene do not pose a significant health threat to the people visiting the site because the estimated cancer risk is insignificant and there would be not an expected increase risk of cancer.

Since the other six “B2” PAHs either do not have determined CSFs or the CSFs from other references are the same as for benzo(a)pyrene, the concentrations of these along with benzo(a)pyrene were totaled and the CSF for benzo(a)pyrene was used in the calculation. Using the estimated exposure dose adjusted for the “worst case” exposure during a lifetime (i.e., 70 years) for the adult population, the cancer risk was estimated at  $1 \times 10^{-5}$ , or a likely increase of about 10 cancers in 1 million people. For 7 years, the risk would be about 1 excess cancer in one million people. Therefore, PADOH determined that exposure to these B2 PAHs pose no increased risk for cancers. Additionally, all the maximum results for the PAHs analyzed were totaled (Total PAHs) and the cancer risk for 7 years was also determined to be insignificant (an increase in about 2 cancers per one million people).

### **Asbestos and Air Samples**

There was no detection of Particulate Matter with a diameter less than or equal to 10 microns in size or PM10 at the site in the most recent sampling. Based on current data and current on-site activities, generation of lots of dust on site is unlikely, and *PADOH determined there is little threat of exposure by inhalation at this site.* Since previous soil samples results for selected metals and PAHs were very low and also since the PM10 samples results were nondetects, selected metals and PAHs were not analyzed. *Upon availability of the asbestos fiber data for air samples data, PADOH will complete an evaluation, though currently it is expected that asbestos fibers pose no public health hazard at this site.*

### **Children’s Health Considerations**

ATSDR and PADOH recognize that children are especially sensitive when exposed to many contaminants. This sensitivity is a result of the following factors: (1) children are more likely to be exposed to certain media (e.g., soil, sediment, air, surface water or water from springs) because they play outdoors and, in general, are more likely than are adults to put their hands and objects into their mouths; (2) children are shorter than adults, which means they can breathe dust, soil, and vapors close to the ground; and (3) children are smaller, therefore childhood exposure results in higher doses of chemicals per body weight. Children can sustain permanent damage if these factors lead to toxic exposure during critical growth stages. ATSDR and PADOH evaluated the likelihood that children living near the site may have been or may be exposed to contaminants at levels of health concern as a result of playing on site.

### **Conclusions**

The interpretation, advice, and recommendations provided in this HC are based on the information currently available. Additional information may alter the conclusions and recommendations of this HC. In addition, the conclusions and recommendations of this HC are specific to the Pathan Chemical Site and should not be considered applicable to any other situations or sites.

PADOH and ATSDR conclude that exposure to the current levels of selected metals (lead, arsenic, and antimony) and the current levels of the PAHs at the site are unlikely to cause health effects, therefore, they pose no apparent public health hazard. Though the analysis for asbestos fiber in air samples has not been completed at this time, ATSDR and PADOH conclude that the site poses no apparent public health hazard. Any further asbestos fiber analysis data received from EPA will be evaluated by PADOH.

### **Recommendations**

EPA should complete the analysis for asbestos fibers in the samples already collected at the Pathan Chemical Site.

### **Public Health Action Plan**

ATSDR and PADOH will ensure that the City of Philadelphia, USEPA, and the community are aware of the findings of this consultation.

PADOH will review and evaluate the analysis data for asbestos fiber when it becomes available.

## References

1. Federal On-Scene Coordinator's After Action Report for Pathan Chemical Restart, Philadelphia, PA, November 3, 1998 through December 14, 1998.
2. Electronic mail to Thomas Fox, City of Philadelphia Parks and Recreation Director and Kendall O. Banks, City of Philadelphia Risk Assessment, October 22, 2001 and to PADOH, August 26, 2003 from Robert Lausch, EPA Region 3 and telephone discussion with Robert Lausch, EPA Region 3 in January 2004.
3. Data validation reports for Pathan Chemical Site from Fredrick Foreman, Region 3 ESAT RPO (3ES22), April 2003 and June 2003 and electronic mail to PADOH from Robert Lausch, EPA Region 3 - June 13, 2003, July 01, 2003 and November 5, 2003.
4. Agency for Toxic Substance and Disease Registry (ATSDR). Soil/Water/Air Comparison Values and Health Guideline Comparison Values, version 12/31/03.
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10. Agency for Toxic Substances and Disease Registry. Public health statement for Polycyclic aromatic hydrocarbons. Available from: URL: <http://www.atsdr.cdc.gov/toxprofiles/phs69.html>. Atlanta: US Department of Health and Human Services; 1995.

