ADMINISTRATIVE RECORD

WHITE SWAN CLEANERS SITE

WALL TOWNSHIP, NEW JERSEY

Prepared for:

U. S. EPA Region II
Response and Prevention Branch
Edison, New Jersey 08837

Prepared by:

Region II Removal Support Team
Roy F. Weston, Inc
Federal Programs Division
Edison, New Jersey 08837

DCN #: RST-02-F-00514
EPA Contract No.: 68-W00-113

MARCH 2002

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Bureau of Field Operations - Case Assignment Section
P. O. Box 434, Trenton, NJ 08625-0434
(609) 292-2943

Robert C. Shinn, Jr.
Commissioner

FEB 28 2001

Marion Brady
Summit Bank
301 Carnegie Center, PO Box 2066
Princeton, NJ 08543-2066

Re White Swan Laundry & Cleaners (former), Wall Twp, Monmouth County
Case No: 01-02-15-0340-52
Block: 706 Lots: 2

Dear Mr. Brady:

The purpose of this letter is to provide you with written notification that Department of Environmental Protection has reviewed the Memorandum of Agreement application for the above referenced site and determined that it is administratively complete. This letter constitutes the Memorandum of Agreement by rule pursuant to N.J.A.C. 7:26C-3.3. The date of this letter is considered the effective date of the Memorandum of Agreement.

Within thirty (30) calendar days from the effective date of the Memorandum of Agreement, you are required to submit to the Department a schedule of implementation of those activities and/or phases enumerated in the Memorandum of Agreement. If all remedial activities required by this Memorandum of Agreement are completed, then please submit a schedule of when required documents will be submitted. This schedule is needed to assure that Department personnel can be appropriately assigned to this matter to ensure timely response by the Department.

Until a case manager is assigned, your contact for the Department concerning all matters addressed by the Memorandum of Agreement is Kirstin Pointin-Hahn. Please contact Kirstin Pointin-Hahn at (609) 584-4150 if you have any questions.

All reports should be sent to :

New Jersey Department of Environmental Protection
Division of Responsible Party Site Remediation
Bureau of Field Operations - Southern
P.O. Box 407
Trenton, New Jersey 08625-0407

Attention: Kirstin Pointin-Hahn, Supervisor

Enclosed is a copy of the certification that must accompany all submittals to the Department.

Sincerely,

Vincent Krisak, Section Chief
Case Assignment Section

Enclosures

C: Monmouth County Health Department

MEMORANDUM OF AGREEMENT FOR NON-RESIDENTIAL PROPERTIES

This Memorandum of Agreement (Agreement) has been developed so that any party interested in conducting a cleanup at a non-residential property can do so with oversight from the Department. The Department will provide oversight as long as the Department is reimbursed for the cost of its review. This Agreement must be completed in its entirety by the party interested in conducting the cleanup activities and/or the party's authorized agent, and shall include a fully executed copy of the attached certification. The Department can not process any applications unless all the information requested is complete and all questions are answered to the satisfaction of the Department. Once completed the Agreement must be submitted to the following address:

Division of Responsible Party Site Remediation
Bureau of Field Operations
401 East State Street, PO Box 434
Trenton, NJ 08625-0434

Attention: Section Chief - Case Assignment Section

(609) 292-2943

Answer all questions as completely as possible. If you have any questions when completing this form, it is recommended that you contact the Case Assignment Section at (609) 292-2943 between the hours of 8:00 AM and 5:00 PM for assistance.

This Agreement is entered into pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "the Department") by N.J.S.A. 13:1D-1 et seq. and N.J.S.A. 58:10B et seq. and the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq. and the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11 et seq. and duly delegated to the Section Chief, Division of Responsible Party Site Remediation, Bureau of Field Operations pursuant to N.J.S.A. 13:1B-4.

This Agreement is to be used as a formal request for Department oversight of cleanup activities pursuant to the Procedures for Department Oversight of the Remediation of Contaminated Sites (N.J.A.C. 7:26C et seq.)and review of reports submitted pursuant to the Technical Rules for Site Remediation (N.J.A.C. 7:26E et seq.).

MEMORANDUM OF AGREEMENT FOR NON-RESIDENTIAL PROPERTIES

CASE NUMBER 01-02-15-0340-52 DATE January 31, 2001

2/22/2001 AK

A. Current Use: Agricultural _____ Industrial _____ Undeveloped _____
Commercial X Other _____

B. Site Name Summit Bank (formerly White Swan Laundry & Cleaners)

Street Address 1322 Sea Girt Avenue

Zip Code 08750

Municipality Wall Township County Monmouth

Tax Block and Lot Number(s) Block 706, Lot 2

Latitude 40° 08'N Longitude 74° 03'W

Acreage 0.47

Geographic Boundaries North of Sea Girt Avenue, South of Laurel Avenue, West of Begonia Avenue and East of Route 35.

RECEIVED
FEB - 5 2001

1

EPA ID # (if applicable) _____

C. **Who will be executing this Agreement?** (if different than Question B)

Name _____

Affiliation Summit Bank

Address 301 Carnegie Center, P.O. Box 2066

City Princeton State NJ Zip Code 08543-2066

State of Incorporation _____ Corp. Status _____

Telephone # _____

D. Select which phase(s) of the cleanup process are to be performed and what document(s) are to be submitted pursuant to the Agreement being requested.

REMEDIAL PHASE		DOCUMENTS TO BE SUBMITTED	
☐	Preliminary Assessment	☐	Preliminary Assessment Report
☒	Site Investigation	☒	Site Investigation Report
☒	Remedial Investigation	☒	Remedial Investigation Workplan
☐	Remedial Action	☒	Remedial Investigation Report
		☐	Remedial Action Selection Report
		☐	Remedial Action Workplan
		☐	Remedial Action Report

E. **Current Site Owner(s)**

Name(s) See Question C.

Firm _____ Telephone # _____

Street Address _____

Municipality _____

State _____ Zip Code _____

F. **Current Business Operator(s)**

Name(s) See Question C.

Firm _____

Telephone # _____ Street Address _____

Municipality _____ State _____ Zip Code _____

G. **Current Business Owner(s)** (if different than question Part E. or F.)

Name(s) See Question C.

Firm _____ Telephone # _____

Street Address _____

Municipality _____

State _____ Zip Code _____

H. Provide the information requested below on the previous owners of the site and the entities who operated at the site.

Name	Owner or Operator	From	To
See Appendix A.			

I. For those former Owner(s) and/or Operator(s)identified above (in paragraph H), give a brief discussion of all operations at the site, including but not limited to types of operations, materials used, waste generated, and waste disposal techniques.

The site is a former dry cleaning establishment. It has also been operated as a bank, which is its present use.

J. Are there currently or have there ever been any notices on the deed which constitute a Declaration of Environmental Restriction (DER) pursuant to N.J.A.C. 7:26E-1 et seq.?

Yes _____ No X Unknown _____

If yes, please state the name of the site as it was identified in the DER, the address, lot and block and EP ID number (if applicable) associated with the site.

K. Are there currently, or have there ever been any hazardous substances as defined by N.J.A.C. 7:1E-1 et seq., used, treated, stored, disposed or discharged at the site (ie. fuel oil, gasoline)?

Yes _____ No _____ Unknown X

L. Are there currently, or have there ever been any hazardous wastes as defined by N.J.A.C. 7:26G-16 et seq., used, generated, treated, stored, disposed or discharged at the site?

Yes _____ No _____ Unknown ___x___

M. Are there currently, or have there ever been, any above or below ground storage tanks at the site?

Yes _____ No ___x___ Unknown _____

N. Did the discharge impact groundwater?

Yes _____ No _____ Unknown ___x___

O. What are the current operations at the site?

The property is currently used for conducting financial transactions with the general public.

P. What are the intended future uses of the site?

See Question O.

Q. Describe briefly the major types of contaminants found at the site and what media they affect.

The results of soil and groundwater samples have shown concentrations of chlorinated hydrocarbons and other volatile organic compounds above applicable standards.

R. Describe in detail how the contamination came to exist at the site. For example, were there past spills, landfill operations, industrial septic systems, USTs, deposition of fill material, etc.?

A septic tank and a seepage pit on-site may have received discharges of chlorinated hydrocarbons resulting from dry cleaning operations.

S. List any civil/criminal actions taken against the owner/operator, managers or officials associated with the site for violations of any environmental laws or statutes.

Check here if no violations or alleged violation ☒

Date of action _____

Section of law or statute violated _____

Type of enforcement action _____

Description of the violation _____

How was the violation or alleged violation resolved?

T. List all permits currently held by the applicant for the site. (NJPDES, RCRA, etc.)

None.

U. Has a Hazardous Discharge Site Remediation Fund Grant or Loan Application been filed with the Department?

Yes _____ No X

V. Has a loan/grant application pursuant to the Underground Storage Tank Finance Act been filed with the Department?

Yes _____ No X

W. Is the site located in a Neighborhood Empowerment Zone as defined in P.L.1996,c.62 (New Jersey Urban Redevelopment Act) ?

Yes _____ No X Unknown _____

X. Who will be the contact for all matters of this application?

Name Richard J. Ericsson, Esq. Title Attorney

Affiliation Farer Fersko, P.A. Phone 908-789-8660

Address 600 South Avenue, P.O. Box 580

City/Town Westfield State NJ Zip Code 07091-0580

Y. Is the site currently, or has it ever been, under the oversight of any other program within the Department of Environmental Protection?

Yes _____ No X

If Yes, explain: _____

Z. Do you consider this site to be a Brownfield as defined below:

Any former or current commercial or industrial site that is currently vacant or underutilized and on which there has been, or there is suspected to have been, a discharge of a contaminant.

OR

Is the remediation being conducted with the intent to pursue redevelopment?

Yes _____ No X

The following certification shall be signed by the highest-ranking individual with overall legal responsibility for implementing the remediation of a site, but shall not include contractors or consultants.

1. For a corporation, by a principal executive officer of at least the level of vice president;
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively, or;
3. For a municipality, State, Federal or other public agency, by either a principal executive officer or ranking elected official.

A duly authorized representative of those persons described above may also sign the certification. A person is a duly authorized representative only if:

1. The authorization is made in writing by a person described above;
2. The authorization specifies either an individual or a position having a responsibility for the overall operation of the site or activity, such as the position of plant manager, or a superintendent or person of equivalent responsibility (a duly authorized representative may thus be either a named individual or an individual occupying a named position);
3. The written authorization is submitted to the Department; and
4. If the authorization is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of this subsection shall be submitted to the Department prior to or together with any reports, information or applications to be signed by an authorized representative.

" I certify that I am fully aware of the requirements of N.J.A.C 7:26C-3, specifically as it pertains to the memorandum of agreement by rule. Further, I agree to pay the Department's oversight costs for the Department's review of any submissions pursuant to the memorandum of agreement until such time as I notify the Department that it is no longer feasible or desirable for me to continue with the memorandum of agreement."

SIGNATORY

Summit Bank, a New Jersey Corporation

Date: 1/30/2001

BY: _____
Signature

Marion Brady, Senior Vice President
Print Full Name Signed Above

Date: 1/30/2001

BY: _____ JOAN C. RUSSELL
Notary Signature

NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES JAN. 28, 2006

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Date: 2/23/01

BY: _____
Vincent S. Krisak, Section Chief
DRPSR, Case Assignment Section

The Department will review the application and will respond in writing, within thirty calendar days from receipt of the application, as to whether the application is administratively complete or not. If the application is incomplete the deficiencies shall be listed. If the application is complete, the applicant will be deemed to have entered into an Agreement by rule pursuant to N.J.A.C. 7:26C-3.3.

Appendix A

Memorandum of Agreement Application for
Summit Bank
1322 Sea Girt Avenue, Wall Township, New Jersey

Ownership History

Name	From	To
White Swan Laundry & Cleaners	Approximately 1964 *	Approximately 1982 *
Charles and Mary Mahoney	Approximately 1982 *	September 1983
Ocean County National Bank	September 1983	May 1993
Summit Bank	May 1993	Present

Operational History

Name	From	To
White Swan Laundry & Cleaners	Approximately 1964 *	Mid 1980's *
Ocean County National Bank	1985	1993
Summit Bank	1993	Present

*** Dates presented are based upon historical anecdotal information.**

State of New Jersey

Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

Memorandum

To: Thomas W. Downey, Section Chief
Bureau of Field Operations - Southern

From: Ralph Downs, Supervisor
Bureau of Field Operations – Case Assignment Section

Subject: Executed Memorandum of Agreement

Re: Site Name: ~~13~~ White Swan Laundry + Cleaner

CSL ID #: NJSFN0204241

Incident #: 01-02-15-0340-52

Remedial Level: C2

Well

This memorandum serves as the case transfer form for the above referenced site. The case is being transferred to you based on the remedial phase(s) cited in the attached Memorandum of Agreement, and the remedial level of the case.

Please sign and date below to indicate receipt of this case and return this memo to the Case Assignment Section.

Date: 3/1/01 **Remedial Lead Group Signature:** Ralph Downs

Reports Submitted with MOA Application? YES / ~~NO~~

Initials RD Date 2/22/01

ATP

C. Case Transfer File

CT# 20010216B

MAR 1 2001

DEP-081 A
1/97

New Jersey Department of Environmental Protection

SUPPLEMENTAL CASE TRANSFER REPORT

Site Name/CSL ID#: White Swan Laundry & Cleaners

AREA OF CONCERN #1 **Media Affected:** GROUND WATER ✓ SOIL _____ SURFACE WATER _____

Description of AOC: Ground water contaminated with solvents from Dry cleaning operations and septic System. Regional Ground water contamination also present. Public supply well Impacted. Private potable wells impacted.

SAMPLING RESULTS		ACTION LEVEL
Contaminant	ppm/ppb	ppm/ppb
PCE	670.0	1.0
TCE	97.0	1.0
cis-1,2-DCE	25.0	10.0
SEE ATTACHED PA/SI for complete list.		

AREA OF CONCERN #2 **Media Affected:** GROUND WATER _____ SOIL ✓ SURFACE WATER _____

Description of AOC: PCE detected in on-site Soils above background but below SCC

SAMPLING RESULTS		ACTION LEVEL
Contaminant	ppm/ppb	ppm/ppb
SEE ATTACHED PA/SI for complete list.		

AREA OF CONCERN #3 **Media Affected:** GROUND WATER _____ SOIL _____ SURFACE WATER ✓

Description of AOC: Contaminated ground water discharge to Surface water (Wreck Pond) and has caused surface water and Sediment contamination

SAMPLING RESULTS		ACTION LEVEL
Contaminant	ppm/ppb	ppm/ppb
PCE	16.0	0.358
cis-1,2-DCE	0.8	0.57
SEE ATTACHED PA/SI For complete list.		

GENERAL INFORMATION SECTION:

RECALCITRANT? _____ BANKRUPTCY? _____

OTHER ISSUES (Enforcement Actions, MOA) ?

Summit Bank has signed MOA to investigate their role in a large regional solvent groundwater plume that has impacted a municipal supply well, private potable wells, soils, surface water + sediments.

UST #:
ECRA #:
NJPDES:

IEC (Fill out only if an IEC condition exists)

TYPE: POTABLE WATER _____ DIRECT CONTACT _____ TOXIC OR HARMFUL GAS EXPOSURE _____

DESCRIPTION OF CONDITIONS (Actions Taken, Dates):

SAMPLING RESULTS		ACTION LEVEL
Contaminant	ppm/ppb	ppm/ppb

PTS INPUT SHEET

CASE INFORMATION

Subsite Name: White Swan Laundry
Subsite ID: 0102-15-0340-SE
Case Type: NL
Confirmed Contamination: [X]Y [ ]N [ ]U [ ]X
SR33, SR57

Case Manager: K²
Remedial Level: 2-2
Job Code:
File Number:

SCHEDULER INFORMATION

Step	Step Name	Actual Date
PA001	Preliminary Assessment Initiated	
PA006	Preliminary Assessment Completed	
SI001	Site Investigation Initiated	
SI006	Site Investigation Completed	
RI000	Remedial Investigation Initiated	3-19-01
RI007	Remedial Investigation Workplan Received	
RI014	Remedial Investigation Workplan Review Completed	
RI015	Remedial Investigation Revised Workplan Received	
RI016	Remedial Investigation Workplan Approval	
RI017	Remedial Investigation Report Received	3-19-01
RI024	Remedial Investigation Report Review Completed	
RI025	Remedial Investigation Revised Report Received	
RI026	Remedial Investigation Report Approval	
RI027	Remedial Investigation Completed	
RA000	Remedial Action Initiated	
RA001	Remedial Action Workplan Received	
RA008	Remedial Action Workplan Review Completed	
RA009	Remedial Action Revised Workplan Received	
RA010	Remedial Action Workplan Approval	
RA018	Remedial Action Report Received	
RA025	Remedial Action Report Review Completed	
RA026	Remedial Action Revised Report Received	
RA030	Remedial Action Report Approval	
RA031	Remedial Action Completed	

DOCUMENT INFORMATION

Document Type:
Withdrawn/Dropped Date:
CMS Transfer Date: 3/21/01
Institutional Control Date:

NFA Date:
Cost of Cleanup: $
CEA Date:

DEP-090
5/95

N Jersey Department of Environmenta otection
COMMUNICATIONS CENTER NOTIFICATION REPORT

Received	02/15/2001			TD Log#	74360
Operator	JON	Reviewed By		Case #	01-02-15-0340-52

Notification Type: Other

Reported By	Affiliation	Phone
RALPH DOWNS	BFO-CAS	609-292-2943

Street Address	Municipality	State
401 E STATE ST	TRENTON	NJ

Incident Location: Other

Site: WHITE SWAN LAUNDRY — Phone:

Street Address	Municipality	County	State
1322 SEW GIRT AV	WALL TWP	MONMOUTH	NJ

Location Type: — Incident Date: 02/15/2001 — Time:

Substance Released:
Amount Released ( ):
ID: — State: — CAS#: — Release Is:
Additional Substances:
Substance Contained?: — Hazardous Material?: — TCPA?: — A310 Letter?: N
COMU Code: 1352 — Referral Code: 101 — Is Hazardouse Waste Involved?:

Incident Description: MOA

Injuries?: — Public Evac?: — Facility Evac?: — Public Exposure?:
Police On Scene?: — Firemen On Scene?: — DEP Requested?: — Road Closure?:
Wind Speed/Direction: — Contamination Of: — Receiving Water:

Status at Scene: SITE OF MOA

Responsible Party:
Party: — Phone:
Contact: — Title:

Street Address	Municipality	County	State

OFFICIALS NOTIFIED

	Name	Affiliation	Phone	Date	Time
NJSP					
MUNIC					
OTHER					

	Name	Affiliation	Method	Date	Time
1.		BFO-CAS DRPSR	Faxed, Mailed	02/15/2001	
2.					
3.					

COMMENT

WSC 6.1012

KLOU
CRAFTING
RA
3-19-01
R1 Received

Groundwater
& Environmental Services, Inc.

1340 Campus Parkway, Building C • P.O. Box 1750 • Wall, New Jersey 07719 • (732) 919-0100 • FAX (732) 919-0916

April 6, 2001

Richard Ericsson, Esq.
Farer Fersko
600 South Avenue - 2nd floor
Westfield, NJ 07091

Re: Implementation Schedule
Summit Bank Branch (former White Swan Laundry & Cleaner, Inc.)
1322 Sea Girt Avenue, Block 706, Lot 2
Wall Township (Monmouth County), New Jersey 07719
NJDEP Case No: 01-02-15-0340-52

Dear Mr. Ericsson:

On January 30, 2001, Summit Bank submitted a completed Memorandum of Agreement (MOA) application to the New Jersey Department of Environmental Protection Agency (NJDEP) regarding environmental activities conducted at the above referenced location. On February 28, 2001, the NJDEP notified Summit that the submitted MOA was administratively complete and requested a schedule of implementation of activities and/or phases outlined in the MOA.