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**Certification**

This Health Consultation for the Pathan Chemical Site was prepared by the Pennsylvania Department of Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

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**LCDR Alan G. Parham, REHS, MPH**  
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The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this health consultation and concurs with its findings.

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**Roberta Erlwein**  
**Lead, Cooperative Agreement Team, SSAB, DHAC, ATSDR**

## **APPENDICES**

## **APPENDIX A. FIGURES**

Figure 1  
Map of the Commonwealth of Pennsylvania  
Showing the Site Location of Pathan Chemical Site  
427 Moyer Street  
Philadelphia, PA 19125

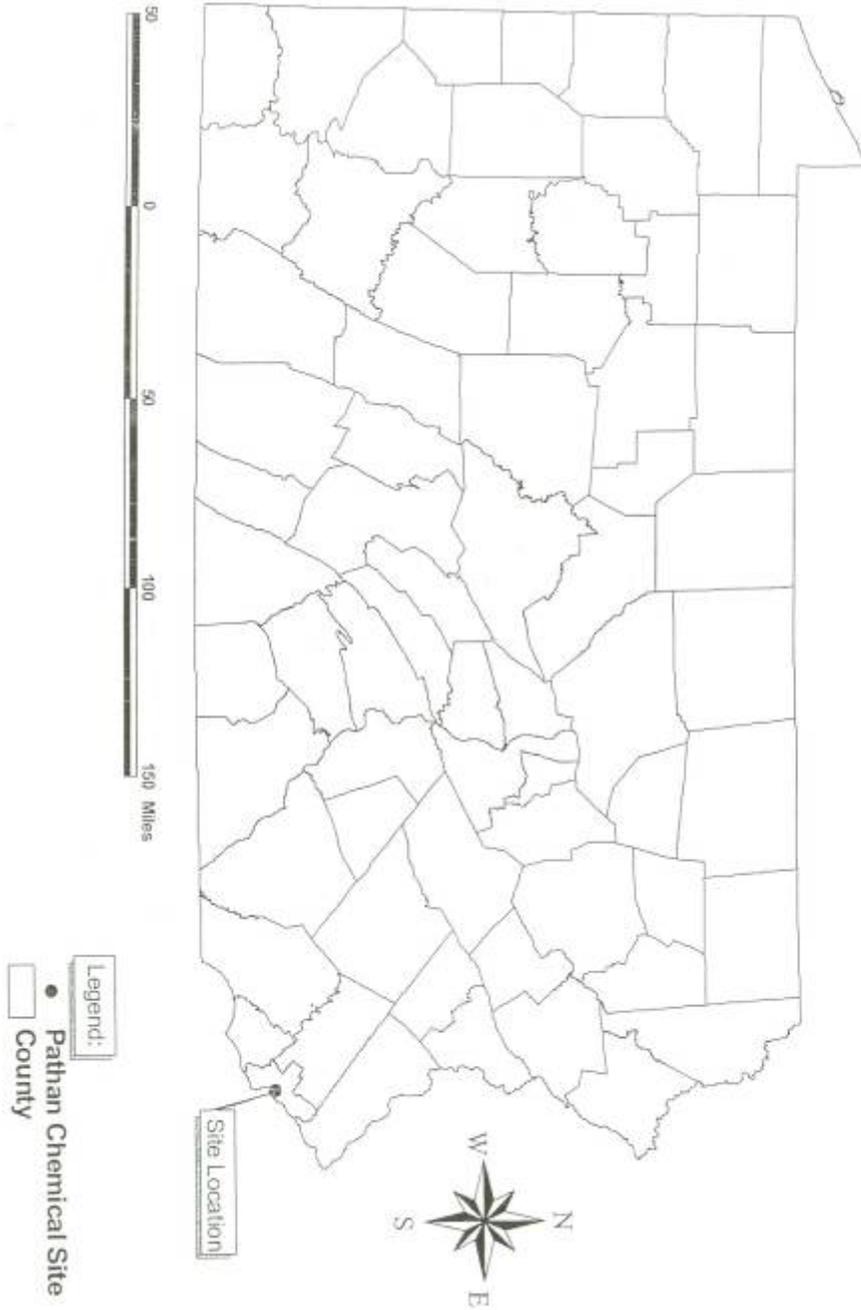


Figure 1. Map of the Commonwealth of Pennsylvania (showing the site location of Pathan Chemical Site)