Groundwater & Environmental Services, Inc. (GES), on behalf Summit Bank, has prepared the following implementation schedule for completion of additional investigative activities and submission of required documents as proposed in the MOA application.

Remedial Phase	Documents to be Submitted	Status/Completion Date
Site Investigation	Site Investigation Report	Submitted December 26, 2000
Remedial Investigation	Remedial Investigation Workplan	April-May 2001
	Remedial Investigation Report	October-November 2001

As noted above, the remedial investigation is ongoing. GES projects that the remedial investigation will be completed on or about August 2001. The remedial investigation will include, but not be limited to, completion of the following tasks:

- Collection of ground water samples from six on-site monitoring wells for laboratory analysis of volatile organic compounds (VOCs), methyl *tert*-butyl ether (MTBE), *tert*-butyl alcohol (TBA) plus the qualification and quantification of 10 associated peaks via U.S. Environmental Protection Agency test method 624.

- Septic tank and seepage pit on-site are inactive. Liquid from septic tank will be pumped out and cleaned. Residual solid in adjacent seepage pit will be removed and pressure washed. Liquids and solids will be transport on waste manifests to an approved disposal facility. Backfill septic tank and seepage with certified clean fill/pea gravel

- Excavate soil from all sides for off-site disposal. Collect post-remedial soil samples for laboratory analysis of VOCs to document remedial efforts. Three soil samples collected previously indicate some VOC impact is present in soil above the water table.

- Conduct an 8-hour groundwater pumping test to estimate the transmissivity, hydraulic conductivity, and storativity of the unconsolidated aquifer.

- Install an additional deep monitor well to delineate the vertical distribution of chlorinated VOCs in groundwater. Two weeks following installation and development of the monitor well, a groundwater sample will be collected and submitted to a New Jersey certified laboratory for VOC, MTBE, and TBA analysis via USEPA approved test method 624+10.

All of the above noted investigative activities will be conducted in accordance with the Technical Requirements for Site Remediation (N.J.A.C. 7:26E *et seq*).

Sincerely,

John H. Montgomery

John H. Montgomery, P.G.
Project Hydrogeologist

c: M. Maegerle, GES-NJ
J. Campbell, GES-NJ
G. Skowronski, Summit
GES-NJ case file

State of New Jersey
Department of Environmental Protection

DONALD T. DiFRANCESCO
Acting Governor

Robert C. Shinn, Jr.
Commissioner

DEC 04 2001

Richard Caspe, Director
Emergency and Remedial Response Division
U. S. Environmental Protection Agency, Region II
290 Broadway
New York, New York 10007-1866

Re: Removal Request – Magnolia Avenue Ground Water Contamination
Wall Township, Monmouth County

Dear Director Caspe:

The New Jersey Department of Environmental Protection (Department) hereby submits the Magnolia Avenue Ground Water Contamination case ("site") for CERCLA removal action consideration. The following information details the case history and supports the removal request.

The Magnolia Avenue Ground Water Contamination case extends through two municipalities, Wall Township and Sea Girt Borough, in Monmouth County. Approximately 100 shallow private irrigation wells have been sampled in the two municipalities and discovered to be contaminated with volatile organic compounds (VOCs), including tetrachloroethylene (PCE), trichloroethylene (TCE) and cis 1,2 dichloroethylene (DCE). The plume of VOCs is approximately 2 miles long and 1 mile wide. Contaminant levels range from 10 parts per billion (ppb) to 1,500 ppb.

In August of 1997, the Monmouth County Health Department (MCHD) was advised by a resident of Magnolia Avenue in Wall Township, that ground water samples analyzed in 1990 from three private irrigation wells had exhibited high concentrations of PCE. The 1990 sampling event documented contamination levels up to 1, 546 ppb. The MCHD resampled the three irrigation wells and four additional irrigation wells in 1997. The data obtained confirmed the presence of PCE in the ground water with levels up to 595 ppb.

In August and September of 1998, MCHD conducted a survey of 29 irrigation wells and documented the presence of PCE in 19 irrigation wells. The concentration of PCE in the wells ranged from 1.1 ppb to 1,068 ppb.

On November 6, 1998, MCHD sent a letter to the Department requesting assistance to determine the source of the ground water contamination.

In 1999, the Department initiated a ground water investigation of the Magnolia Avenue area. During the investigation, approximately 50 ground water samples were collected to identify the responsible parties. Three facilities were identified as possible sources of the ground water contamination, specifically, White Swan Laundry and Cleaners, Block 706 Lot 2 (aka: Fleet Bank, Summit Bank), Gulf Service Station, Block 706 Lot 1 (aka: Cumberland Farms) and Sun Cleaners, Block 807 Lot 1.

The direction of ground water flow was confirmed to be in an east-northeast direction. Identified receptors located downgradient of the ground water plume include Hannabrand Brook, Wreck Pond, the contaminated private irrigation wells and the Sea Girt Borough municipal wells.

In March of 1999, the MCHD issued an advisory recommending that irrigation wells not be used for any purpose unless a current water analysis revealed levels of PCE below 1 ppb.

In October of 1999, at the request of the MCHD, the Environmental Protection Agency (EPA) Agency for Toxic Substance and Disease Registry (ATSDR) was asked to review the information regarding the ground water contamination and advise the public about the usage of the irrigation wells. ATSDR determined that the amount of PCE in the ground water posed no health concerns or hazards when used for non-potable purposes.
Beginning in April 1999, due to the potential risk of contamination, the Department initiated monthly sampling and analysis of the Sea Girt Borough municipal wells. No contaminants were detected until the summer of 1999 when Well # 6 exhibited 0.5 ppb of PCE. The level was below the New Jersey Maximum Contaminant Level (MCL) of 1 ppb; however, the well was taken off line and used only during peak times of water usage.

During the period from 1998 to 2000, the Department conducted site investigations at the three facilities identified as potential sources. Soil and ground water samples collected at the three sites confirmed that a release of VOCs had occurred at each of the sites. The White Swan Laundry and Cleaners (akas: Fleet Bank, Summit Bank property), Gulf Service Station and Sun Cleaners have been identified as contributing sources of the Magnolia Avenue Ground Water Contamination.

In addition, surface water and sediment sampling conducted by both the MCHD and the Department documented VOC contamination in the Hannabrand Brook and Wreck Pond. Levels of PCE contamination documented in the surface water ranged from 0.8 to 16 ppb, which exceeds the New Jersey Surface Water Standard of 0.388 ppb. All three sites are located upgradient from the Hannabrand Brook and Wreck Pond and are considered to be contributing sources of the surface water contamination.

On February 23, 2001, the responsible party for White Swan Laundry and Cleaners entered into a Memorandum of Agreement with the Department to conduct a Site Investigation and Remedial Investigation at the site. During the remedial investigation the Department determined that the ground water plume of contamination might be adversely impacting the interior air quality of nearby residential properties.

On October 25, 2001, the Department conducted an indoor air quality survey of three residential properties and one commercial property that are located immediately downgradient of the ground water plume.

On November 27, 2001 data results were provided to the Department which revealed elevated levels of VOC vapors in the basements of the properties sampled. At this time, the Department's Bureau of Emergency Response is addressing the exposure threat at the four properties by providing temporary venting of the basement areas.

Of concern to the Department is the potential that additional homes in the area may also be impacted by the ground water contamination. The Department views the extensive plume of VOC ground water contamination to be a threat to downgradient receptors, primarily, residential properties where sumps allow passive intrusion of VOC vapors to negatively impact indoor air quality. Impact to these receptors provides a route of direct contact exposure to area residents.

Due to the potential size and scope of the necessary investigation, the Department feels the EPA is the agency best qualified to conduct the additional investigation and perform any necessary remedial actions in the area.

Should your staff require additional information please have them contact Janet Smolenski of the Bureau of Field Operations, Case Assignment section at (609) 292-2943 or the case manager, Karen Kloo, at (609) 584-4150.

Sincerely,

Robert R. Van Fossen
Director
Division of Responsible Party Site Remediation

C: Susan B. Boyle, Assistant Commissioner, Site Remediation Program, DEP
Bruce Sprague, Branch Chief, Removal Action Branch, EPA
Richard Salkie, Branch Chief, Response and Prevention Branch, EPA
George Zachos, Superfund Integration Manager, EPA
Al Kaczoroski, Assistant Director, Field Operation Element, DEP
Vince Krisak, Bureau Chief, Bureau of Field Operations, DEP
Janet Smolenski, EPA Coordinator, Bureau of Field Operation, DEP

CHRISTOPHER H. SMITH
4TH DISTRICT, NEW JERSEY

WASHINGTON OFFICE
2373 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-3004
(202) 225-3765

CONSTITUENT SERVICE CENTERS
1540 KUSER ROAD
SUITE A9
HAMILTON, NJ 08619-3828
(609) 585-7878
TTY (609) 585-3650

108 LACEY ROAD
WHITING, NJ 08759-1331
(732) 350-2300

Congress of the United States
House of Representatives
Washington, DC 20515-3004

COMMITTEES:

VETERANS' AFFAIRS
CHAIRMAN

COMMISSION ON SECURITY AND COOPERATION IN EUROPE
CO-CHAIRMAN

INTERNATIONAL RELATIONS
VICE CHAIRMAN

December 21, 2001

Dr. Richard C. Weston
Acting Associate Administrator
ATSDR
200 Independence Avenue Southwest, Rm 719B
Washington, DC 20201-0004

Dear Dr. Weston:

Pursuant to your conversations with my staff both on the phone and at the Toms River Cancer Cluster briefing, I am writing to formally request a public meeting with representatives of ATSDR, the Environmental Protection Agency (EPA), New Jersey Department of Environmental Protection (NJDEP), and local officials and residents of Wall Township, New Jersey.

The purpose of this public meeting would be for environmental health professionals from ATSDR to brief the Wall Township officials and residents on what steps are currently being taken to protect the public's health in light of the recently discovered plume of contamination from the White Swan Dry Cleaners.

As you are aware, on November 30, Wall Township was notified of the results of ongoing tests of homes and properties near the former White Swan Cleaners located on Sea Girt Avenue near Route 35. White Swan Dry Cleaners closed in 1983, and its site is now home to Fleet Bank. White Swan was the source of contaminants that have threatened the shallow irrigation wells within the immediate area of Fleet Bank; and Fleet Bank recently entered into a voluntary cleanup with NJDEP to rid the contaminants from the site, which is known as the Magnolla Project.

Groundwater tests conducted by Fleet Bank, as part of NJ DEP's voluntary cleanup program, found 120,000 parts of tetracholethylene per billion parts of water when the legal limit is no more than one part per billion, according to the New Jersey Drinking Water Standard and the state's groundwater quality standard. Tetracholethylene is a solvent linked to damage of the nervous system.

Initial tests taken by the NJ DEP demonstrate a "chronic health-based level" of contamination. I understand that the EPA defines a chronic health-based level where an individual would have to breathe the air for 24 hours/day, 365 days/year for 30 years to develop a 1 in 1,000,000 chance of developing cancer from exposure to tetracholethylene.

The EPA standard for tetracholethylene in the air is 3.1 micrograms/cubic meter. The initial results of testing were:

	Basement	*Second Floor*	*Inhabitable Crawl Space*
House #1	2.4 times the std.	canister malfunction*	n/a
House #2	19 times the std.	canister malfunction*	n/a
House #3	7.2 times the std.	contamination did not exceed standard	n/a
Motel	28 times the std.	26 times the std.	458 times the std.

* **canister malfunction** means the sample was not able to be taken and the DEP is in the process of re-testing those areas.

Furthermore, it is my understanding that both the EPA and the NJDEP are already conducting air quality tests in the homes of residents affected by the White Swan contamination. However, once the tests have been evaluated, it is imperative that health officials brief the community to ease the fears concerning contamination.

My staff and I are eager to work with ATSDR to facilitate this meeting in early January. Again, thank you for your ongoing support of this critical and timely project. ATSDR has been a valuable partner for New Jersey in protecting our residents from environmental pollution, and I believe the residents of Wall Township would greatly benefit from a public meeting. Once residents know and understand the various steps that are being taken to mitigate this health hazard, I believe it will instill confidence and dispel fears and concerns.

Sincerely,

CHRISTOPHER H. SMITH
Member of Congress

CC: Administrator Jane M. Kenny, USEPA Region 2
Commissioner Richard C. Shinn, N.J. Department of Environmental Protection

Health Consultation

Public Health Implications and Interpretation of
Exposure to Benzene in Residential Indoor Air

(FORMER) WHITE SWAN LAUNDRY AND CLEANER, INCORPORATED
(a/k/a MAGNOLIA AVENUE GROUNDWATER CONTAMINATION SITE)

WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

EPA FACILITY ID: NJSFN0204241

SEPTEMBER 25, 2002

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 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

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(a/k/a MAGNOLIA AVENUE GROUNDWATER CONTAMINATION SITE)

WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

EPA FACILITY ID: NJSFN0204241

Prepared by:

Superfund Site Assessment Branch
Division of Health Assessment and Consultation
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
EMEG	Environmental Media Evaluation Guide
EPA	United States Environmental Protection Agency
HCV	Health-based Comparison Value
IRIS	Integrated Risk Information System
LECR	Lifetime Excess Cancer Risk
MCHD	Monmouth County Health Department
ND	Not Detected
NJDEP	New Jersey Department of Environmental Protection
NJDHSS	New Jersey Department of Health and Senior Services
PCE	Perchloroethylene (tetrachloroethylene)
RfC	Reference Concentration
RMEG	Reference Dose Media Evaluation Guide
TCE	Trichloroethylene
VOC	Volatile Organic Chemical

Summary

This Health Consultation has been prepared in response to a request that was submitted to the Agency for Toxic Substances and Disease Registry (ATSDR) by U.S. Environmental Protection Agency (EPA) Region II in April 2002, to assist in evaluating the public health implications of exposure to benzene that was detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. Concern has been raised by local residents and school officials about possible exposure by inhalation to chemicals that have been found in the ground water in the vicinity of the (former) White Swan Laundry and Cleaner, Inc. (also known as the Magnolia Avenue Ground Water Contamination) site, located in Wall Township, Monmouth County, New Jersey.

It is known that a shallow ground water plume containing trichloroethylene (TCE) and tetrachloroethylene (perchloroethylene) (PCE) extends in an easterly direction from sources located in Wall Township. Concern has been raised regarding the potential for exposure to these contaminants and benzene via inhalation of vapors that may have been transported from the ground water into residences and other structures, and that may subsequently have volatilized in the indoor air.

ATSDR has provided the following public health interpretation of the levels of benzene that have been found in the indoor air as a result of sampling about 220 residences of Wall Township as part of the on-going investigation of the (former) White Swan Laundry and Cleaner, Inc. site:

- All exposures to benzene above 32 micrograms per meter cubed ($\mu g/m^3$) represent a lifetime risk of cancer that is greater than that due to background levels;

- All exposures to benzene between 6 and 32 $\mu g/m^3$ represent a slightly increased lifetime cancer risk that is greater than that due to background levels; and

- All exposures to benzene below 6 $\mu g/m^3$ represent little or no additional lifetime cancer risk that is greater than that due to background levels.

ATSDR considers exposure to benzene at 32 $\mu g/m^3$ and above to be a **"Public Health Hazard"**. Actions taken by EPA to mitigate these exposures are protective of public health. Although exposures between 6 and 32 $\mu g/m^3$ represent a slightly increased risk of cancer above the background risk, ATSDR believes that the actions taken by the New Jersey Department of Environmental Protection (NJDEP), to reduce exposures in this range to below typical background levels, to be protective of public health. Taking into consideration indoor background levels in U.S. homes and the very low risk of an adverse cancer effect, ATSDR considers all exposures to benzene below 6 $\mu g/m^3$ to represent a **"No Apparent Public Health Hazard"**.

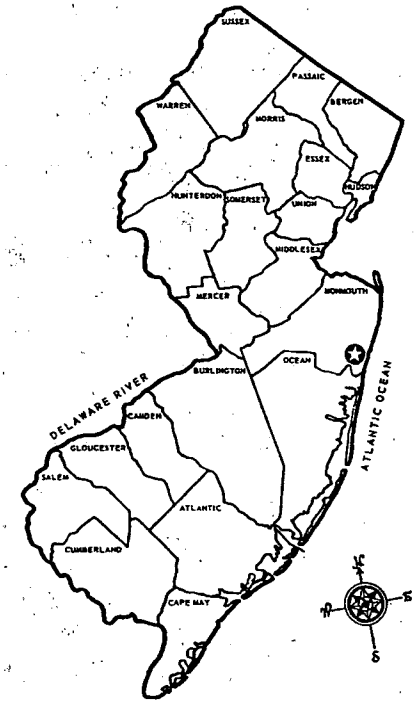
Most of the levels of benzene found in the homes in Wall Township are below ATSDR Minimal Risk Level (MRL) for exposures of intermediate duration (15-365 days). The maximum concentration of benzene that has been measured is about 30 times below the "less serious neurological effect" level that was determined in one animal study. None of the benzene levels were above ATSDR's acute MRL. Therefore, at the maximum benzene level that was detected, acute or intermediate duration exposures are not likely to result in any serious adverse non-cancer health effects.

Soil gas and ground water investigations should continue, in order to determine the extent and contribution of site-related contaminants being transported from ground water into the indoor air of homes and businesses. If these or other investigations provide additional information on local background levels of PCE in residential indoor air, the conclusions of this Health Consultation may be re-evaluated.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Background and Statement of Issues

The U.S. Environmental Protection Agency (EPA) Region II requested that the Agency for Toxic Substances and Disease Registry (ATSDR) assist in evaluating the public health implications of benzene concentrations that were detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. The sampling was conducted in conjunction with the on-going investigation of releases of hazardous substances from the White Swan Laundry and Cleaner, Inc. site and from other sources of ground water contaminants.



In 1997, the Monmouth County Health Department (MCHD) became aware of tetrachloroethylene (PCE) contamination of irrigation wells in the vicinity of Magnolia Avenue in Wall Township, New Jersey. Between 1999 and 2000, the MCHD and the New Jersey Department of Environmental Protection (NJDEP) performed a joint study of shallow ground water that mapped a plume of PCE and trichloroethylene (TCE) contamination about 2.5 miles long and one mile wide. The contamination plume extends from Wall Township into the Boroughs of Manasquan and Sea Girt and continues to the coastline (NJDEP, 2001).

In October 1999, at the request of the MCHD and EPA, ATSDR was asked to review the information regarding the ground water contamination and to advise the community about the usage of the irrigation wells. ATSDR determined that the amount of PCE in the ground water posed no health concerns or hazards when used for non-potable purposes (ATSDR, 1999).

During the period from 1998 to 2000, the NJDEP conducted site investigations at the three facilities identified as potential sources. Soil and ground water sampling confirmed that a release of volatile organic compounds (VOCs) had occurred at each of the sites. The (former) White Swan Laundry and Cleaner (aka Fleet Bank or Summit Bank) property, Gulf Service Station, and Sun Cleaners have been identified as contributing sources to the Magnolia Avenue ground water contamination (NJDEP, 2001).

On February 23, 2001, the owners of the (former) White Swan Laundry and Cleaner property entered into a memorandum of agreement with the NJDEP to conduct a site investigation and remedial investigation of the property. During the remedial investigation, the NJDEP concluded that

a ground water plume of contamination might be adversely effecting the indoor air quality of nearby residential properties (NJDEP, 2001).

Sampling by Fleet Bank at its branch office on Sea Girt Avenue found high levels of PCE contamination in shallow ground water. Based on these results, on October 25, 2001, the NJDEP conducted indoor air quality testing of three residences and one commercial property located near to the Fleet Bank property. The NJDEP provided the residents and the owners of the commercial property with fans for ventilating the basements of each of these buildings where PCE was detected.

At the request of the NJDEP, the EPA announced plans on December 5, 2001, to take over the investigation of the contaminated ground water plume that underlies portions of Wall Township and the Boroughs of Sea Girt and Manasquan. The EPA also announced that they agreed to evaluate the site for listing on the National Priorities List (NPL), *i.e.,* Superfund. Since that time, EPA has collected about 300 indoor air samples from at least 220 residential and business locations. The sampling has also included several schools within the area, including Sea Girt Elementary School, Old Mill School, and Brookside School (EPA, 2002).