**Figure 2**  
**Pathan Chemical**  
**Site Location Map**

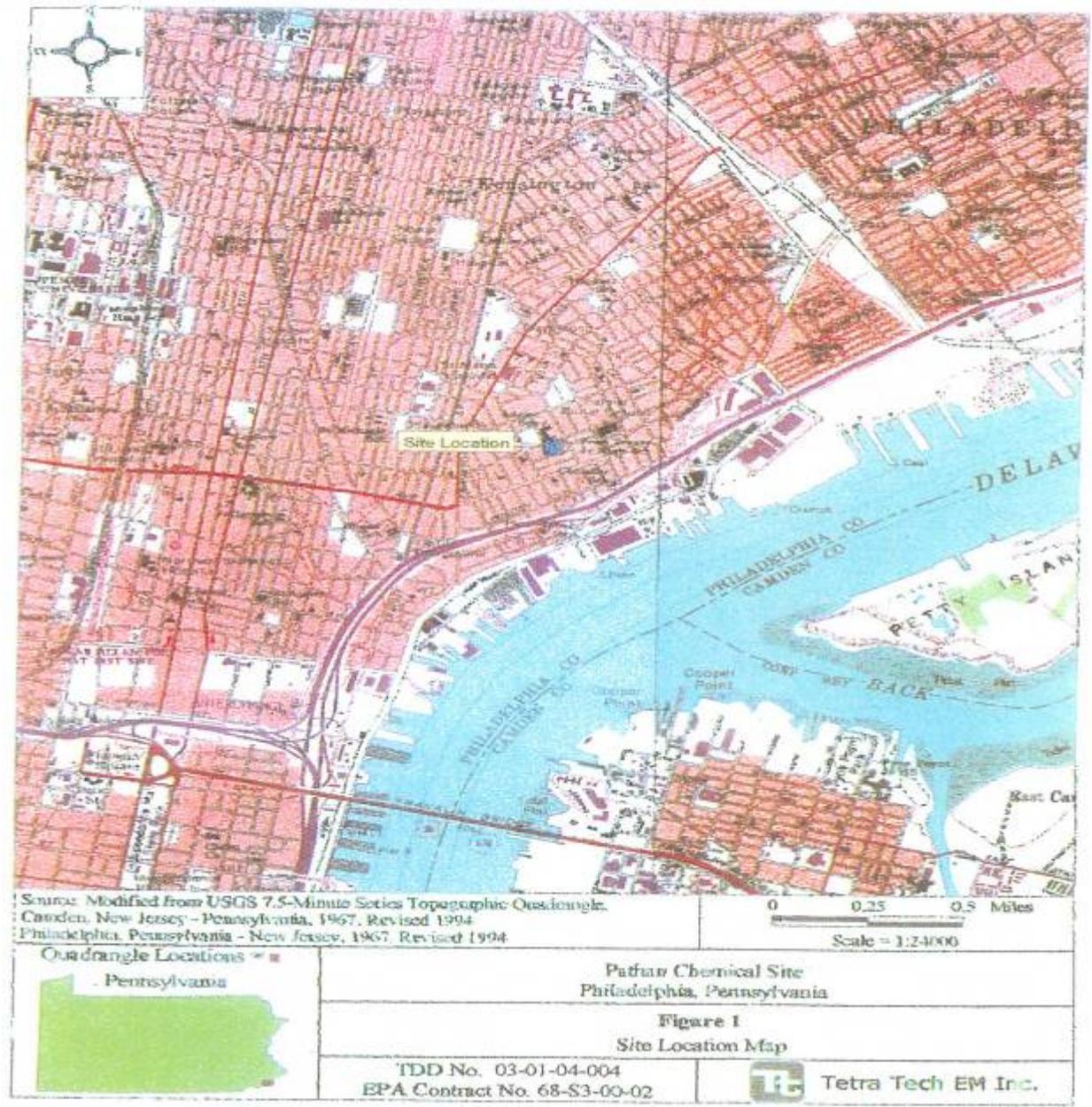


Figure 2. Pathan Chemical Site Location Map (from Tetra Tech)

Figure 3  
 Pathan Chemical Site  
 Sampling Location Map

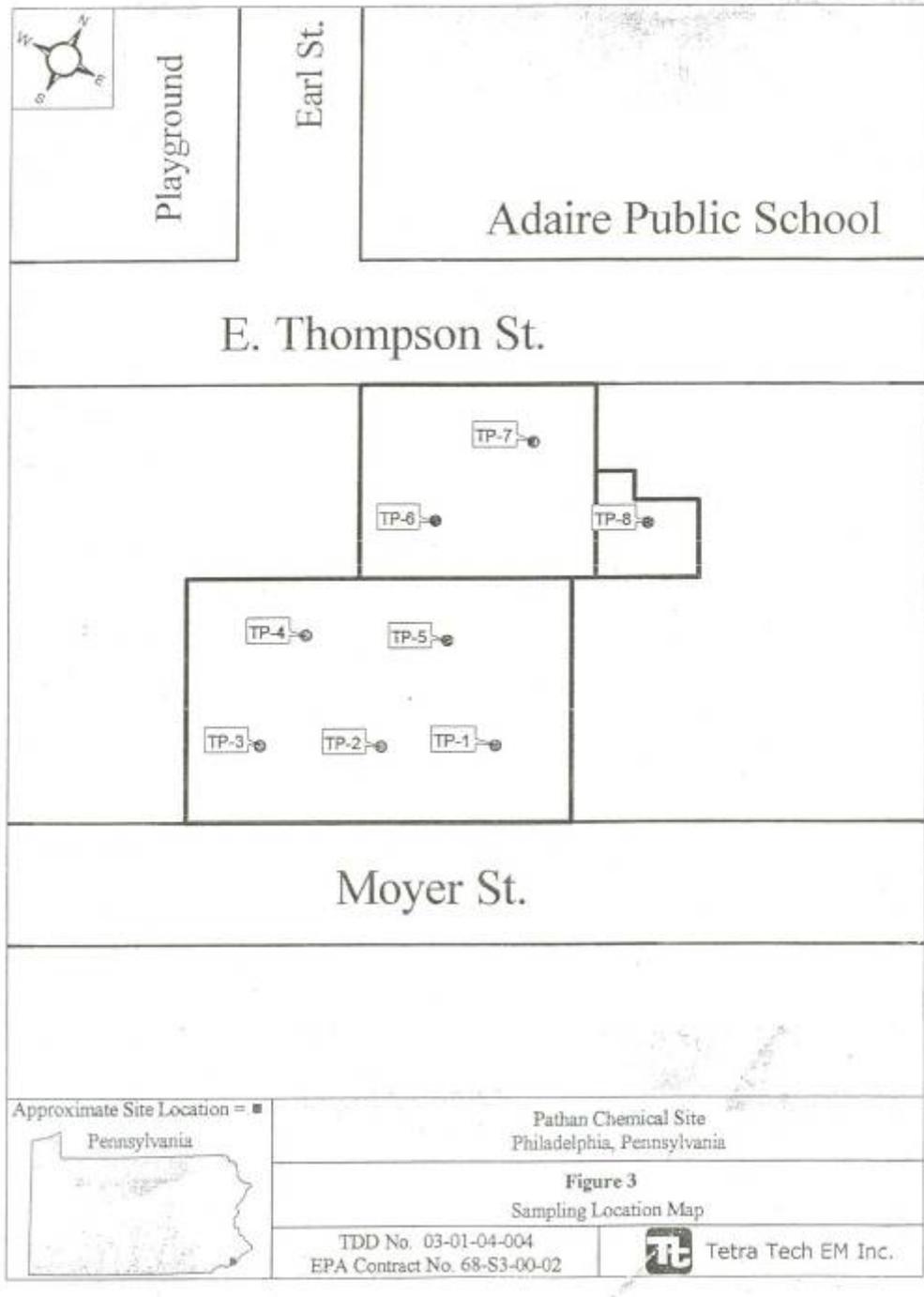


Figure 3. Pathan Chemical Site Location Map (from Tetra Tech) - site location enlarged showing street boundaries and the Adaire Public School