In accordance with their mandate to protect public health under the National Contingency Plan (NCP), EPA has installed ventilation systems at all homes with benzene and PCE levels that would be considered a health risk, and the NJDEP is working with the homeowners whose homes had slightly elevated levels and are interested in undertaking remedial measures. [Note: A companion Health Consultation to this document specifically addresses residential exposure to PCE (ATSDR, 2002).] In April 2002, the EPA sent the results of indoor air sampling of the 220 residences to individual homeowners. Included with this letter, ATSDR provided a fact sheet containing a public health interpretation of the benzene air exposures, a contaminant of concern for the site (see Appendix A). Although it has not been definitively determined that benzene is a site-related contaminant, it has been detected in many samples of air from homes in the area, thus suggesting that benzene might be related to one of the potential sources of ground water contamination that are being investigated.

Discussion

Health Assessment Methodology

In the course of creating Public Health Assessments and Health Consultations, ATSDR evaluates the environmental and human components that lead to human exposure from releases of hazardous substances from a given site. A pathways analysis consists of five elements: (1) a source of contamination; (2) transport through an environmental medium; (3) a point of human exposure; (4) a route of human exposure; and, (5) a receptor population. ATSDR classifies exposure pathways into three groups: (1) "completed pathways", that is, those in which exposure is reasonably expected

to have occurred, to occur, or to occur in the future; (2) "potential pathways", that is, those in which exposure might have occurred, may be occurring, or may yet occur, and, (3) "eliminated pathways", that is, those that can be eliminated from further analysis because at least one of the five elements listed above is missing and will never be present, or in which no contamination of concern can be identified.

After the pathways are designated as "completed", "potential", or "eliminated", ATSDR follows a two-step methodology to comment on public health issues related to exposure pathways at hazardous waste sites. First, ATSDR obtains representative environmental monitoring data for the site of concern and compiles a list of site-related contaminants. ATSDR compares this list of contaminants to health-based values (health comparison values or HVCs) to identify those contaminants that do not have a realistic possibility of causing adverse health effects. Second, for the remaining contaminants, ATSDR evaluates site-specific conditions to determine what exposure scenario is realistic for a given exposure pathway. Given this exposure scenario, ATSDR determines a dose and compares this dose to scientific studies to determine whether the extent of exposure indicates a public health hazard.

The health-based comparison values used in this report are concentrations of contaminants that the current public health literature suggests are "safe" or "harmless". These comparison values are quite conservative because they include ample safety factors that account for the most sensitive populations. ATSDR typically uses HCVs as follows: if a contaminant is never found at levels greater than its comparison value, ATSDR concludes the levels of corresponding contamination are "safe" or "harmless". If, however, a contaminant is found at greater than its HCV, ATSDR designates the pollutant as a contaminant of concern and examines it further in the assessment. Because HCVs are based on extremely conservative assumptions, the presence of concentrations greater than an HCV does not necessarily suggest that adverse health effects will occur among the exposed population.

Exposure Pathways and Contaminant of Concerns

The exposure pathway of concern that is evaluated in this Health Consultation is inhalation of benzene that is in the indoor air of private residences near the (former) White Swan Laundry and Dry Cleaner site. It has been assumed that benzene from at least one of the potential sources has contaminated the ground water, has been transported to soils beneath the homes, and finally has infiltrated these homes through cracks in the foundation or directly from soils into homes.

Studies by the EPA have shown that most homes in the U.S. have measurable levels of organic chemicals in indoor air. While outdoor air contains many organic chemicals, a surprising finding from EPA studies is that the concentrations of organic chemicals in indoor air are usually higher than in outdoor air. These higher indoor air levels of VOCs presumably come from consumer products that are brought into the homes, from off-gassing of home building materials, and from personal activities. EPA studies showed that certain human activities were associated with having

increased levels of chemicals in indoor air. Examples of these activities are listed below (EPA, 1987):

- smoking indoors increases benzene, xylene, ethyl benzene, and styrene levels in indoor air;
- bringing dry cleaning home causes higher PCE levels in indoor air;
- using hot water in the home increases chloroform levels in indoor air; and
- using room air fresheners, toilet bowl deodorizers, and moth crystals leads to higher levels of para-dichlorobenzene in indoor air.

Additional studies by EPA are underway to determine the contribution of site-related contaminants found in the ground water (including benzene) to the levels of chemicals detected in residential air samples. Therefore, at this time benzene exposures can only be considered a potential exposure pathway related to the site.

The levels of benzene detected in the more than 300 samples of indoor air from 220 residences range from not detected (ND) to 38.4 $\mu g/m^3$ (micrograms per cubic meter). In a majority of the homes, benzene was detected in the air at levels above the health comparison value of 0.22 $\mu g/m^3$ (based on EPA Region III's Risk-Based Concentration, *i.e.*, RBC). The EPA Region III RBC is based on cancer effects. The ATSDR Cancer Risk Evaluation Guideline for benzene is 0.1 $\mu g/m^3$. For non-cancer effects, ATSDR's Minimal Risk Levels, *i.e.*, MRL (see definition below) for intermediate exposures (15-364 days), and for acute exposures (1-14 days), are 13 $\mu g/m^3$ and 162 $\mu g/m^3$, respectively. Many of the air samples were in the range of what may be considered typical background levels in U.S. homes. Benzene is a component of gasoline emissions, cigarette smoke, paints and adhesives, particle board, wood composites, and wood smoke. The estimated average of the medians (50% values) for typical background levels found in several studies was reported to be approximately 6 $\mu g/m^3$, with generally higher levels being found in homes with smokers (Wallace, L., 1996). However, it is important to note that any given level of benzene in a household air sample that falls within this typical background level for indoor air in the U.S. does not necessarily indicate that the benzene is entirely due to a non-site-related source. In addition, there may be differences in the studies of homes in others areas (as reported by Wallace, 1996) versus Wall Township (e.g., basements, age, and construction) and differences in other factors that may effect local indoor background benzene levels. Because benzene is considered a potential site-related contaminant of concern, all exposures above background levels may be related to the site; therefore, ATSDR considers exposures to concentrations of benzene above 6 $\mu g/m^3$ to result in a completed (or at least a potential) exposure pathway.

Since the available data represent a snapshot in time, it is not possible for ATSDR to determine the duration and concentration of a resident's exposure. However, given that the exposure is likely to persist without any intervention, it has been assumed, conservatively, that the exposure may continue over a duration of 30 years.

Public Health Implications

Benzene: Chronic Exposure and Non-Cancer Health Effects

To evaluate non-carcinogenic health effects, ATSDR has developed Minimal Risk Levels (MRLs) for contaminants that are commonly found at hazardous waste sites. A MRL is an estimate of a level of daily human exposure to a contaminant below which non-cancerous adverse health effects are unlikely. MRLs are developed for each route of exposure, *e.g.*, ingestion and inhalation, and for the length of exposure, *i.e.*, acute, less than 14 days; intermediate, 15–364 days; and chronic, 365 days or more. Because ATSDR has no methodology to determine amounts of chemicals absorbed through the skin, there are no MRLs for skin exposure. ATSDR presents information on MRLs in its series of Toxicological Profiles on hazardous substances. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. If a MRL has not been developed for a contaminant, the EPA Reference Dose (RfD) is used (if available). The RfD is an estimate of the daily exposure of the human population to a potential hazard that is likely to be without risk of a non-carcinogenic adverse health effects during a person's lifetime.

Most of the levels of benzene found in the homes in Wall Township are below ATSDR's intermediate MRL of 13 $\mu g/m^3$ for less serious neurological effects that were found in a study of mice (Li et al., 1992). The ATSDR MRL includes an uncertainty or margin-of-safety factor of 90. The maximum level of benzene that has been detected is about 30 times below the "less serious neurological effect" seen by Li et al. None of the benzene levels were above ATSDR's acute MRL. Therefore, at the maximum benzene level that was detected, acute or intermediate duration exposures are not likely to result in any serious adverse health effects. For chronic exposures, the effect of concern is cancer, which is discussed below.

Benzene: chronic exposure and cancer

Exposure to benzene can cause adverse effects on the blood. Persons who breathe high levels of benzene for long periods of time are likely to have reduced red blood cell production, *i.e.*, anemia. Studies of workers have consistently linked benzene exposures with a particular type of leukemia. Studies have also shown that benzene causes cancer in animals (ATSDR, 1997). The primary end point of concern for exposure to benzene in air is leukemia, specifically, acute myelogenous leukemia (AML), the only form of cancer that is consistently associated with high levels of occupational exposures to benzene.

One way to evaluate the possibility of benzene causing cancer in Wall Township residents is to compare the estimated benzene levels in air to the levels in human studies that have caused cancer. While this approach cannot provide a definitive answer that benzene exposure might cause cancer in Wall Township residents, it gives some insight into the likelihood of benzene exposures causing cancer.

Complicating this comparison, however, is the lack of information regarding the time frame and concentrations of exposure over time in any given household. The actual exposures to most residents are likely to be much less than those shown to cause cancer in human and animal studies. In fact, there is little scientific evidence of serious adverse health effects in animals or humans exposed to long-terms levels of benzene at concentrations less than 32,000 $\mu g/m^3$.

The two exposure levels (Wall Township residents and the human studies) can be compared by using a margin of safety (MOS) approach. A MOS can be calculated by dividing the exposure level in human studies that caused cancer by the estimated exposure concentrations in Wall Township residents. As can be seen in Appendix A, based on various exposure ranges in relation to typical background levels, the MOS ranged from less than 1,000 to greater than 5,333. The MOS for exposures to concentrations of 32 $\mu g/m^3$ and above represent a lifetime cancer risk that is greater than the risk due to background benzene levels. Exposure levels between 6 -32 $\mu g/m^3$ represent a slightly increased lifetime excess cancer risk above the cancer risk due to background benzene levels. Exposure to benzene at concentrations below 6 $\mu g/m^3$ would result in little or no increased risk of developing cancer, and is at least 5,333 times less than the level that scientific studies have shown cause serious adverse health effects in humans and animals (see Appendix A).

Conclusions

ATSDR has provided the following public health interpretation of the levels of benzene that have been found in the air in about 220 residences of Wall Township that were sampled as part of the on-going investigation of the (former) White Swan Laundry and Cleaner, Inc. site:

- All exposures to benzene above 32 $\mu g/m^3$ represent a lifetime risk of cancer that is greater than that due to background levels;
- All exposures to benzene between 6 and 32 $\mu g/m^3$ represent a slightly increased lifetime cancer risk that is greater than that due to background levels; and
- All exposures to benzene below 6 $\mu g/m^3$ represent little to no additional lifetime cancer risk beyond that due to background levels.

ATSDR considers exposure to benzene at 32 $\mu g/m^3$ and above to be a **"Public Health Hazard"** because of the existence of a completed pathway and an unacceptable risk of cancer beyond background benzene levels [See Appendix B for a description of ATSDR's Public Health Hazard categories.] Although exposures between 6 and 32 $\mu g/m^3$ represent only a slightly increased risk of cancer above the background risk, ATSDR considers the measures taken by the NJDEP to reduce or eliminate exposures in this range to be protective of public health. Taking into consideration typical indoor background levels in U.S. homes and the very low risk of an adverse cancer effect, ATSDR considers all exposures to benzene below 6 $\mu g/m^3$ to represent a **"No Apparent Public Health Hazard"**.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Recommendations

On-going soil gas and ground water investigations should continue, in order to determine the extent and contribution of site-related contaminants being transported from ground water into the indoor air of homes and businesses. If these or other investigations provide additional information on local background levels of PCE in residential indoor air, the conclusions of this Health Consultation may be re-evaluated.

Public Health Action Plan (PHAP)

The Public Health Action Plan (PHAP) for the (former) White Swan Laundry and Cleaner, Inc. site contains descriptions of the actions to be taken by ATSDR and other agencies at or in the vicinity of the site. The purpose of a PHAP is to ensure that this Health Consultation not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. The environmental sampling data and remedial activities that have been conducted have been evaluated within the context of human exposure pathways and other relevant public health factors. Included is a commitment on the part of ATSDR to monitor this plan to ensure that the plan is implemented. ATSDR will provide follow-up to this PHAP, outlining the actions which have been completed, and actions that are in progress, as needed. The public health actions to be implemented by ATSDR are as follow:

Actions Undertaken

(1) EPA and the NJDEP have sampled the indoor air of numerous residences and other structures, including several schools in the vicinity of the site property. In addition, the EPA and NJDEP, collectively, have taken action to reduce benzene exposure to below the level of public health concern.

(2) ATSDR and NJDHSS have participated in a public availability session with local residents to provide them with a public health interpretation of their individual air sampling results. In addition, ATSDR and NJDHSS have participated in a public meeting to inform the general public of the public health issues of air exposures.

(3) ATSDR has prepared a fact sheet for benzene to accompany individual sampling results sent to the residents by the EPA.

Actions Planned

(1) ATSDR will provide a copy of this document to all concerned residents in the vicinity of the site.

(2) As additional soil gas and ground water data become available, ATSDR and the NJDHSS will evaluate the public health implications of indoor air exposures to other chemicals found to be related to the site.

(3) ATSDR will coordinate as deemed necessary with the appropriate environmental agencies to develop plans to implement the recommendations contained in this document.

Preparers of Report

Preparers of Report:

Gregory Ulirsch
Technical Project Officer
Superfund Site Assessment Branch (SSAB)
Division of Health Assessment and Consultation (DHAC)
Agency for Toxic Substances and Disease Registry

ATSDR Regional Representative:

Arthur Block
Regional Representative, Region II
Regional Operations
Office of the Assistant Administrator

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Appendix A

Fact Sheet
Benzene Residential Air Exposures
Public Health Interpretations

Agency for Toxic Substances and Disease Registry (ATSDR)
Fact Sheet

Residential Exposure to Benzene in Air
Public Health Implications and Interpretation

General Public Health Issues:

- Benzene is found in gasoline emissions, cigarette smoke, paints and adhesives, particle board, wood composites and wood smoke.

- Indoor air studies have shown that background levels in U.S. homes have an average of approximately 6 $\mu g/m^3$, with generally higher levels in homes with smokers. This value is not a site-specific background level, but is presented to provide perspective.

- Benzene causes adverse effects to the blood. Persons who breathe high levels of benzene for long periods of time may have reduced red blood cell production leading to anemia.

- Studies of workers have consistently linked benzene exposures with a particular type of leukemia.

- Benzene is known to cause cancer in animals.

- The scientific community has determined that benzene is linked to cancer in humans, particularly leukemia (acute myeloid leukemia or AML), although there is some debate as to whether benzene causes cancer at low concentrations.

Perspective on Site-Specific Exposure:

- To be protective of public health, the interpretation of benzene air exposures in the attached table is based on conservative assumptions.

- The actual length of exposure to residents is not known. Because air sampling results are only available over a short time frame, and the actual exposure levels over time are also not known, the public health interpretation that is presented below may over- or underestimate the chance of getting cancer.

- The risk of someone getting cancer is dependent on many factors; for example, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace.

- The actual exposures to most residents are likely to be much less than those shown to cause cancer in human and animal studies. In fact, there is little scientific evidence of serious adverse health effects in animals or humans exposed to long-terms levels of benzene at concentrations less than 32,000 $\mu g/m^3$.

- Since benzene is a known human carcinogen, prudent public health practice dictates that, no matter the source, exposure should be minimized.

Agency for Toxic Substances and Disease Registry (ATSDR)
Public Health Interpretation of Exposure to Benzene in Residential Air

Concentration of Benzene in Air ($\mu g/m^3$)	Public Health Interpretation	Estimated Margin of Safety (MOS)*	Estimated Background Level in U.S Homes ($\mu g/m^3$)**
Less Than 6	Little to no additional lifetime cancer risk beyond the cancer risk due to background benzene levels	Greater Than 5,333	6
6 - 32	Slight additional lifetime cancer risk beyond the cancer risk due to benzene background levels	1,000-5,333	
32 and Above	Increased lifetime cancer risk beyond the cancer risk due to benzene background levels	Equal To or Less Than 1,000	

* Estimated margin of safety (MOS) is based on 32,000 $\mu g/m^3$ benzene in air. For example, if benzene were detected at 32 $\mu g/m^3$ in a resident's indoor air sample, the margin of safety would represent how much below (in this case 1,000 times) the actual exposure is, when compared to levels, above which scientific studies have shown serious adverse effects in humans and animals.

** Reported value represents the average of the medians for background levels found in several studies, as reported by Wallace, L., Environmental Health Perspectives, Vol. 104, S6, December 1996. This level does not represent specific background levels for the Wall Township, New Jersey area, but are presented to provide perspective. Any level of benzene in a household sample result that falls within this range of background levels for indoor air in the U.S. does not necessarily indicate that the benzene is entirely due to non-site-related sources.

WSC 8.1019

Appendix B: ATSDR Public Health Hazard Categories

ATSDR's Interim Public Health Hazard Categories

Category / Definition	Data Sufficiency	Criteria
A. Urgent Public Health Hazard This category is used for sites where short-term exposures (< 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.	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.	Evaluation of available relevant information* indicates that site-specific 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.
B. Public Health Hazard This category is used for sites that pose a public health hazard due to the existence of long-term exposures (> 1 yr) to hazardous substance or conditions that could result in adverse health effects.	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.	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.
C. Indeterminate Public Health Hazard This category is used for sites in which "*critical*" data are *insufficient* with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.	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.	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.

Category / Definition	Data Sufficiency	Criteria
D. No Apparent Public Health Hazard This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.	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.	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.
E: No Public Health Hazard This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.	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	

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

Health Consultation

Public Health Implications and Interpretation of
Exposure to Benzene in Residential Indoor Air

(FORMER) WHITE SWAN LAUNDRY AND CLEANER, INCORPORATED
(a/k/a MAGNOLIA AVENUE GROUNDWATER CONTAMINATION SITE)

WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

EPA FACILITY ID: NJSFN0204241

SEPTEMBER 25, 2002

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 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

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EPA FACILITY ID: NJSFN0204241

Prepared by:

Superfund Site Assessment Branch
Division of Health Assessment and Consultation
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
EMEG	Environmental Media Evaluation Guide
EPA	United States Environmental Protection Agency
HCV	Health-based Comparison Value
IRIS	Integrated Risk Information System
LECR	Lifetime Excess Cancer Risk
MCHD	Monmouth County Health Department
ND	Not Detected
NJDEP	New Jersey Department of Environmental Protection
NJDHSS	New Jersey Department of Health and Senior Services
PCE	Perchloroethylene (tetrachloroethylene)
RfC	Reference Concentration
RMEG	Reference Dose Media Evaluation Guide
TCE	Trichloroethylene
VOC	Volatile Organic Chemical

Summary

This Health Consultation has been prepared in response to a request that was submitted to the Agency for Toxic Substances and Disease Registry (ATSDR) by U.S. Environmental Protection Agency (EPA) Region II in April 2002, to assist in evaluating the public health implications of exposure to benzene that was detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. Concern has been raised by local residents and school officials about possible exposure by inhalation to chemicals that have been found in the ground water in the vicinity of the (former) White Swan Laundry and Cleaner, Inc. (also known as the Magnolia Avenue Ground Water Contamination) site, located in Wall Township, Monmouth County, New Jersey.

It is known that a shallow ground water plume containing trichloroethylene (TCE) and tetrachloroethylene (perchloroethylene) (PCE) extends in an easterly direction from sources located in Wall Township. Concern has been raised regarding the potential for exposure to these contaminants and benzene via inhalation of vapors that may have been transported from the ground water into residences and other structures, and that may subsequently have volatilized in the indoor air.

ATSDR has provided the following public health interpretation of the levels of benzene that have been found in the indoor air as a result of sampling about 220 residences of Wall Township as part of the on-going investigation of the (former) White Swan Laundry and Cleaner, Inc. site:

- All exposures to benzene above 32 micrograms per meter cubed ($\mu g/m^3$) represent a lifetime risk of cancer that is greater than that due to background levels;

- All exposures to benzene between 6 and 32 $\mu g/m^3$ represent a slightly increased lifetime cancer risk that is greater than that due to background levels; and

- All exposures to benzene below 6 $\mu g/m^3$ represent little or no additional lifetime cancer risk that is greater than that due to background levels.

ATSDR considers exposure to benzene at 32 $\mu g/m^3$ and above to be a **"Public Health Hazard"**. Actions taken by EPA to mitigate these exposures are protective of public health. Although exposures between 6 and 32 $\mu g/m^3$ represent a slightly increased risk of cancer above the background risk, ATSDR believes that the actions taken by the New Jersey Department of Environmental Protection (NJDEP), to reduce exposures in this range to below typical background levels, to be protective of public health. Taking into consideration indoor background levels in U.S. homes and the very low risk of an adverse cancer effect, ATSDR considers all exposures to benzene below 6 $\mu g/m^3$ to represent a **"No Apparent Public Health Hazard"**.

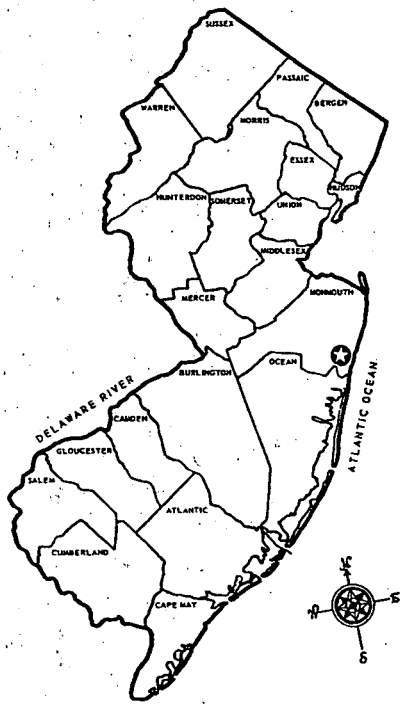
Most of the levels of benzene found in the homes in Wall Township are below ATSDR Minimal Risk Level (MRL) for exposures of intermediate duration (15-365 days). The maximum concentration of benzene that has been measured is about 30 times below the "less serious neurological effect" level that was determined in one animal study. None of the benzene levels were above ATSDR's acute MRL. Therefore, at the maximum benzene level that was detected, acute or intermediate duration exposures are not likely to result in any serious adverse non-cancer health effects.

Soil gas and ground water investigations should continue, in order to determine the extent and contribution of site-related contaminants being transported from ground water into the indoor air of homes and businesses. If these or other investigations provide additional information on local background levels of PCE in residential indoor air, the conclusions of this Health Consultation may be re-evaluated.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Background and Statement of Issues

The U.S. Environmental Protection Agency (EPA) Region II requested that the Agency for Toxic Substances and Disease Registry (ATSDR) assist in evaluating the public health implications of benzene concentrations that were detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. The sampling was conducted in conjunction with the on-going investigation of releases of hazardous substances from the White Swan Laundry and Cleaner, Inc. site and from other sources of ground water contaminants.



In 1997, the Monmouth County Health Department (MCHD) became aware of tetrachloroethylene (PCE) contamination of irrigation wells in the vicinity of Magnolia Avenue in Wall Township, New Jersey. Between 1999 and 2000, the MCHD and the New Jersey Department of Environmental Protection (NJDEP) performed a joint study of shallow ground water that mapped a plume of PCE and trichloroethylene (TCE) contamination about 2.5 miles long and one mile wide. The contamination plume extends from Wall Township into the Boroughs of Manasquan and Sea Girt and continues to the coastline (NJDEP, 2001).

In October 1999, at the request of the MCHD and EPA, ATSDR was asked to review the information regarding the ground water contamination and to advise the community about the usage of the irrigation wells. ATSDR determined that the amount of PCE in the ground water posed no health concerns or hazards when used for non-potable purposes (ATSDR, 1999).

During the period from 1998 to 2000, the NJDEP conducted site investigations at the three facilities identified as potential sources. Soil and ground water sampling confirmed that a release of volatile organic compounds (VOCs) had occurred at each of the sites. The (former) White Swan Laundry and Cleaner (aka Fleet Bank or Summit Bank) property, Gulf Service Station, and Sun Cleaners have been identified as contributing sources to the Magnolia Avenue ground water contamination (NJDEP, 2001).

On February 23, 2001, the owners of the (former) White Swan Laundry and Cleaner property entered into a memorandum of agreement with the NJDEP to conduct a site investigation and remedial investigation of the property. During the remedial investigation, the NJDEP concluded that

a ground water plume of contamination might be adversely effecting the indoor air quality of nearby residential properties (NJDEP, 2001).

Sampling by Fleet Bank at its branch office on Sea Girt Avenue found high levels of PCE contamination in shallow ground water. Based on these results, on October 25, 2001, the NJDEP conducted indoor air quality testing of three residences and one commercial property located near to the Fleet Bank property. The NJDEP provided the residents and the owners of the commercial property with fans for ventilating the basements of each of these buildings where PCE was detected.

At the request of the NJDEP, the EPA announced plans on December 5, 2001, to take over the investigation of the contaminated ground water plume that underlies portions of Wall Township and the Boroughs of Sea Girt and Manasquan. The EPA also announced that they agreed to evaluate the site for listing on the National Priorities List (NPL), *i.e.,* Superfund. Since that time, EPA has collected about 300 indoor air samples from at least 220 residential and business locations. The sampling has also included several schools within the area, including Sea Girt Elementary School, Old Mill School, and Brookside School (EPA, 2002).

In accordance with their mandate to protect public health under the National Contingency Plan (NCP), EPA has installed ventilation systems at all homes with benzene and PCE levels that would be considered a health risk, and the NJDEP is working with the homeowners whose homes had slightly elevated levels and are interested in undertaking remedial measures. [Note: A companion Health Consultation to this document specifically addresses residential exposure to PCE (ATSDR, 2002).] In April 2002, the EPA sent the results of indoor air sampling of the 220 residences to individual homeowners. Included with this letter, ATSDR provided a fact sheet containing a public health interpretation of the benzene air exposures, a contaminant of concern for the site (see Appendix A). Although it has not been definitively determined that benzene is a site-related contaminant, it has been detected in many samples of air from homes in the area, thus suggesting that benzene might be related to one of the potential sources of ground water contamination that are being investigated.

Discussion

Health Assessment Methodology

In the course of creating Public Health Assessments and Health Consultations, ATSDR evaluates the environmental and human components that lead to human exposure from releases of hazardous substances from a given site. A pathways analysis consists of five elements: (1) a source of contamination; (2) transport through an environmental medium; (3) a point of human exposure; (4) a route of human exposure; and, (5) a receptor population. ATSDR classifies exposure pathways into three groups: (1) "completed pathways", that is, those in which exposure is reasonably expected

to have occurred, to occur, or to occur in the future; (2) "potential pathways", that is, those in which exposure might have occurred, may be occurring, or may yet occur, and, (3) "eliminated pathways", that is, those that can be eliminated from further analysis because at least one of the five elements listed above is missing and will never be present, or in which no contamination of concern can be identified.

After the pathways are designated as "completed", "potential", or "eliminated", ATSDR follows a two-step methodology to comment on public health issues related to exposure pathways at hazardous waste sites. First, ATSDR obtains representative environmental monitoring data for the site of concern and compiles a list of site-related contaminants. ATSDR compares this list of contaminants to health-based values (health comparison values or HVCs) to identify those contaminants that do not have a realistic possibility of causing adverse health effects. Second, for the remaining contaminants, ATSDR evaluates site-specific conditions to determine what exposure scenario is realistic for a given exposure pathway. Given this exposure scenario, ATSDR determines a dose and compares this dose to scientific studies to determine whether the extent of exposure indicates a public health hazard.

The health-based comparison values used in this report are concentrations of contaminants that the current public health literature suggests are "safe" or "harmless". These comparison values are quite conservative because they include ample safety factors that account for the most sensitive populations. ATSDR typically uses HCVs as follows: if a contaminant is never found at levels greater than its comparison value, ATSDR concludes the levels of corresponding contamination are "safe" or "harmless". If, however, a contaminant is found at greater than its HCV, ATSDR designates the pollutant as a contaminant of concern and examines it further in the assessment. Because HCVs are based on extremely conservative assumptions, the presence of concentrations greater than an HCV does not necessarily suggest that adverse health effects will occur among the exposed population.

Exposure Pathways and Contaminant of Concerns

The exposure pathway of concern that is evaluated in this Health Consultation is inhalation of benzene that is in the indoor air of private residences near the (former) White Swan Laundry and Dry Cleaner site. It has been assumed that benzene from at least one of the potential sources has contaminated the ground water, has been transported to soils beneath the homes, and finally has infiltrated these homes through cracks in the foundation or directly from soils into homes.

Studies by the EPA have shown that most homes in the U.S. have measurable levels of organic chemicals in indoor air. While outdoor air contains many organic chemicals, a surprising finding from EPA studies is that the concentrations of organic chemicals in indoor air are usually higher than in outdoor air. These higher indoor air levels of VOCs presumably come from consumer products that are brought into the homes, from off-gassing of home building materials, and from personal activities. EPA studies showed that certain human activities were associated with having

increased levels of chemicals in indoor air. Examples of these activities are listed below (EPA, 1987):

- smoking indoors increases benzene, xylene, ethyl benzene, and styrene levels in indoor air;
- bringing dry cleaning home causes higher PCE levels in indoor air;
- using hot water in the home increases chloroform levels in indoor air; and
- using room air fresheners, toilet bowl deodorizers, and moth crystals leads to higher levels of para-dichlorobenzene in indoor air.

Additional studies by EPA are underway to determine the contribution of site-related contaminants found in the ground water (including benzene) to the levels of chemicals detected in residential air samples. Therefore, at this time benzene exposures can only be considered a potential exposure pathway related to the site.

The levels of benzene detected in the more than 300 samples of indoor air from 220 residences range from not detected (ND) to 38.4 $\mu g/m^3$ (micrograms per cubic meter). In a majority of the homes, benzene was detected in the air at levels above the health comparison value of 0.22 $\mu g/m^3$ (based on EPA Region III's Risk-Based Concentration, *i.e.*, RBC). The EPA Region III RBC is based on cancer effects. The ATSDR Cancer Risk Evaluation Guideline for benzene is 0.1 $\mu g/m^3$. For non-cancer effects, ATSDR's Minimal Risk Levels, *i.e.*, MRL (see definition below) for intermediate exposures (15-364 days), and for acute exposures (1-14 days), are 13 $\mu g/m^3$ and 162 $\mu g/m^3$, respectively. Many of the air samples were in the range of what may be considered typical background levels in U.S. homes. Benzene is a component of gasoline emissions, cigarette smoke, paints and adhesives, particle board, wood composites, and wood smoke. The estimated average of the medians (50% values) for typical background levels found in several studies was reported to be approximately 6 $\mu g/m^3$, with generally higher levels being found in homes with smokers (Wallace, L., 1996). However, it is important to note that any given level of benzene in a household air sample that falls within this typical background level for indoor air in the U.S. does not necessarily indicate that the benzene is entirely due to a non-site-related source. In addition, there may be differences in the studies of homes in others areas (as reported by Wallace, 1996) versus Wall Township (e.g., basements, age, and construction) and differences in other factors that may effect local indoor background benzene levels. Because benzene is considered a potential site-related contaminant of concern, all exposures above background levels may be related to the site; therefore, ATSDR considers exposures to concentrations of benzene above 6 $\mu g/m^3$ to result in a completed (or at least a potential) exposure pathway.

Since the available data represent a snapshot in time, it is not possible for ATSDR to determine the duration and concentration of a resident's exposure. However, given that the exposure is likely to persist without any intervention, it has been assumed, conservatively, that the exposure may continue over a duration of 30 years.

Public Health Implications

Benzene: Chronic Exposure and Non-Cancer Health Effects

To evaluate non-carcinogenic health effects, ATSDR has developed Minimal Risk Levels (MRLs) for contaminants that are commonly found at hazardous waste sites. A MRL is an estimate of a level of daily human exposure to a contaminant below which non-cancerous adverse health effects are unlikely. MRLs are developed for each route of exposure, *e.g.*, ingestion and inhalation, and for the length of exposure, *i.e.*, acute, less than 14 days; intermediate, 15–364 days; and chronic, 365 days or more. Because ATSDR has no methodology to determine amounts of chemicals absorbed through the skin, there are no MRLs for skin exposure. ATSDR presents information on MRLs in its series of Toxicological Profiles on hazardous substances. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. If a MRL has not been developed for a contaminant, the EPA Reference Dose (RfD) is used (if available). The RfD is an estimate of the daily exposure of the human population to a potential hazard that is likely to be without risk of a non-carcinogenic adverse health effects during a person's lifetime.

Most of the levels of benzene found in the homes in Wall Township are below ATSDR's intermediate MRL of 13 $\mu g/m^3$ for less serious neurological effects that were found in a study of mice (Li et al., 1992). The ATSDR MRL includes an uncertainty or margin-of-safety factor of 90. The maximum level of benzene that has been detected is about 30 times below the "less serious neurological effect" seen by Li et al. None of the benzene levels were above ATSDR's acute MRL. Therefore, at the maximum benzene level that was detected, acute or intermediate duration exposures are not likely to result in any serious adverse health effects. For chronic exposures, the effect of concern is cancer, which is discussed below.

Benzene: chronic exposure and cancer

Exposure to benzene can cause adverse effects on the blood. Persons who breathe high levels of benzene for long periods of time are likely to have reduced red blood cell production, *i.e.*, anemia. Studies of workers have consistently linked benzene exposures with a particular type of leukemia. Studies have also shown that benzene causes cancer in animals (ATSDR, 1997). The primary end point of concern for exposure to benzene in air is leukemia, specifically, acute myelogenous leukemia (AML), the only form of cancer that is consistently associated with high levels of occupational exposures to benzene.

One way to evaluate the possibility of benzene causing cancer in Wall Township residents is to compare the estimated benzene levels in air to the levels in human studies that have caused cancer. While this approach cannot provide a definitive answer that benzene exposure might cause cancer in Wall Township residents, it gives some insight into the likelihood of benzene exposures causing cancer.

Complicating this comparison, however, is the lack of information regarding the time frame and concentrations of exposure over time in any given household. The actual exposures to most residents are likely to be much less than those shown to cause cancer in human and animal studies. In fact, there is little scientific evidence of serious adverse health effects in animals or humans exposed to long-terms levels of benzene at concentrations less than 32,000 $\mu g/m^3$.

The two exposure levels (Wall Township residents and the human studies) can be compared by using a margin of safety (MOS) approach. A MOS can be calculated by dividing the exposure level in human studies that caused cancer by the estimated exposure concentrations in Wall Township residents. As can be seen in Appendix A, based on various exposure ranges in relation to typical background levels, the MOS ranged from less than 1,000 to greater than 5,333. The MOS for exposures to concentrations of 32 $\mu g/m^3$ and above represent a lifetime cancer risk that is greater than the risk due to background benzene levels. Exposure levels between 6 -32 $\mu g/m^3$ represent a slightly increased lifetime excess cancer risk above the cancer risk due to background benzene levels. Exposure to benzene at concentrations below 6 $\mu g/m^3$ would result in little or no increased risk of developing cancer, and is at least 5,333 times less than the level that scientific studies have shown cause serious adverse health effects in humans and animals (see Appendix A).

Conclusions

ATSDR has provided the following public health interpretation of the levels of benzene that have been found in the air in about 220 residences of Wall Township that were sampled as part of the on-going investigation of the (former) White Swan Laundry and Cleaner, Inc. site:

- All exposures to benzene above 32 $\mu g/m^3$ represent a lifetime risk of cancer that is greater than that due to background levels;
- All exposures to benzene between 6 and 32 $\mu g/m^3$ represent a slightly increased lifetime cancer risk that is greater than that due to background levels; and
- All exposures to benzene below 6 $\mu g/m^3$ represent little to no additional lifetime cancer risk beyond that due to background levels.

ATSDR considers exposure to benzene at 32 $\mu g/m^3$ and above to be a **"Public Health Hazard"** because of the existence of a completed pathway and an unacceptable risk of cancer beyond background benzene levels [See Appendix B for a description of ATSDR's Public Health Hazard categories.] Although exposures between 6 and 32 $\mu g/m^3$ represent only a slightly increased risk of cancer above the background risk, ATSDR considers the measures taken by the NJDEP to reduce or eliminate exposures in this range to be protective of public health. Taking into consideration typical indoor background levels in U.S. homes and the very low risk of an adverse cancer effect, ATSDR considers all exposures to benzene below 6 $\mu g/m^3$ to represent a **"No Apparent Public Health Hazard"**.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Recommendations

On-going soil gas and ground water investigations should continue, in order to determine the extent and contribution of site-related contaminants being transported from ground water into the indoor air of homes and businesses. If these or other investigations provide additional information on local background levels of PCE in residential indoor air, the conclusions of this Health Consultation may be re-evaluated.

Public Health Action Plan (PHAP)

The Public Health Action Plan (PHAP) for the (former) White Swan Laundry and Cleaner, Inc. site contains descriptions of the actions to be taken by ATSDR and other agencies at or in the vicinity of the site. The purpose of a PHAP is to ensure that this Health Consultation not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. The environmental sampling data and remedial activities that have been conducted have been evaluated within the context of human exposure pathways and other relevant public health factors. Included is a commitment on the part of ATSDR to monitor this plan to ensure that the plan is implemented. ATSDR will provide follow-up to this PHAP, outlining the actions which have been completed, and actions that are in progress, as needed. The public health actions to be implemented by ATSDR are as follow:

Actions Undertaken

(1) EPA and the NJDEP have sampled the indoor air of numerous residences and other structures, including several schools in the vicinity of the site property. In addition, the EPA and NJDEP, collectively, have taken action to reduce benzene exposure to below the level of public health concern.

(2) ATSDR and NJDHSS have participated in a public availability session with local residents to provide them with a public health interpretation of their individual air sampling results. In addition, ATSDR and NJDHSS have participated in a public meeting to inform the general public of the public health issues of air exposures.

(3) ATSDR has prepared a fact sheet for benzene to accompany individual sampling results sent to the residents by the EPA.

Actions Planned

(1) ATSDR will provide a copy of this document to all concerned residents in the vicinity of the site.

(2) As additional soil gas and ground water data become available, ATSDR and the NJDHSS will evaluate the public health implications of indoor air exposures to other chemicals found to be related to the site.

(3) ATSDR will coordinate as deemed necessary with the appropriate environmental agencies to develop plans to implement the recommendations contained in this document.

Preparers of Report

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Appendix A

Fact Sheet
Benzene Residential Air Exposures
Public Health Interpretations

Agency for Toxic Substances and Disease Registry (ATSDR)
Fact Sheet

Residential Exposure to Benzene in Air
Public Health Implications and Interpretation

General Public Health Issues:

- Benzene is found in gasoline emissions, cigarette smoke, paints and adhesives, particle board, wood composites and wood smoke.

- Indoor air studies have shown that background levels in U.S. homes have an average of approximately 6 $\mu g/m^3$, with generally higher levels in homes with smokers. This value is not a site-specific background level, but is presented to provide perspective.

- Benzene causes adverse effects to the blood. Persons who breathe high levels of benzene for long periods of time may have reduced red blood cell production leading to anemia.

- Studies of workers have consistently linked benzene exposures with a particular type of leukemia.

- Benzene is known to cause cancer in animals.

- The scientific community has determined that benzene is linked to cancer in humans, particularly leukemia (acute myeloid leukemia or AML), although there is some debate as to whether benzene causes cancer at low concentrations.

Perspective on Site-Specific Exposure:

- To be protective of public health, the interpretation of benzene air exposures in the attached table is based on conservative assumptions.