## **APPENDIX B. TABLES**

Table 1. Pathan Chemical – Phase 2, Philadelphia County, PA - Summary of INORGANIC Chemicals of Health Concern from On-site Soil Samples - 2003. All Concentrations are in PPM.						
Contaminant	Frequency	Concentrations (mg/kg or PPM)	ATSDR Comparison Values (CVs) <sup>1</sup>		IRIS CR GROUP GROUP	Notes
			CVs	Source		
Arsenic	9 / 9	2.4 - 5.1	0.5	CREG	A	PA Act 2 Cleanup Standard (surface soil) for nonresidential = 53 PPM  EPA Screening Standard (mean) for non-residential = 1000 PPM
Lead	9 / 9	37 - 204	n/a	-	-	

Source: Data was received by way of the U.S. Environmental Protection Agency (EPA) Region 3. Samples were from May 2003 as per Phase 2, 0 to 3 inch soil sampling.

<b>Table Key:</b>
1 = ATSDR CV table used was version 09-30-03 to 12-31-03
PPM = units of Parts per Million or milligrams of chemical per kilogram of soil
n/a = None Available
EPA = the United States Environmental Protection Agency

IRIS =EPA’s Integrated Risk Information System

IRIS CR Group = EPA’s Lifetime Cancer Risk Classification

IRIS CR Group “A” = EPA Cancer Classification, “Known human carcinogen”

CREG = ATSDR Cancer Risk Evaluation Guide for 1 in one million excess cancer risk

Table 2. Pathan Chemical - Phase 2, Philadelphia County, PA - Summary of ORGANIC Chemicals of Health Concern From On-site Soil Samples - 2003. All Concentrations are in PPM.

Contaminant	Frequency	Concentrations (mg/kg or PPM)	ATSDR Comparison Values (CVs) <sup>1</sup>		IRIS CR GROUP	Notes
			CV	Source		
<b>Benzo[a]anthracene</b>	9 / 9	0.29 - 1.70	n/a		B2	
<b>Benzo[a]pyrene</b>	9 / 9	0.27J - 1.10	0.1	CREG	B2	PA Act 2 Cleanup Standard (surface soil) for nonresidential = 11 PPM
<b>Benzo[b]fluoranthene</b>	9 / 9	0.31 - 1.60	n/a		B2	
<b>Benzo[k]fluoranthene</b>	9 / 9	0.32 - 1.30	n/a		B2	
<b>Chrysene</b>	9 / 9	0.30 - 1.60	n/a		B2	
<b>Dibenzo[a,h]anthracene</b>	9 / 9	0.071J - 0.38	n/a		B2	
<b>Indeno[1,2,3-cd]pyrene</b>	9 / 9	0.27 - 1.50	n/a		B2	
Total EPA “B2” Carcinogens	-	1.831 - 9.18	n/a		All “B2s”	
Total PAHs (carcinogens and noncarcinogens)*	-	3.37 - 18.64	n/a		-	

Source: Data was received by way of the U.S. Environmental Protection Agency (EPA) Region 3. Samples were from January 2003, 0 to 3 inches subsurface sampling.

Table Key:
1 = ATSDR CV table used was version 9-30-03 to 12-31-03
PPM = units of Parts per Million or milligrams of chemical per kilogram of soil
n/a = None Available; the assumption was made that the Cancer Slope Factor is the same as that for benzo[a]pyrene if no value was available through ATSDR.
* _ The highest result was not used due to laboratory error
J = Greater than the method detection limit but less than the quantitation limit, an estimated value
EPA = the United States Environmental Protection Agency
IRIS = EPA's Integrated Risk Information System
IRIS CR Group = EPA's Lifetime Cancer Risk Classification
IRIS CR Group "B2" = EPA Cancer Classification, "Probable human carcinogen with inadequate human , but sufficient animal studies"
GREG = ATSDR Cancer Risk Evaluation Guide for a "one in a million" excess cancer risk