- The actual length of exposure to residents is not known. Because air sampling results are only available over a short time frame, and the actual exposure levels over time are also not known, the public health interpretation that is presented below may over- or underestimate the chance of getting cancer.

- The risk of someone getting cancer is dependent on many factors; for example, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace.

- The actual exposures to most residents are likely to be much less than those shown to cause cancer in human and animal studies. In fact, there is little scientific evidence of serious adverse health effects in animals or humans exposed to long-terms levels of benzene at concentrations less than 32,000 $\mu g/m^3$.

- Since benzene is a known human carcinogen, prudent public health practice dictates that, no matter the source, exposure should be minimized.

Agency for Toxic Substances and Disease Registry (ATSDR)
Public Health Interpretation of Exposure to Benzene in Residential Air

Concentration of Benzene in Air ($\mu g/m^3$)	Public Health Interpretation	Estimated Margin of Safety (MOS)*	Estimated Background Level in U.S Homes ($\mu g/m^3$)**
Less Than 6	Little to no additional lifetime cancer risk beyond the cancer risk due to background benzene levels	Greater Than 5,333	6
6 - 32	Slight additional lifetime cancer risk beyond the cancer risk due to benzene background levels	1,000-5,333	
32 and Above	Increased lifetime cancer risk beyond the cancer risk due to benzene background levels	Equal To or Less Than 1,000	

* Estimated margin of safety (MOS) is based on 32,000 $\mu g/m^3$ benzene in air. For example, if benzene were detected at 32 $\mu g/m^3$ in a resident's indoor air sample, the margin of safety would represent how much below (in this case 1,000 times) the actual exposure is, when compared to levels, above which scientific studies have shown serious adverse effects in humans and animals.

** Reported value represents the average of the medians for background levels found in several studies, as reported by Wallace, L., Environmental Health Perspectives, Vol. 104, S6, December 1996. This level does not represent specific background levels for the Wall Township, New Jersey area, but are presented to provide perspective. Any level of benzene in a household sample result that falls within this range of background levels for indoor air in the U.S. does not necessarily indicate that the benzene is entirely due to non-site-related sources.

WSC 8.1019

Appendix B: ATSDR Public Health Hazard Categories

ATSDR's Interim Public Health Hazard Categories

Category / Definition	Data Sufficiency	Criteria
A. Urgent Public Health Hazard This category is used for sites where short-term exposures (< 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.	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.	Evaluation of available relevant information* indicates that site-specific 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.
B. Public Health Hazard This category is used for sites that pose a public health hazard due to the existence of long-term exposures (> 1 yr) to hazardous substance or conditions that could result in adverse health effects.	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.	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.
C. Indeterminate Public Health Hazard This category is used for sites in which "*critical*" data are *insufficient* with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.	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.	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.

WSC 8.1021

Category / Definition	Data Sufficiency	Criteria
D. No Apparent Public Health Hazard This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.	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.	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.
E: No Public Health Hazard This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.	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	

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

Health Consultation

Public Health Implications and Interpretation of
Exposure to Tetrachloroethylene (PCE) in Residential Indoor Air

(FORMER) WHITE SWAN LAUNDRY AND CLEANER, INCORPORATED
(a/k/a MAGNOLIA AVENUE GROUNDWATER CONTAMINATION SITE)

WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

EPA FACILITY ID: NJSFN0204241

SEPTEMBER 25, 2002

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 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

Public Health Implications and Interpretation of
Exposure to Tetrachloroethylene (PCE) in Residential Indoor Air

(FORMER) WHITE SWAN LAUNDRY AND DRY CLEANER, INCORPORATED
(a/k/a MAGNOLIA AVENUE GROUNDWATER CONTAMINATION SITE)

WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

EPA FACILITY ID: NJSFN0204241

Prepared by:

New Jersey Department of Health and Senior Services
Hazardous Site Health Evaluation Program
Consumer and Environmental Health Services
Division of Epidemiology, Environmental, and Occupational Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CREG	Cancer Risk Evaluation Guide
CSF	Cancer Slope Factor
EMEG	Environmental Media Evaluation Guide
EPA	United States Environmental Protection Agency
HCV	Health-based Comparison Value
LECR	Lifetime Excess Cancer Risk
MCHD	Monmouth County Health Department
MRL	Minimal Risk Level
ND	Not Detected
NJDEP	New Jersey Department of Environmental Protection
NJDHSS	New Jersey Department of Health and Senior Services
PCE	Perchloroethylene (tetrachloroethylene)
RBC	Risk-Based Concentration
RfC	Reference Concentration
RfD	Reference Dose
RMEG	Reference Dose Evaluation Guide
TCE	Trichloroethylene
VOC	Volatile Organic Chemical

Summary

This Health Consultation has been prepared in response to a request that was submitted in April 2002 by the U.S. Environmental Protection Agency (EPA) Region II to the Agency for Toxic Substances and Disease Registry (ATSDR) to assist in evaluating the public health implications of exposure to tetrachloroethylene (PCE) that was detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. Specifically, this Health Consultation provides a public health interpretation of the tetrachloroethylene (perchloroethylene), *i.e.,* PCE action levels in air that were proposed by the EPA and the New Jersey Department of Environmental Protection (NJDEP). Concern has been raised about possible exposure, by inhalation, to chemicals that have been found in the ground water in the vicinity of the (former) White Swan Laundry and Cleaner, Inc. (aka Magnolia Avenue Ground Water Contamination) site, also located in Wall Township, Monmouth County, New Jersey.

It is known that a shallow ground water plume of trichloroethylene, *i.e.,* TCE, and tetrachloroethylene (perchloroethylene), *i.e.,* PCE, exists that extends in an easterly direction from sources located in Wall Township, Monmouth County, New Jersey. Concern has been raised regarding the potential for exposure to these contaminants via inhalation of vapors that may have been transported from the ground water into residences and other structures, and subsequently volatilized in indoor air.

Based on the action levels proposed by the EPA and the NJDEP, ATSDR and the NJDHSS have provided the following public health interpretation of the levels of PCE that were found as a result of sampling the indoor air in about 220 residences in Wall Township in conjunction with the on-going investigation of the White Swan site:

- All exposures to PCE concentrations that are above 60 $\mu g/m^3$ represent a lifetime risk of cancer greater than that due to background concentrations;
- All exposures to PCE concentrations between 6 and 60 $\mu g/m^3$ represent a cancer risk that is slightly greater than that due to background levels; and,
- All exposures to PCE concentrations that are less than 6 $\mu g/m^3$ represent little or no lifetime cancer risk greater than that due to background levels.

EPA has installed ventilation systems at all homes with PCE concentrations of 60 $\mu g/m^3$ and above, and the NJDEP, in accordance with their mandate to reduce exposures to background levels, is working with the homeowners who have slightly elevated levels and are interested in undertaking remedial measures.

ATSDR and the NJDHSS consider exposures to PCE at concentrations of 60 $\mu g/m^3$ and above to be a **"Public Health Hazard"**. Actions taken by EPA to mitigate these exposures are

protective of public health. Although exposures to concentrations between 6 and 60 $\mu g/m^3$ represent a slightly increased risk of cancer beyond the background risk, ATSDR and the NJDHSS consider that remedial actions taken by NJDEP to mitigate exposures in this range to also be protective of public health. Taking into consideration typical indoor background levels in U.S. homes and the very low risk of cancer, ATSDR and the NJDHSS consider all exposures to PCE below 6 $\mu g/m^3$ to represent **"No Apparent Public Health Hazard".** No remedial actions are necessary.

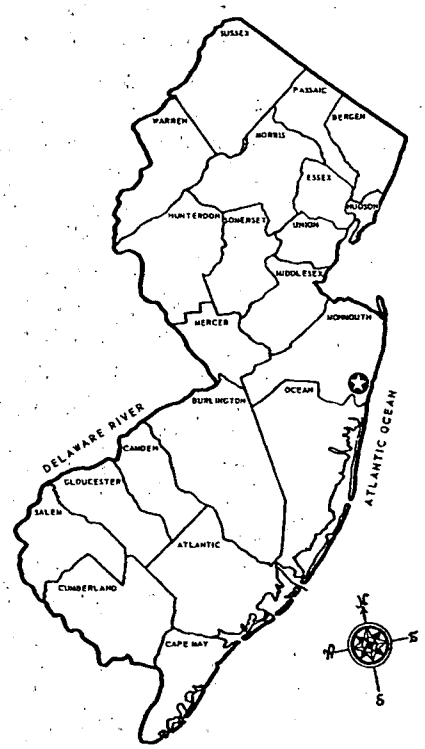
ATSDR and the NJDHSS have also evaluated the likelihood of an adverse non-cancer effect from the PCE air exposures in the 220 residences that were sampled in Wall Township. All but one sample were below ATSDR's Minimal Risk Levels (MRL) for short-term non-cancer health effects. The one sample that was above the short-term MRL was from a sump at a residence on Laurel Street. Because this sample was taken from an enclosed sump, only short-term intermittent exposures are likely to have occurred. Based on further evaluation of potential health effects from the short-term exposures to the levels of PCE found in the air in the sump area, it is not likely that exposure to any residents would result in any serious non-cancer adverse health effects.

Soil gas and ground water investigations in the vicinity of the (former) White Swan Laundry and Cleaner, Inc. site should be continued in order to determine the extent and contribution of site-related contaminants that infiltrate from ground water into the indoor air of homes and businesses. If these or other investigations provide additional information on local background levels of PCE in residential indoor air, the conclusions of this Health Consultation may be re-evaluated.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Background and Statement of Issues

The U.S. Environmental Protection Agency (EPA) Region II requested that the Agency for Toxic Substances and Disease Registry (ATSDR) assist in evaluating the public health implications of exposure to tetrachloroethylene (PCE) that was detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. The sampling was conducted in conjunction with the on-going investigation of releases of hazardous substances from the (former) White Swan Laundry and Dry Cleaner, Inc. site. Specifically, this Health Consultation provides a public health interpretation of the PCE action levels in air that were proposed by the EPA and the New Jersey Department of Environmental Protection (NJDEP). The New Jersey Department of Health and Senior Services (NJDHSS), under a cooperative agreement with ATSDR, and working jointly with the Superfund Site Assessment Branch, Division of Health Assessment and Consultation, ATSDR, will address EPA's request in this Health Consultation.



In 1997, the Monmouth County Health Department (MCHD) became aware of tetrachloroethylene (PCE) contamination of irrigation wells on Magnolia Avenue in Wall Township, Monmouth County, New Jersey. Between 1999 and 2000, the MCHD and the New Jersey Department of Environmental Protection (NJDEP) performed a joint study of shallow ground water that mapped a plume of PCE and trichloroethylene (TCE) contamination about 2.5 miles long and one mile wide. The contamination plume extends from Wall Township into the Boroughs of Manasquan and Sea Girt and continues to the coastline (NJDEP, 2001).

In October 1999, at the request of the MCHD and EPA, ATSDR was asked to review the information related to the ground water contamination, and to advise the community about the usage of the irrigation wells. ATSDR determined that the concentrations of PCE that were found in the irrigation wells posed no public health concern, providing the water was used for non-potable purposes only (ATSDR, 1999).

During the period from 1998 to 2000, the NJDEP conducted site investigations at three facilities that were identified as potential sources. Soil and ground water samples collected at the three sites confirmed that a release of volatile organic compounds (VOCs) had occurred at each of the sites. The (former) White Swan Laundry and Cleaner (aka: Fleet Bank or Summit Bank)

property, a Gulf Service Station, and Sun Cleaners were identified as contributing sources to the Magnolia Avenue ground water contamination site (NJDEP, 2001).

On February 23, 2001, the owners of the (former) White Swan Laundry and Cleaner, Inc. property entered into a memorandum of agreement with the NJDEP to conduct a site investigation and remedial investigation at the site. During the remedial investigation, the NJDEP determined that a ground water plume of contamination might be adversely effecting the indoor air quality of nearby residential properties (NJDEP, 2001).

Sampling by Fleet Bank at its branch office on Sea Girt Avenue found high levels of PCE contamination in shallow ground water. Based on these results, on October 25, 2001, the NJDEP conducted indoor air quality testing of three residential properties and one commercial property located near to the Fleet Bank property. The NJDEP provided the residents and the owners of the commercial property with fans for ventilating the basements of each of these buildings where PCE was detected. The NJDEP conducted additional sampling of various residences in October through December, 2001.

At the request of the NJDEP, the EPA announced plans on December 5, 2001, to take over the investigation of the contaminated ground water plume that underlies portions of Wall Township and the Boroughs of Sea Girt and Manasquan. The EPA also announced that they agreed to evaluate the site for listing on the National Priorities List (NPL), *i.e.,* Superfund. Since that time, EPA has collected about 300 indoor air samples from at least 220 residential and business locations. The sampling has also included various educational facilities within the area, including Sea Girt Elementary School, Old Mill School, and Brookside School (EPA, 2002).

In accordance with their mandate to protect public health under the National Contingency Plan (NCP), EPA has installed ventilation systems at all homes with PCE levels above 60 $\mu g/m^3$ and the NJDEP, in accordance with their mandate to reduce exposures to background levels, is working with the homeowners who have slightly elevated levels and are interested in undertaking remedial measures (EPA, 2002). In April 2002, the EPA sent the results of indoor air sampling of the 220 residences to individual homeowners. Included with this letter, ATSDR and NJDHSS provided a public health interpretation of air exposures to PCE based on EPA's and the NJDEP's proposed action levels [Appendix A shows the fact sheet on PCE that was distributed to individual homeowners].

Discussion

Health Assessment Methodology

In the course of creating Public Health Assessments (PHA) and Health Consultations (HC), ATSDR evaluates the environmental and human components that lead to human exposure to a

release of hazardous substances from a given site. A pathways analysis consists of five elements: (1) a source of contamination; (2) transport through an environmental medium; (3) a point of human exposure; (4) a route of human exposure; and (5) a receptor population. ATSDR categorizes exposure pathways into three groups: (1) "completed pathways", that is, those in which exposure is reasonably expected to have occurred, to be occurring, or to occur in the future; (2) "potential pathways", that is, those in which exposure might have occurred, may be occurring, or may yet occur, and (3) "eliminated pathways", that is, those that can be eliminated from further analysis because at least one of the five elements listed above is missing and will never be present, or in which no contamination of concern can be identified.

After the pathways are designated as "completed", "potential", or "eliminated", ATSDR follows a two-step methodology to comment on public health issues related to exposure pathways at hazardous waste sites. First, ATSDR obtains representative environmental monitoring data for the site of concern and compiles a list of site-related contaminants. ATSDR compares this list of contaminants to health-based values (health comparison values or HVCs) (definitions of HVCs are shown in Appendix B) to identify those contaminants that do not have a realistic possibility of causing adverse health effects. Second, for the remaining contaminants, ATSDR evaluates site-specific conditions to determine what exposure scenario is realistic for a given exposure pathway. Given this exposure scenario, ATSDR determines an exposed dose and compares this dose to scientific studies to determine whether the extent of exposure indicates a public health hazard.

The health-based comparison values used in this report are concentrations of contaminants that the current public health literature suggest are "safe" or "harmless". These comparison values are quite conservative because they include ample safety factors that account for the most sensitive populations. ATSDR typically uses HCVs as follows: if a contaminant is never found at levels greater than its comparison value, ATSDR concludes the levels of corresponding contamination are "safe" or "harmless". If, however, a contaminant is found at concentrations that are greater than its HCV, ATSDR designates the pollutant as a contaminant of concern and examines it further in the assessment. Because HCVs are based on extremely conservative assumptions, the presence of concentrations greater than an HCV does not necessarily suggest that adverse health effects will occur among the exposed population.

Exposure Pathways and Contaminant of Concerns

The pathway of concern evaluated in this Health Consultation is exposure to ground water contaminants that off-gas or volatilize from ground water to soils and then infiltrate into the air of various homes. It has been assumed that ground water beneath the White Swan site (and possibly other sources) is contaminated with PCE, that the PCE has off-gassed to soils beneath nearby homes, and, finally, that the PCE has infiltrated into these homes through cracks in the foundation or directly from soils into homes.

In addition to the site-related PCE that may have infiltrated homes from off-gassing from ground water, it is possible that some of the PCE may be coming from indoor sources. Studies by the EPA have shown that most homes in the U.S. have measurable levels of organic chemicals in indoor air. While outdoor air contains these organic chemicals, a surprising finding from the EPA studies is that indoor levels of organic chemicals are usually higher than outdoor air. These higher indoor air levels of VOCs presumably come from consumer products that are brought into the homes, from off-gassing of home building materials, and from personal activities. EPA studies showed that certain human activities were associated with having increased levels of chemicals in indoor air. Examples of these activities are (EPA, 1987):

- smoking indoors increases benzene, xylene, ethyl benzene, and styrene levels in indoor air;
- bringing dry cleaning home causes higher PCE levels in indoor air;
- using hot water in the home increases chloroform levels in indoor air; and
- using room air fresheners, toilet bowl deodorizers, and moth crystals leads to higher levels of para-dichlorobenzene in indoor air.

Additional studies by EPA are underway to determine the contribution of site-related contaminants found in the ground water (including PCE) to the levels of chemicals detected in residential air samples.

PCE is a solvent that is commonly used in the commercial dry cleaning industry and in some household products. Studies have shown that background levels in U.S. homes, in areas similar to Wall Township, average about 3 - 6 $\mu g/m^3$ (micrograms per cubic meter) (EPA, 1987). Reported values are the ranges of medians for background concentrations found in several U.S. cities, as reported by EPA's TEAM Study, 1987. However, these are not site-specific background concentrations for the White Swan Laundry and Cleaner site, but are presented to provide perspective. If the concentration of PCE in a household sample is within this range, it does not necessarily indicate that the PCE is entirely due to non-site related sources. Moreover, there are many uncertainties related to applying the estimates of background from the EPA TEAM Study to Wall Township. That is, there may be differences due to the types of homes in the study versus Wall Township (e.g., basements, age, and construction) and differences in other factors that may effect local indoor background levels of PCE. Because PCE is considered a site-related contaminant of concern, all exposures above typical background levels are considered to be an exposure that may be related to the site; therefore, ATSDR and NJDHSS consider this pathway to be a completed, or at least a potential, exposure pathway.

The levels of PCE detected in the over 300 samples of indoor air from 220 residences ranged from not detected (ND) to 223.4 $\mu g/m^3$. However, one air sample collected by the NJDEP from the air space of a confined sump located in a basement of a home contained 1,760 $\mu g/m^3$ of PCE. In a majority of the homes, PCE was either not detected at all, or the levels of PCE in the air were less than the health comparison value of 0.63 $\mu g/m^3$ (based on EPA Region III's Risk-Based Concentration or RBC). The RBC for PCE is based on cancer effects. ATSDR currently does not

have a Cancer Risk Evalaution Guide (CREG) for PCE in air. For non-cancer effects due to long-term exposures to PCE, ATSDR's Minimal Risk Level or MRL (see definition below) is 271 $\mu g/m^3$. For non-cancer effects due to short-term PCE exposures, ATSDR's MRL is 1,356 $\mu g/m^3$. Many of the air samples were in the range of what may be considered typical background levels.

Since the available data represent a snapshot in time, ATSDR and NJDHSS cannot definitively determine the concentration or duration of a resident's exposure. However, given that the exposure is likely to persist without any intervention, it is assumed, conservatively, that the exposure duration is 30 years.

Public Health Implications

Tetrachloroethylene (PCE): Chronic Exposure and Non-Cancer Effects

To evaluate non-carcinogenic health effects, ATSDR has developed Minimal Risk Levels (MRLs) for contaminants that are commonly found at hazardous waste sites. The MRL is an estimate of the level of daily human exposure to a contaminant below which non-cancerous adverse health effects are unlikely. MRLs are developed for each route of exposure, *e.g.*, ingestion or inhalation, and for the length of exposure, *i.e.*, acute (less than 14 days); intermediate (15–364 days); and chronic (365 days or more). Because ATSDR has no methodology to determine amounts of chemicals absorbed through the skin, no MRLs have been established for skin exposure. ATSDR presents information on MRLs in its series of Toxicological Profiles on hazardous substances. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. If ATSDR has not developed an MRL for a contaminant, the EPA Reference Dose (RfD) is used, if available. The RfD is an estimate of the daily exposure of the human population to a potential hazard that is likely to be without risk of a non-carcinogenic adverse health effects during a person's lifetime. To date, none of the air samples from residential living areas were above ATSDR's long-term or short-term MRL. Therefore, adverse non-carcinogenic health effects from either short- or long-term exposures to PCE are not expected. One sample obtained from the sump at a residence on Laurel Avenue did contain PCE above ATSDR's short-term MRL. Exposure to this concentration of PCE is considered to be of short-term duration when the cover over the sump is opened. For this reason, this exposure is further evaluated below. Since the concentrations of PCE in several other homes were above the HCV for cancer effects and typical background levels in U.S. homes, ATSDR and NJDHSS will also evaluate the public health implications of these exposures.

The highest concentration of PCE that was measured (1,760 $\mu g/m^3$ in the residential sump) exceeds ATSDR's short-term MRL of 1,356 $\mu g/m^3$. However, it should be noted that the short-term MRL for PCE is based on a human study of neurological effects (hand-eye coordination) of PCE (Altman et al., 1992), which is considered by ATSDR to be of a less serious nature. Moreover, the short-term MRL for PCE that was determined by the study is 200 times below the Lowest Observed

Adverse Effect Level (LOAEL)–the value of 200 is considered an uncertainty or margin-of-safety factor. Furthermore, the concentration that was that was measured at the sump is about 40 times less than the No Observed Adverse Effect Level (NOAEL). Moreover, because this sample was taken from an enclosed sump, only short-term intermittent exposures are likely to have occurred. Based on this information, it does not appear likely that the residents would experience any short-term adverse non-cancer effects from their exposures.

Tetrachloroethene (TCE): chronic exposure and cancer

PCE is a common commercial chemical that is used in the dry cleaning industry. Because of the potential for high PCE exposure, a number of epidemiological studies of dry cleaning workers have been conducted. These studies suggest a possible association between long-term PCE exposure and an increased risk of cancer. The cancer types most consistently showing an increased risk are esophageal cancer, bladder cancer, cervical cancer, and non-Hodgkin's lymphoma. Since dry cleaning workers are also exposed to other chemicals, it is difficult to determine whether these cancers are associated with PCE or some other chemical used in the drying cleaning industry. Another study of a community exposed to PCE only through their drinking water showed an increase in leukemia and bladder cancer in the exposed population (Aschengrau *et al*,1993; Webler *et al*, 1993). Adding to the complexity is the contribution that smoking and other life-style variables might have on producing these cancers. One scientist reviewed these studies and concluded that esophageal cancer might have been caused by cigarette smoking and alcohol consumption, and that bladder cancer might have been caused by exposure to other solvents that are used in the dry cleaning industry (Weiss 1995; ATSDR 1997).

Near-lifetime exposure to PCE by inhalation has been shown to cause cancer in rats and mice. In a 2-year study of rats, Mennear et al. showed an increase in mononuclear cell leukemia (a cancer of the blood) following exposure to 1,356,000 $\mu g/m^3$ PCE for 5 days a week, 6 hours a day. Mennear et al. also showed that inhalation of PCE caused an increase in liver cancer in mice exposed at 678,000 $\mu g/m^3$ for 5 days a week, 6 hours a day for over 2 years.

Much discussion exists in the scientific community about whether PCE exposure can cause cancer in humans. The EPA is currently reviewing its cancer classification for PCE. The National Toxicology Program (NTP), within the federal Department of Health and Human Services, has reviewed the available cancer information and has determined that there is sufficient evidence that PCE can cause cancer in animals, but that the evidence in humans is inconclusive. The NTP has concluded that PCE may reasonably be anticipated to be a carcinogen (ATSDR, 1997). Overall, the scientific community is uncertain whether PCE causes cancer in humans. However, to be protective of public health, ATSDR and the NJDHSS believe it is reasonable to consider PCE a probable human carcinogen.

Since EPA Region III's Risk Based Concentration (RBC) for PCE is 0.63 $\mu g/m^3$, a concentration of 6 $\mu g/m^3$ (a typical background concentration found in indoor air) represents a

Lifetime Excess Cancer Risk (LECR) of 1 x 10^{-5} (1 in 100,000). [A concentration of 60 $\mu g/m^3$, a factor of 10 greater than the average background concentration, therefore represents a LECR of 1 x 10^{-4} (1 in 10,000)]. Exposure levels of 6 - 60 $\mu g/m^3$ represent a slightly increased lifetime excess cancer risk beyond the cancer risk due to background PCE levels. The LECRs were calculated based on EPA's draft provisional cancer reassessment of exposure to PCE by inhalation (EPA, 2002). This determination was based on a study of liver cancer in female mice, an outcome that is considered by many to be the most appropriate when comparing rodent studies to human health effects.

The method used to calculate the LECR is based on EPA's Cancer Slope Factor (CSF), which assumes that high dose animal exposure data can be used to estimate the risk for low dose exposures in humans. The method also assumes that there is no "safe" level for exposure, and that the total duration of past, current, and future exposure could be as much as 30 years – a very conservative assumption. While this calculation may not determine a real-life increase in cancer to those who are exposed to PCE, it is evidence of a potential added risk, suggesting a difference between the cancer incidence under the exposure conditions and the background incidence in the absence of exposure. The actual possibility of any one person (child or adult) getting cancer is probably lower than the calculated risk and is dependent on many factors, for example, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace. Moreover, the actual exposures to the residents are likely to be much lower than those shown to cause cancer in animals, or than exposures to workers at dry cleaning establishments.

Conclusions

Based on the action levels proposed by the EPA and the NJDEP, the public health interpretation of the levels of PCE that were found in the indoor air in about 220 residences in Wall Township that were sampled in conjunction with the on-going investigation of the White Swan site is as follows:

- Exposures to PCE concentrations above 60 $\mu g/m^3$ represent a lifetime risk of cancer greater than that due to background concentrations;
- Exposures to PCE concentrations between 6 and 60 $\mu g/m^3$ represent a lifetime cancer risk that is slightly greater than that due to background levels; and
- Exposures to PCE concentrations less than 6 $\mu g/m^3$ represent little or no lifetime cancer risk greater than that due to background levels.

Taking into consideration the cancer effects associated with PCE air exposures, ATSDR and the NJDHSS calculated Lifetime Excess Cancer Risks (LECR). While this calculation may not be an indication of a real-life increase in cancer to those who are exposed to PCE, it does indicate a potential added risk, suggesting a difference between the cancer incidence under the exposure conditions and

the background incidence in the absence of exposure. The possibility of any one person (child or adult) getting cancer is probably lower than the calculated risk and is dependent on many factors, *i.e.*, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace. Moreover, the actual exposures to the residents are likely to be much lower than those shown to cause cancer in animals or lower than exposures to workers at dry cleaning establishments.

ATSDR and the NJDHSS consider exposures to PCE at 60 $\mu g/m^3$ and above to be a **"Public Health Hazard"**[See Appendix C for a description of ATSDR's Public Health Hazard categories]. Actions taken by EPA to mitigate these completed pathway exposures are protective of public health. Although exposures between 6 and 60 $\mu g/m^3$ represent a slightly increased risk of cancer beyond the background risk, ATSDR and the NJDHSS consider the actions taken by the NJDEP to reduce or eliminate exposures in this range to also be protective of public health. Taking into consideration typical indoor background levels in U.S. homes and the very low risk of cancer, ATSDR and the NJDHSS consider all exposures to PCE below 6 $\mu g/m^3$ to represent **"No Apparent Public Health Hazard"**.

ATSDR and the NJDHSS have also evaluated the likelihood of an adverse non-cancer effect from the PCE air exposures in the 220 residences that were sampled in Wall Township. All but one sample were below ATSDR's MRLs for long-term non-cancer health effects; therefore, no adverse non-cancer health effects are likely. The one sample that was above the short-term MRL was from a sump at a residence on Laurel Street. Because this sample was taken from an enclosed sump, only short-term intermittent exposures are likely to have occurred. Based on further evaluation of the exposures and health effects from the short-term exposures to the levels of PCE found in the air in the sump area, it is not likely that exposure to any residents would result in any serious non-cancer adverse health effects.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Recommendations

Soil gas and ground water investigations should be continued in order to determine the extent and contribution of site-related contaminants in ground water that infiltrate into the indoor air of homes and businesses.

Public Health Action Plan (PHAP)

The Public Health Action Plan (PHAP) for the (former) White Swan Laundry and Cleaner, Inc. site contains descriptions of the actions to be taken by ATSDR, NJDHSS and other agencies at or in the vicinity of the site. The purpose of a PHAP is to ensure that this Health Consultation not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. The environmental sampling data and remedial activities that have been conducted have been evaluated within the context of human exposure pathways and other relevant public health factors. Included is a commitment on the part of ATSDR and NJDHSS to monitor this plan to ensure that the plan is implemented. ATSDR will provide follow-up to this PHAP, outlining the actions which have been completed and those actions that are in progress, as needed. The public health actions to be implemented by ATSDR/NJDHSS are as follow:

Actions Undertaken

(1) EPA and the NJDEP have sampled the indoor air of numerous residences and other structures, including several schools in the vicinity of the site property. In addition, the EPA and NJDEP, collectively, have taken actions to reduce PCE exposures to concentrations that are below levels of public health concern.

(2) ATSDR and the NJDHSS have participated in a public availability session with local residents to provide them with a public health interpretation of their individual air sampling results. In addition, ATSDR and NJDHSS have participated in a public meeting to inform the general public of the public health issues of air exposures.

(3) ATSDR and the NJDHSS have prepared a fact sheet for PCE to accompany individual sampling results sent to the residents by the EPA.

Actions Planned

(1) ATSDR and NJDHSS will provide a copy of this document to all concerned residents in the vicinity of the site.

(2) As additional soil gas and ground water data become available, ATSDR and the NJDHSS will, when requested, evaluate the public health implications of indoor air exposures to other chemicals that may be found to be related to the site and provide assistance to residents to reduce their exposures to chemicals found that are not related to the site.

(3) ATSDR and NJDHSS will coordinate as deemed necessary with the appropriate environmental agencies to develop plans to implement the recommendations contained in this document.

Certification

This Health Consultation was prepared by the Division of Health Assessment and Consultation (DHAC), ATSDR, and the New Jersey Department of Health and Senior Services (NJDHSS) under a cooperative agreement with the ATSDR. It has been produced in accordance with approved methodology and procedures existing at the time the Health Consultation was begun.

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Superfund Site Assessment Branch (SSAB)
Division of Health Assessment and Consultation (DHAC)
ATSDR

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

Roberta Erlwein
Chief, State Program Section (SPS), SSAB, DHAC
ATSDR

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Appendices

Appendix A: Fact Sheet on Perchloroethylene (PCE)

Agency for Toxic Substances and Disease Registry (ATSDR) Fact Sheet

Exposure to PCE in Residential Air Near the (former) White Swan Laundry Site Public Health Implications and Interpretation

General Public Health Issues:

- PCE is a solvent that is commonly used in the commercial dry cleaning industry and in some household products.
- Studies have shown that typical background levels in U.S. homes average 3 - 6 $\mu g/m^3$. This range is not a site-specific background level, but is presented to provide perspective.
- Studies of dry cleaning workers suggest a possible link between PCE air exposures and an increased risk of cancer.
- The most consistent cancers shown are esophageal, bladder, cervical, and non-Hodgkin's lymphoma.
- Scientists are uncertain whether these cancers are linked to PCE exposure, exposures from other chemicals used in dry cleaning, or from other risk factors, such as smoking, etc.
- Studies of rats and mice have linked PCE exposure to liver cancer in female mice. As with the human studies, some uncertainty exists, but it appears that the most credible link is with liver cancer in female rodents.
- The scientific community is uncertain whether PCE causes cancer in humans. However, to be protective of public health, ATSDR and the NJDHSS believe it is reasonable to consider PCE a probable human carcinogen.

Perspective on Site-Specific Exposure:

- To be protective of public health, the interpretation of PCE air exposures in the attached table is based on 30 years of exposure. The actual length of exposure to residents is not known, but it is likely to be much shorter than 30 years, so the chance of getting cancer is likely to be lower than stated.
- However, because the actual exposure levels over time are not known, the risk estimates may over- or underestimate the chance of getting cancer.
- The risk of any one person getting cancer is very low and is dependent on many factors, for example, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace.
- The actual exposures to most residents are likely to be much lower than those shown to cause cancer in animal studies or exposure to workers in the dry cleaning business.

Agency for Toxic Substances and Disease Registry (ATSDR)
Public Health Interpretation of Exposure to Tetrachloroethylene (PCE) in Residences Near the (former)White Swan Laundry and Dry Cleaner, Inc. Site

Concentration of PCE in Indoor Air ($\mu g/m^3$)	Public Health Interpretation	Background Concentration of PCE in Indoor Air in U.S. Homes ($\mu g/m^3$)*
Less Than 6	Little to no additional lifetime cancer risk beyond the cancer risk due to background PCE levels (LECR** $<10^{-5}$)	3 - 6
6 - 60	Slightly increased lifetime cancer risk beyond the cancer risk due to background PCE levels (10^{-4} < LECR** < 10^{-5})	
60 and Above	Increased lifetime cancer risk beyond the cancer risk due to background PCE levels (LECR** $>10^{-4}$)	

*Reported values are the ranges of medians for background concentrations found in several U.S. cities, as reported by EPA's TEAM Study, 1987. These are not site-specific background concentrations for the White Swan Laundry and Cleaner site, but are presented to provide perspective. If the concentration of PCE in a household sample is within this range, it does not necessarily indicate that the PCE is entirely due to non-site-related sources.

**LECR - Lifetime Excess Cancer Risk

Note: The EPA Region III Risk Based Concentration (RBC) for PCE of 0.63 $\mu g/m^3$ is equivalent to a LECR of 10^{-6} (1 in 1,000,000). ATSDR currently does not have a health-based cancer comparison value for inhalation of PCE.

Appendix B: Description of Comparison Values

Description of Comparison Values

ATSDR's Comparison Values are media-specific concentrations that are considered to be "safe" under default conditions of exposure. They are used as screening values in the preliminary identification of site-specific chemical substances that the health assessor has selected for further evaluation of potential health effects.

Generally, a chemical is selected for evaluation because its maximum concentration in air, water, or soil at the site exceeds one of ATSDR's Comparison Values. However, it cannot be emphasized strongly enough that Comparison Values are not thresholds of toxicity. While concentrations at or below the relevant comparison value may reasonably be considered safe, it does not automatically follow that any environmental concentration that exceeds a Comparison Value would be expected to produce adverse health effects. Indeed, the whole purpose behind highly conservative, health-based standards and guidelines is to enable health professionals to recognize and resolve potential public health problems before they become actual health hazards. The probability that adverse health outcomes will actually occur as a result of exposure to environmental contaminants depends on site-specific conditions and individual lifestyle and genetic factors that affect the route, magnitude, and duration of actual exposure, and not solely on environmental concentrations.

Screening values based on non-cancer effects are generally based on the level at which no health adverse health effects (or the lowest level associated with health effects) found in animal or (less often) human studies, and include a cumulative margin of safety (variously called safety factors, uncertainty factors, and modifying factors) that typically range from 10-fold to 1,000-fold or more. By contrast, cancer-based screening values are usually derived by linear extrapolation with statistical models from animal data obtained at high exposure doses, because human cancer incidence data for very low levels of exposure are rarely available. Cancer risk estimates are intended to represent the upper limit of risk, based on the available data.

Listed and described below are the types of comparison values that the ATSDR and the NJDHSS used in this Health Consultation:

Cancer Risk Evaluation Guides (CREGs) are estimated concentrations of contaminants in an environmental medium (such as drinking water) that are expected to cause no more than one excess cancer case for every million persons who are continuously exposed to the concentration for an entire lifetime (equaling a risk of 1×10^{-6}). These concentrations are calculated from the EPA's cancer slope factors, which indicate the relative potency of carcinogenic chemicals. Only chemicals that are known or suspected of being carcinogenic have CREG Comparison values.

Environmental Media Evaluation Guides (EMEGs) and Reference Dose Media Evaluation Guides (RMEGs) are estimates of chemical concentrations in an environmental medium (such as drinking water) that are not likely to cause an appreciable risk of deleterious, non-cancer health effects, for fixed durations of exposure. These guides may be developed for special sub-populations such as children. EMEGs are based on ATSDR's Minimal Risk Level (MRL) while RMEGs are based on the EPA's Reference Dose (RfD).

Other health-based guides may also be used as Comparison Values, including drinking water Maximum Contaminant Levels (MCLs) established by the EPA or the NJDEP.

Appendix C: ATSDR Public Health Hazard Categories

ATSDR's Interim Public Health Hazard Categories

Category / Definition	Data Sufficiency	Criteria
A. Urgent Public Health Hazard This category is used for sites where short-term exposures (< 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.	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.	Evaluation of available relevant information* indicates that site-specific 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.
B. Public Health Hazard This category is used for sites that pose a public health hazard due to the existence of long-term exposures (> 1 yr) to hazardous substance or conditions that could result in adverse health effects.	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.	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.
C. Indeterminate Public Health Hazard This category is used for sites in which "*critical*" data are *insufficient* with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.	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.	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.

Category / Definition	Data Sufficiency	Criteria
D. No Apparent Public Health Hazard This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.	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.	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.
E: No Public Health Hazard This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.	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	

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

Health Consultation

Public Health Implications and Interpretation of
Exposure to Tetrachloroethylene (PCE) in Residential Indoor Air

(FORMER) WHITE SWAN LAUNDRY AND CLEANER, INCORPORATED
(a/k/a MAGNOLIA AVENUE GROUNDWATER CONTAMINATION SITE)

WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

EPA FACILITY ID: NJSFN0204241

SEPTEMBER 25, 2002

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 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

Public Health Implications and Interpretation of
Exposure to Tetrachloroethylene (PCE) in Residential Indoor Air

(FORMER) WHITE SWAN LAUNDRY AND DRY CLEANER, INCORPORATED
(a/k/a MAGNOLIA AVENUE GROUNDWATER CONTAMINATION SITE)

WALL TOWNSHIP, MONMOUTH COUNTY, NEW JERSEY

EPA FACILITY ID: NJSFN0204241

Prepared by:

New Jersey Department of Health and Senior Services
Hazardous Site Health Evaluation Program
Consumer and Environmental Health Services
Division of Epidemiology, Environmental, and Occupational Health
Under a Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Abbreviations

ATSDR	Agency for Toxic Substances and Disease Registry
CREG	Cancer Risk Evaluation Guide
CSF	Cancer Slope Factor
EMEG	Environmental Media Evaluation Guide
EPA	United States Environmental Protection Agency
HCV	Health-based Comparison Value
LECR	Lifetime Excess Cancer Risk
MCHD	Monmouth County Health Department
MRL	Minimal Risk Level
ND	Not Detected
NJDEP	New Jersey Department of Environmental Protection
NJDHSS	New Jersey Department of Health and Senior Services
PCE	Perchloroethylene (tetrachloroethylene)
RBC	Risk-Based Concentration
RfC	Reference Concentration
RfD	Reference Dose
RMEG	Reference Dose Evaluation Guide
TCE	Trichloroethylene
VOC	Volatile Organic Chemical

Summary

This Health Consultation has been prepared in response to a request that was submitted in April 2002 by the U.S. Environmental Protection Agency (EPA) Region II to the Agency for Toxic Substances and Disease Registry (ATSDR) to assist in evaluating the public health implications of exposure to tetrachloroethylene (PCE) that was detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. Specifically, this Health Consultation provides a public health interpretation of the tetrachloroethylene (perchloroethylene), *i.e.*, PCE action levels in air that were proposed by the EPA and the New Jersey Department of Environmental Protection (NJDEP). Concern has been raised about possible exposure, by inhalation, to chemicals that have been found in the ground water in the vicinity of the (former) White Swan Laundry and Cleaner, Inc. (aka Magnolia Avenue Ground Water Contamination) site, also located in Wall Township, Monmouth County, New Jersey.

It is known that a shallow ground water plume of trichloroethylene, *i.e.*, TCE, and tetrachloroethylene (perchloroethylene), *i.e.*, PCE, exists that extends in an easterly direction from sources located in Wall Township, Monmouth County, New Jersey. Concern has been raised regarding the potential for exposure to these contaminants via inhalation of vapors that may have been transported from the ground water into residences and other structures, and subsequently volatilized in indoor air.

Based on the action levels proposed by the EPA and the NJDEP, ATSDR and the NJDHSS have provided the following public health interpretation of the levels of PCE that were found as a result of sampling the indoor air in about 220 residences in Wall Township in conjunction with the on-going investigation of the White Swan site:

- All exposures to PCE concentrations that are above 60 $\mu g/m^3$ represent a lifetime risk of cancer greater than that due to background concentrations;
- All exposures to PCE concentrations between 6 and 60 $\mu g/m^3$ represent a cancer risk that is slightly greater than that due to background levels; and,
- All exposures to PCE concentrations that are less than 6 $\mu g/m^3$ represent little or no lifetime cancer risk greater than that due to background levels.

EPA has installed ventilation systems at all homes with PCE concentrations of 60 $\mu g/m^3$ and above, and the NJDEP, in accordance with their mandate to reduce exposures to background levels, is working with the homeowners who have slightly elevated levels and are interested in undertaking remedial measures.

ATSDR and the NJDHSS consider exposures to PCE at concentrations of 60 $\mu g/m^3$ and above to be a **"Public Health Hazard"**. Actions taken by EPA to mitigate these exposures are

protective of public health. Although exposures to concentrations between 6 and 60 $\mu g/m^3$ represent a slightly increased risk of cancer beyond the background risk, ATSDR and the NJDHSS consider that remedial actions taken by NJDEP to mitigate exposures in this range to also be protective of public health. Taking into consideration typical indoor background levels in U.S. homes and the very low risk of cancer, ATSDR and the NJDHSS consider all exposures to PCE below 6 $\mu g/m^3$ to represent **"No Apparent Public Health Hazard".** No remedial actions are necessary.

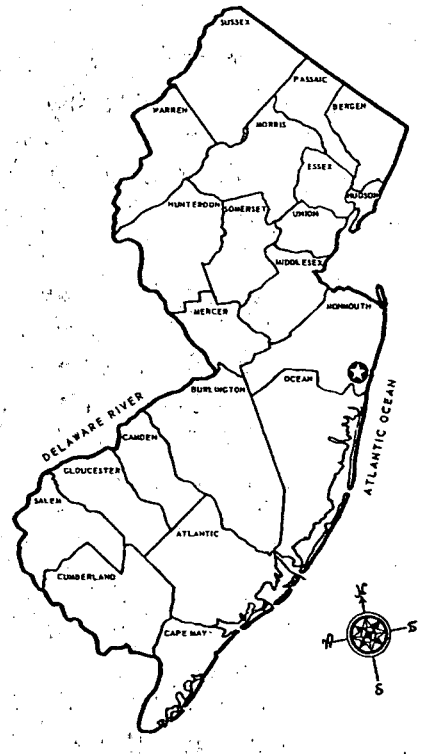
ATSDR and the NJDHSS have also evaluated the likelihood of an adverse non-cancer effect from the PCE air exposures in the 220 residences that were sampled in Wall Township. All but one sample were below ATSDR's Minimal Risk Levels (MRL) for short-term non-cancer health effects. The one sample that was above the short-term MRL was from a sump at a residence on Laurel Street. Because this sample was taken from an enclosed sump, only short-term intermittent exposures are likely to have occurred. Based on further evaluation of potential health effects from the short-term exposures to the levels of PCE found in the air in the sump area, it is not likely that exposure to any residents would result in any serious non-cancer adverse health effects.

Soil gas and ground water investigations in the vicinity of the (former) White Swan Laundry and Cleaner, Inc. site should be continued in order to determine the extent and contribution of site-related contaminants that infiltrate from ground water into the indoor air of homes and businesses. If these or other investigations provide additional information on local background levels of PCE in residential indoor air, the conclusions of this Health Consultation may be re-evaluated.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Background and Statement of Issues

The U.S. Environmental Protection Agency (EPA) Region II requested that the Agency for Toxic Substances and Disease Registry (ATSDR) assist in evaluating the public health implications of exposure to tetrachloroethylene (PCE) that was detected in indoor air sampling of about 220 residences in Wall Township, Monmouth County, New Jersey. The sampling was conducted in conjunction with the on-going investigation of releases of hazardous substances from the (former) White Swan Laundry and Dry Cleaner, Inc. site. Specifically, this Health Consultation provides a public health interpretation of the PCE action levels in air that were proposed by the EPA and the New Jersey Department of Environmental Protection (NJDEP). The New Jersey Department of Health and Senior Services (NJDHSS), under a cooperative agreement with ATSDR, and working jointly with the Superfund Site Assessment Branch, Division of Health Assessment and Consultation, ATSDR, will address EPA's request in this Health Consultation.



In 1997, the Monmouth County Health Department (MCHD) became aware of tetrachloroethylene (PCE) contamination of irrigation wells on Magnolia Avenue in Wall Township, Monmouth County, New Jersey. Between 1999 and 2000, the MCHD and the New Jersey Department of Environmental Protection (NJDEP) performed a joint study of shallow ground water that mapped a plume of PCE and trichloroethylene (TCE) contamination about 2.5 miles long and one mile wide. The contamination plume extends from Wall Township into the Boroughs of Manasquan and Sea Girt and continues to the coastline (NJDEP, 2001).

In October 1999, at the request of the MCHD and EPA, ATSDR was asked to review the information related to the ground water contamination, and to advise the community about the usage of the irrigation wells. ATSDR determined that the concentrations of PCE that were found in the irrigation wells posed no public health concern, providing the water was used for non-potable purposes only (ATSDR, 1999).

During the period from 1998 to 2000, the NJDEP conducted site investigations at three facilities that were identified as potential sources. Soil and ground water samples collected at the three sites confirmed that a release of volatile organic compounds (VOCs) had occurred at each of the sites. The (former) White Swan Laundry and Cleaner (aka: Fleet Bank or Summit Bank)

property, a Gulf Service Station, and Sun Cleaners were identified as contributing sources to the Magnolia Avenue ground water contamination site (NJDEP, 2001).

On February 23, 2001, the owners of the (former) White Swan Laundry and Cleaner, Inc. property entered into a memorandum of agreement with the NJDEP to conduct a site investigation and remedial investigation at the site. During the remedial investigation, the NJDEP determined that a ground water plume of contamination might be adversely effecting the indoor air quality of nearby residential properties (NJDEP, 2001).

Sampling by Fleet Bank at its branch office on Sea Girt Avenue found high levels of PCE contamination in shallow ground water. Based on these results, on October 25, 2001, the NJDEP conducted indoor air quality testing of three residential properties and one commercial property located near to the Fleet Bank property. The NJDEP provided the residents and the owners of the commercial property with fans for ventilating the basements of each of these buildings where PCE was detected. The NJDEP conducted additional sampling of various residences in October through December, 2001.

At the request of the NJDEP, the EPA announced plans on December 5, 2001, to take over the investigation of the contaminated ground water plume that underlies portions of Wall Township and the Boroughs of Sea Girt and Manasquan. The EPA also announced that they agreed to evaluate the site for listing on the National Priorities List (NPL), *i.e.*, Superfund. Since that time, EPA has collected about 300 indoor air samples from at least 220 residential and business locations. The sampling has also included various educational facilities within the area, including Sea Girt Elementary School, Old Mill School, and Brookside School (EPA, 2002).

In accordance with their mandate to protect public health under the National Contingency Plan (NCP), EPA has installed ventilation systems at all homes with PCE levels above 60 $\mu g/m^3$ and the NJDEP, in accordance with their mandate to reduce exposures to background levels, is working with the homeowners who have slightly elevated levels and are interested in undertaking remedial measures (EPA, 2002). In April 2002, the EPA sent the results of indoor air sampling of the 220 residences to individual homeowners. Included with this letter, ATSDR and NJDHSS provided a public health interpretation of air exposures to PCE based on EPA's and the NJDEP's proposed action levels [Appendix A shows the fact sheet on PCE that was distributed to individual homeowners].

Discussion

Health Assessment Methodology

In the course of creating Public Health Assessments (PHA) and Health Consultations (HC), ATSDR evaluates the environmental and human components that lead to human exposure to a

release of hazardous substances from a given site. A pathways analysis consists of five elements: (1) a source of contamination; (2) transport through an environmental medium; (3) a point of human exposure; (4) a route of human exposure; and (5) a receptor population. ATSDR categorizes exposure pathways into three groups: (1) "completed pathways", that is, those in which exposure is reasonably expected to have occurred, to be occurring, or to occur in the future; (2) "potential pathways", that is, those in which exposure might have occurred, may be occurring, or may yet occur, and (3) "eliminated pathways", that is, those that can be eliminated from further analysis because at least one of the five elements listed above is missing and will never be present, or in which no contamination of concern can be identified.

After the pathways are designated as "completed", "potential", or "eliminated", ATSDR follows a two-step methodology to comment on public health issues related to exposure pathways at hazardous waste sites. First, ATSDR obtains representative environmental monitoring data for the site of concern and compiles a list of site-related contaminants. ATSDR compares this list of contaminants to health-based values (health comparison values or HVCs) (definitions of HVCs are shown in Appendix B) to identify those contaminants that do not have a realistic possibility of causing adverse health effects. Second, for the remaining contaminants, ATSDR evaluates site-specific conditions to determine what exposure scenario is realistic for a given exposure pathway. Given this exposure scenario, ATSDR determines an exposed dose and compares this dose to scientific studies to determine whether the extent of exposure indicates a public health hazard.

The health-based comparison values used in this report are concentrations of contaminants that the current public health literature suggest are "safe" or "harmless". These comparison values are quite conservative because they include ample safety factors that account for the most sensitive populations. ATSDR typically uses HCVs as follows: if a contaminant is never found at levels greater than its comparison value, ATSDR concludes the levels of corresponding contamination are "safe" or "harmless". If, however, a contaminant is found at concentrations that are greater than its HCV, ATSDR designates the pollutant as a contaminant of concern and examines it further in the assessment. Because HCVs are based on extremely conservative assumptions, the presence of concentrations greater than an HCV does not necessarily suggest that adverse health effects will occur among the exposed population.

Exposure Pathways and Contaminant of Concerns

The pathway of concern evaluated in this Health Consultation is exposure to ground water contaminants that off-gas or volatilize from ground water to soils and then infiltrate into the air of various homes. It has been assumed that ground water beneath the White Swan site (and possibly other sources) is contaminated with PCE, that the PCE has off-gassed to soils beneath nearby homes, and, finally, that the PCE has infiltrated into these homes through cracks in the foundation or directly from soils into homes.

In addition to the site-related PCE that may have infiltrated homes from off-gassing from ground water, it is possible that some of the PCE may be coming from indoor sources. Studies by the EPA have shown that most homes in the U.S. have measurable levels of organic chemicals in indoor air. While outdoor air contains these organic chemicals, a surprising finding from the EPA studies is that indoor levels of organic chemicals are usually higher than outdoor air. These higher indoor air levels of VOCs presumably come from consumer products that are brought into the homes, from off-gassing of home building materials, and from personal activities. EPA studies showed that certain human activities were associated with having increased levels of chemicals in indoor air. Examples of these activities are (EPA, 1987):

- smoking indoors increases benzene, xylene, ethyl benzene, and styrene levels in indoor air;
- bringing dry cleaning home causes higher PCE levels in indoor air;
- using hot water in the home increases chloroform levels in indoor air; and
- using room air fresheners, toilet bowl deodorizers, and moth crystals leads to higher levels of para-dichlorobenzene in indoor air.

Additional studies by EPA are underway to determine the contribution of site-related contaminants found in the ground water (including PCE) to the levels of chemicals detected in residential air samples.

PCE is a solvent that is commonly used in the commercial dry cleaning industry and in some household products. Studies have shown that background levels in U.S. homes, in areas similar to Wall Township, average about 3 - 6 $\mu g/m^3$ (micrograms per cubic meter) (EPA, 1987). Reported values are the ranges of medians for background concentrations found in several U.S. cities, as reported by EPA's TEAM Study, 1987. However, these are not site-specific background concentrations for the White Swan Laundry and Cleaner site, but are presented to provide perspective. If the concentration of PCE in a household sample is within this range, it does not necessarily indicate that the PCE is entirely due to non-site related sources. Moreover, there are many uncertainties related to applying the estimates of background from the EPA TEAM Study to Wall Township. That is, there may be differences due to the types of homes in the study versus Wall Township (e.g., basements, age, and construction) and differences in other factors that may effect local indoor background levels of PCE. Because PCE is considered a site-related contaminant of concern, all exposures above typical background levels are considered to be an exposure that may be related to the site; therefore, ATSDR and NJDHSS consider this pathway to be a completed, or at least a potential, exposure pathway.

The levels of PCE detected in the over 300 samples of indoor air from 220 residences ranged from not detected (ND) to 223.4 $\mu g/m^3$. However, one air sample collected by the NJDEP from the air space of a confined sump located in a basement of a home contained 1,760 $\mu g/m^3$ of PCE. In a majority of the homes, PCE was either not detected at all, or the levels of PCE in the air were less than the health comparison value of 0.63 $\mu g/m^3$ (based on EPA Region III's Risk-Based Concentration or RBC). The RBC for PCE is based on cancer effects. ATSDR currently does not

have a Cancer Risk Evalaution Guide (CREG) for PCE in air. For non-cancer effects due to long-term exposures to PCE, ATSDR's Minimal Risk Level or MRL (see definition below) is 271 $\mu g/m^3$. For non-cancer effects due to short-term PCE exposures, ATSDR's MRL is 1,356 $\mu g/m^3$. Many of the air samples were in the range of what may be considered typical background levels.

Since the available data represent a snapshot in time, ATSDR and NJDHSS cannot definitively determine the concentration or duration of a resident's exposure. However, given that the exposure is likely to persist without any intervention, it is assumed, conservatively, that the exposure duration is 30 years.

Public Health Implications

Tetrachloroethylene (PCE): Chronic Exposure and Non-Cancer Effects

To evaluate non-carcinogenic health effects, ATSDR has developed Minimal Risk Levels (MRLs) for contaminants that are commonly found at hazardous waste sites. The MRL is an estimate of the level of daily human exposure to a contaminant below which non-cancerous adverse health effects are unlikely. MRLs are developed for each route of exposure, *e.g.*, ingestion or inhalation, and for the length of exposure, *i.e.*, acute (less than 14 days); intermediate (15–364 days); and chronic (365 days or more). Because ATSDR has no methodology to determine amounts of chemicals absorbed through the skin, no MRLs have been established for skin exposure. ATSDR presents information on MRLs in its series of Toxicological Profiles on hazardous substances. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. If ATSDR has not developed an MRL for a contaminant, the EPA Reference Dose (RfD) is used, if available. The RfD is an estimate of the daily exposure of the human population to a potential hazard that is likely to be without risk of a non-carcinogenic adverse health effects during a person's lifetime. To date, none of the air samples from residential living areas were above ATSDR's long-term or short-term MRL. Therefore, adverse non-carcinogenic health effects from either short- or long-term exposures to PCE are not expected. One sample obtained from the sump at a residence on Laurel Avenue did contain PCE above ATSDR's short-term MRL. Exposure to this concentration of PCE is considered to be of short-term duration when the cover over the sump is opened. For this reason, this exposure is further evaluated below. Since the concentrations of PCE in several other homes were above the HCV for cancer effects and typical background levels in U.S. homes, ATSDR and NJDHSS will also evaluate the public health implications of these exposures.

The highest concentration of PCE that was measured (1,760 $\mu g/m^3$ in the residential sump) exceeds ATSDR's short-term MRL of 1,356 $\mu g/m^3$. However, it should be noted that the short-term MRL for PCE is based on a human study of neurological effects (hand-eye coordination) of PCE (Altman et al., 1992), which is considered by ATSDR to be of a less serious nature. Moreover, the short-term MRL for PCE that was determined by the study is 200 times below the Lowest Observed

Adverse Effect Level (LOAEL)–the value of 200 is considered an uncertainty or margin-of-safety factor. Furthermore, the concentration that was that was measured at the sump is about 40 times less than the No Observed Adverse Effect Level (NOAEL). Moreover, because this sample was taken from an enclosed sump, only short-term intermittent exposures are likely to have occurred. Based on this information, it does not appear likely that the residents would experience any short-term adverse non-cancer effects from their exposures.

Tetrachloroethene (TCE): chronic exposure and cancer

PCE is a common commercial chemical that is used in the dry cleaning industry. Because of the potential for high PCE exposure, a number of epidemiological studies of dry cleaning workers have been conducted. These studies suggest a possible association between long-term PCE exposure and an increased risk of cancer. The cancer types most consistently showing an increased risk are esophageal cancer, bladder cancer, cervical cancer, and non-Hodgkin's lymphoma. Since dry cleaning workers are also exposed to other chemicals, it is difficult to determine whether these cancers are associated with PCE or some other chemical used in the drying cleaning industry. Another study of a community exposed to PCE only through their drinking water showed an increase in leukemia and bladder cancer in the exposed population (Aschengrau *et al*,1993; Webler *et al*, 1993). Adding to the complexity is the contribution that smoking and other life-style variables might have on producing these cancers. One scientist reviewed these studies and concluded that esophageal cancer might have been caused by cigarette smoking and alcohol consumption, and that bladder cancer might have been caused by exposure to other solvents that are used in the dry cleaning industry (Weiss 1995; ATSDR 1997).

Near-lifetime exposure to PCE by inhalation has been shown to cause cancer in rats and mice. In a 2-year study of rats, Mennear et al. showed an increase in mononuclear cell leukemia (a cancer of the blood) following exposure to 1,356,000 $\mu g/m^3$ PCE for 5 days a week, 6 hours a day. Mennear et al. also showed that inhalation of PCE caused an increase in liver cancer in mice exposed at 678,000 $\mu g/m^3$ for 5 days a week, 6 hours a day for over 2 years.

Much discussion exists in the scientific community about whether PCE exposure can cause cancer in humans. The EPA is currently reviewing its cancer classification for PCE. The National Toxicology Program (NTP), within the federal Department of Health and Human Services, has reviewed the available cancer information and has determined that there is sufficient evidence that PCE can cause cancer in animals, but that the evidence in humans is inconclusive. The NTP has concluded that PCE may reasonably be anticipated to be a carcinogen (ATSDR, 1997). Overall, the scientific community is uncertain whether PCE causes cancer in humans. However, to be protective of public health, ATSDR and the NJDHSS believe it is reasonable to consider PCE a probable human carcinogen.

Since EPA Region III's Risk Based Concentration (RBC) for PCE is 0.63 $\mu g/m^3$, a concentration of 6 $\mu g/m^3$ (a typical background concentration found in indoor air) represents a

Lifetime Excess Cancer Risk (LECR) of 1 x 10^{-5} (1 in 100,000). [A concentration of 60 µg/m^3, a factor of 10 greater than the average background concentration, therefore represents a LECR of 1 x 10^{-4} (1 in 10,000)]. Exposure levels of 6 - 60 µg/m^3 represent a slightly increased lifetime excess cancer risk beyond the cancer risk due to background PCE levels. The LECRs were calculated based on EPA's draft provisional cancer reassessment of exposure to PCE by inhalation (EPA, 2002). This determination was based on a study of liver cancer in female mice, an outcome that is considered by many to be the most appropriate when comparing rodent studies to human health effects.

The method used to calculate the LECR is based on EPA's Cancer Slope Factor (CSF), which assumes that high dose animal exposure data can be used to estimate the risk for low dose exposures in humans. The method also assumes that there is no "safe" level for exposure, and that the total duration of past, current, and future exposure could be as much as 30 years – a very conservative assumption. While this calculation may not determine a real-life increase in cancer to those who are exposed to PCE, it is evidence of a potential added risk, suggesting a difference between the cancer incidence under the exposure conditions and the background incidence in the absence of exposure. The actual possibility of any one person (child or adult) getting cancer is probably lower than the calculated risk and is dependent on many factors, for example, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace. Moreover, the actual exposures to the residents are likely to be much lower than those shown to cause cancer in animals, or than exposures to workers at dry cleaning establishments.

Conclusions

Based on the action levels proposed by the EPA and the NJDEP, the public health interpretation of the levels of PCE that were found in the indoor air in about 220 residences in Wall Township that were sampled in conjunction with the on-going investigation of the White Swan site is as follows:

- Exposures to PCE concentrations above 60 µg/m^3 represent a lifetime risk of cancer greater than that due to background concentrations;
- Exposures to PCE concentrations between 6 and 60 µg/m^3 represent a lifetime cancer risk that is slightly greater than that due to background levels; and
- Exposures to PCE concentrations less than 6 µg/m^3 represent little or no lifetime cancer risk greater than that due to background levels.

Taking into consideration the cancer effects associated with PCE air exposures, ATSDR and the NJDHSS calculated Lifetime Excess Cancer Risks (LECR). While this calculation may not be an indication of a real-life increase in cancer to those who are exposed to PCE, it does indicate a potential added risk, suggesting a difference between the cancer incidence under the exposure conditions and

the background incidence in the absence of exposure. The possibility of any one person (child or adult) getting cancer is probably lower than the calculated risk and is dependent on many factors, *i.e.*, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace. Moreover, the actual exposures to the residents are likely to be much lower than those shown to cause cancer in animals or lower than exposures to workers at dry cleaning establishments.

ATSDR and the NJDHSS consider exposures to PCE at 60 $\mu g/m^3$ and above to be a **"Public Health Hazard"**[See Appendix C for a description of ATSDR's Public Health Hazard categories]. Actions taken by EPA to mitigate these completed pathway exposures are protective of public health. Although exposures between 6 and 60 $\mu g/m^3$ represent a slightly increased risk of cancer beyond the background risk, ATSDR and the NJDHSS consider the actions taken by the NJDEP to reduce or eliminate exposures in this range to also be protective of public health. Taking into consideration typical indoor background levels in U.S. homes and the very low risk of cancer, ATSDR and the NJDHSS consider all exposures to PCE below 6 $\mu g/m^3$ to represent **"No Apparent Public Health Hazard"**.

ATSDR and the NJDHSS have also evaluated the likelihood of an adverse non-cancer effect from the PCE air exposures in the 220 residences that were sampled in Wall Township. All but one sample were below ATSDR's MRLs for long-term non-cancer health effects; therefore, no adverse non-cancer health effects are likely. The one sample that was above the short-term MRL was from a sump at a residence on Laurel Street. Because this sample was taken from an enclosed sump, only short-term intermittent exposures are likely to have occurred. Based on further evaluation of the exposures and health effects from the short-term exposures to the levels of PCE found in the air in the sump area, it is not likely that exposure to any residents would result in any serious non-cancer adverse health effects.

The above conclusions are based on a residential exposure scenario and do not apply to the evaluation of the public health implications of indoor air exposures under non-residential situations (e.g., schools and commercial buildings).

Recommendations

Soil gas and ground water investigations should be continued in order to determine the extent and contribution of site-related contaminants in ground water that infiltrate into the indoor air of homes and businesses.

Public Health Action Plan (PHAP)

The Public Health Action Plan (PHAP) for the (former) White Swan Laundry and Cleaner, Inc. site contains descriptions of the actions to be taken by ATSDR, NJDHSS and other agencies at or in the vicinity of the site. The purpose of a PHAP is to ensure that this Health Consultation not only identifies public health hazards, but provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment. The environmental sampling data and remedial activities that have been conducted have been evaluated within the context of human exposure pathways and other relevant public health factors. Included is a commitment on the part of ATSDR and NJDHSS to monitor this plan to ensure that the plan is implemented. ATSDR will provide follow-up to this PHAP, outlining the actions which have been completed and those actions that are in progress, as needed. The public health actions to be implemented by ATSDR/NJDHSS are as follow:

Actions Undertaken

(1) EPA and the NJDEP have sampled the indoor air of numerous residences and other structures, including several schools in the vicinity of the site property. In addition, the EPA and NJDEP, collectively, have taken actions to reduce PCE exposures to concentrations that are below levels of public health concern.

(2) ATSDR and the NJDHSS have participated in a public availability session with local residents to provide them with a public health interpretation of their individual air sampling results. In addition, ATSDR and NJDHSS have participated in a public meeting to inform the general public of the public health issues of air exposures.

(3) ATSDR and the NJDHSS have prepared a fact sheet for PCE to accompany individual sampling results sent to the residents by the EPA.

Actions Planned

(1) ATSDR and NJDHSS will provide a copy of this document to all concerned residents in the vicinity of the site.

(2) As additional soil gas and ground water data become available, ATSDR and the NJDHSS will, when requested, evaluate the public health implications of indoor air exposures to other chemicals that may be found to be related to the site and provide assistance to residents to reduce their exposures to chemicals found that are not related to the site.

(3) ATSDR and NJDHSS will coordinate as deemed necessary with the appropriate environmental agencies to develop plans to implement the recommendations contained in this document.

Certification

This Health Consultation was prepared by the Division of Health Assessment and Consultation (DHAC), ATSDR, and the New Jersey Department of Health and Senior Services (NJDHSS) under a cooperative agreement with the ATSDR. It has been produced in accordance with approved methodology and procedures existing at the time the Health Consultation was begun.

Gregory V. Ulirsch
Technical Project Officer
Superfund Site Assessment Branch (SSAB)
Division of Health Assessment and Consultation (DHAC)
ATSDR

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

Roberta Erlwein
Chief, State Program Section (SPS), SSAB, DHAC
ATSDR

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Appendices

Appendix A: Fact Sheet on Perchloroethylene (PCE)

Agency for Toxic Substances and Disease Registry (ATSDR) Fact Sheet

Exposure to PCE in Residential Air Near the (former) White Swan Laundry Site Public Health Implications and Interpretation

General Public Health Issues:

- PCE is a solvent that is commonly used in the commercial dry cleaning industry and in some household products.
- Studies have shown that typical background levels in U.S. homes average 3 - 6 $\mu g/m^3$. This range is not a site-specific background level, but is presented to provide perspective.
- Studies of dry cleaning workers suggest a possible link between PCE air exposures and an increased risk of cancer.
- The most consistent cancers shown are esophageal, bladder, cervical, and non-Hodgkin's lymphoma.
- Scientists are uncertain whether these cancers are linked to PCE exposure, exposures from other chemicals used in dry cleaning, or from other risk factors, such as smoking, etc.
- Studies of rats and mice have linked PCE exposure to liver cancer in female mice. As with the human studies, some uncertainty exists, but it appears that the most credible link is with liver cancer in female rodents.
- The scientific community is uncertain whether PCE causes cancer in humans. However, to be protective of public health, ATSDR and the NJDHSS believe it is reasonable to consider PCE a probable human carcinogen.

Perspective on Site-Specific Exposure:

- To be protective of public health, the interpretation of PCE air exposures in the attached table is based on 30 years of exposure. The actual length of exposure to residents is not known, but it is likely to be much shorter than 30 years, so the chance of getting cancer is likely to be lower than stated.
- However, because the actual exposure levels over time are not known, the risk estimates may over- or underestimate the chance of getting cancer.
- The risk of any one person getting cancer is very low and is dependent on many factors, for example, lifestyle, nutritional status, genetics, and other exposures at home and in the workplace.
- The actual exposures to most residents are likely to be much lower than those shown to cause cancer in animal studies or exposure to workers in the dry cleaning business.

Agency for Toxic Substances and Disease Registry (ATSDR)
Public Health Interpretation of Exposure to Tetrachloroethylene (PCE) in Residences Near the (former)White Swan Laundry and Dry Cleaner, Inc. Site

Concentration of PCE in Indoor Air ($\mu g/m^3$)	Public Health Interpretation	Background Concentration of PCE in Indoor Air in U.S. Homes ($\mu g/m^3$)*
Less Than 6	Little to no additional lifetime cancer risk beyond the cancer risk due to background PCE levels (LECR** $<10^{-5}$)	3 - 6
6 - 60	Slightly increased lifetime cancer risk beyond the cancer risk due to background PCE levels (10^{-4} < LECR** < 10^{-5})	
60 and Above	Increased lifetime cancer risk beyond the cancer risk due to background PCE levels (LECR** $>10^{-4}$)	

*Reported values are the ranges of medians for background concentrations found in several U.S. cities, as reported by EPA's TEAM Study, 1987. These are not site-specific background concentrations for the White Swan Laundry and Cleaner site, but are presented to provide perspective. If the concentration of PCE in a household sample is within this range, it does not necessarily indicate that the PCE is entirely due to non-site-related sources.

**LECR - Lifetime Excess Cancer Risk

Note: The EPA Region III Risk Based Concentration (RBC) for PCE of 0.63 $\mu g/m^3$ is equivalent to a LECR of 10^{-6} (1 in 1,000,000). ATSDR currently does not have a health-based cancer comparison value for inhalation of PCE.

Appendix B: Description of Comparison Values

Description of Comparison Values

ATSDR's Comparison Values are media-specific concentrations that are considered to be "safe" under default conditions of exposure. They are used as screening values in the preliminary identification of site-specific chemical substances that the health assessor has selected for further evaluation of potential health effects.

Generally, a chemical is selected for evaluation because its maximum concentration in air, water, or soil at the site exceeds one of ATSDR's Comparison Values. However, it cannot be emphasized strongly enough that Comparison Values are not thresholds of toxicity. While concentrations at or below the relevant comparison value may reasonably be considered safe, it does not automatically follow that any environmental concentration that exceeds a Comparison Value would be expected to produce adverse health effects. Indeed, the whole purpose behind highly conservative, health-based standards and guidelines is to enable health professionals to recognize and resolve potential public health problems before they become actual health hazards. The probability that adverse health outcomes will actually occur as a result of exposure to environmental contaminants depends on site-specific conditions and individual lifestyle and genetic factors that affect the route, magnitude, and duration of actual exposure, and not solely on environmental concentrations.

Screening values based on non-cancer effects are generally based on the level at which no health adverse health effects (or the lowest level associated with health effects) found in animal or (less often) human studies, and include a cumulative margin of safety (variously called safety factors, uncertainty factors, and modifying factors) that typically range from 10-fold to 1,000-fold or more. By contrast, cancer-based screening values are usually derived by linear extrapolation with statistical models from animal data obtained at high exposure doses, because human cancer incidence data for very low levels of exposure are rarely available. Cancer risk estimates are intended to represent the upper limit of risk, based on the available data.

Listed and described below are the types of comparison values that the ATSDR and the NJDHSS used in this Health Consultation:

Cancer Risk Evaluation Guides (CREGs) are estimated concentrations of contaminants in an environmental medium (such as drinking water) that are expected to cause no more than one excess cancer case for every million persons who are continuously exposed to the concentration for an entire lifetime (equaling a risk of 1×10^{-6}). These concentrations are calculated from the EPA's cancer slope factors, which indicate the relative potency of carcinogenic chemicals. Only chemicals that are known or suspected of being carcinogenic have CREG Comparison values.

Environmental Media Evaluation Guides (EMEGs) and Reference Dose Media Evaluation Guides (RMEGs) are estimates of chemical concentrations in an environmental medium (such as drinking water) that are not likely to cause an appreciable risk of deleterious, non-cancer health effects, for fixed durations of exposure. These guides may be developed for special sub-populations such as children. EMEGs are based on ATSDR's Minimal Risk Level (MRL) while RMEGs are based on the EPA's Reference Dose (RfD).

Other health-based guides may also be used as Comparison Values, including drinking water Maximum Contaminant Levels (MCLs) established by the EPA or the NJDEP.

Appendix C: ATSDR Public Health Hazard Categories

ATSDR's Interim Public Health Hazard Categories

Category / Definition	Data Sufficiency	Criteria
A. Urgent Public Health Hazard This category is used for sites where short-term exposures (< 1 yr) to hazardous substances or conditions could result in adverse health effects that require rapid intervention.	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.	Evaluation of available relevant information* indicates that site-specific 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.
B. Public Health Hazard This category is used for sites that pose a public health hazard due to the existence of long-term exposures (> 1 yr) to hazardous substance or conditions that could result in adverse health effects.	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.	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.
C. Indeterminate Public Health Hazard This category is used for sites in which "*critical*" data are *insufficient* with regard to extent of exposure and/or toxicologic properties at estimated exposure levels.	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.	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.

Category / Definition	Data Sufficiency	Criteria
D. No Apparent Public Health Hazard This category is used for sites where human exposure to contaminated media may be occurring, may have occurred in the past, and/or may occur in the future, but the exposure is not expected to cause any adverse health effects.	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.	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.
E: No Public Health Hazard This category is used for sites that, because of the absence of exposure, do NOT pose a public health hazard.	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	

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

Wall Township Public Meeting
White Swan Cleaners Superfund Site
Wall Township, New Jersey

AGENDA

Wednesday, January 16, 2002
7:00 P.M. - 10:00 P.M.

I. Welcome
Mayor Ned Thomson

II. Introduction & Moderator
Cecilia Echols, Community Involvement Coordinator
Public Outreach Branch

III. Health Implications
Artie Block, Regional Representative
Richard A. Nickle, Emergency Response Coordinator
Sherlita Amler, M.D., Medical Officer
Agency for Toxic Substances and Disease Registry
&
Jim Pasqualo, Project Manager
Department of Health and Senior Services

IV. Update Since Dec. 5th Meeting
Richard Salkie, Chief
Superfund Removal Branch

V. Results of Site Sampling
Thomas Budroe, On-Scene-Coordinator
Superfund Removal Branch

VI. Future Remediation of site
Richard Salkie

VII. Questions & Answers
Cecilia Echols

VIII. Closing

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

The United States Environmental Protection Agency is conducting an investigation of air quality in residential homes in your area. Concerns over contamination allegedly linked to a former dry cleaning operation has sparked local and federal attention. As result, the US EPA will be coming to your home to discuss this matter with you, and collect air samples from your basement.

PUBLIC FACT SHEET : AIR SAMPLING

Why is the United States Environmental Protection Agency collecting air samples from my basement?

An agreement has been formulated by local, state, and federal environmental agencies that your home should be tested for indoor air quality. As a result, US EPA personnel will conduct the sampling of air from your basement, at no charge to you. The sampling of air is to determine whether you and/or your family are at risk of breathing harmful contaminants that may be associated with local environmental issues.

How is the air being collected from my basement?

A device, known as a SUMMA Canister, will be placed in your basement to draw in air for a period of 24 hours. Initially, pressure inside the canister is set at a lower pressure than that of the air in your basement. During the 24 hour time frame, air will flow into the SUMMA canister until the pressure of air inside equals the pressure outside the canister. Air will not flow out of the device. These canisters are completely safe and pose no danger to you or your children.

Who is doing the analysis of the samples?

While US EPA personnel are collecting the air samples, a private laboratory has been contracted to perform the analytical procedures.

What should I NOT do so that I do not damage or disrupt the sampling device?

Air sampling devices are particularly sensitive, and can be damaged very easily. This is why it is important to practice the following precautions, **starting 24 hours prior** to sampling:

-do not smoke in the basement
-do not bring dry-cleaning in the house
-do not open your basement windows
-do not paint or clean paint brushes
-minimize your movement around the device
-do not use solvents of any type
-do not utilize fans or vents in the basement
-do not polish your shoes
-do not pour gasoline or liquid fuels inside your house or attached garage
-do not move the canister(s) under any circumstances.

The US EPA apologizes for any inconveniences that may occur as part of this sampling event. However, your cooperation and understanding is greatly appreciated. Remember, we are doing this for the protection of your health, as well as the surrounding community's.

EPA Contact : Tom Budroe 732/906-6191 budroe.thomas@epa.gov

Site Update

Magnolia Avenue Ground Water Contamination

Wall Township, Manasquan Township and Sea Girt Borough, Monmouth County — December 2001

NJDEP Ventilating Several Buildings Near PCE Source in Wall Township

Site History

In 1997, the Monmouth County Health Department (MCHD) was notified that private testing of several irrigation wells on Magnolia Avenue in Wall Township had shown the wells were contaminated with elevated levels of tetrachloroethylene (also known as perchloroethylene, or PCE). PCE is a volatile organic compound that is commonly used as a degreasing agent and dry cleaning solvent. The United States Department of Health considers PCE a possible carcinogen. Subsequent sampling of other private irrigation wells in the area by MCHD indicated widespread PCE contamination in the shallow ground water, as well as lower levels of trichloroethylene (TCE), a decomposition product of PCE.

Between 1999 and 2000, the New Jersey Department of Environmental Protection (NJDEP) and MCHD conducted a joint study to determine the extent of PCE and TCE in the ground water and evaluate the risk for contamination of Sea Girt's municipal supply wells. The study revealed that a plume of shallow ground water contamination approximately 1.5 miles long extended from Wall into Manasquan and Sea Girt. Levels of PCE in irrigation wells tested in this area ranged from below the New Jersey Drinking Water Standard of one part per billion (ppb) to 1,648 ppb. Levels of TCE were significantly lower. The federal Agency for Toxic Substances and Disease Registry evaluated the irrigation well sampling results and concluded that the ground water was safe if used for irrigation or to fill swimming pools. Beginning in April 1999, NJDEP conducted monthly sampling of two Sea Girt municipal supply wells (Well #6 and Well #7) that withdraw water from the Kirkwood-Cohansey aquifer in the area where contamination has been detected in irrigation wells. The samples from the municipal supply wells met all New Jersey Drinking Water Standards; however, PCE was detected at 0.5 ppb in Sea Girt Municipal Well #6 in the summer of 1999. As a result, Sea Girt Borough officials temporarily removed Well #6 from service. Sea Girt Borough subsequently installed an air stripper to remove potential contamination from both Well #6 and Well #7.

Indoor Air Sampling and Ventilation Interim Action

NJDEP has identified the former White Swan dry cleaners on Sea Girt Avenue in Wall Township (now a Fleet Bank) as one of the sources of the ground water contamination. White Swan went out of business in 1982 after 18 years of operation. Recent sampling by Fleet Bank under a voluntary agreement with NJDEP showed that the shallow ground water at this property is contaminated with PCE at a concentration of 120,000 ppb. These levels prompted NJDEP to collect indoor air samples at a total of four residential and commercial buildings near the bank property in October 2001 to determine whether PCE was volatilizing from the soil and ground water and accumulating in the basements and/or living areas of the buildings. The laboratory results received in late November showed that PCE was present in every building in at least one area at levels exceeding United States Environmental Protection Agency's (USEPA) Risk Based Concentration (RBC) of 3.1 micrograms per cubic meter (3.1 ug/m3). This value constitutes an estimated level above which daily long-term exposure would represent an unacceptable risk to human health.

The lowest concentration of PCE was found in a basement at 7.44 ug/m3 and the highest found in a routinely occupied area was 81.2 ug/

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NJDEP Ventilating Several Buildings Near PCE Source

m3. In addition, PCE was found at 1,421 ug/m3 in the crawl space of one building; however, this area is never occupied.

Upon validation of the laboratory analytical results for the air sampling, NJDEP immediately began installing ventilation systems in the affected residential and commercial buildings as an interim measure. Installation of the ventilation systems is expected to be complete early the week of December 10th. The air inside the buildings will be tested to ensure that the ventilation systems are reducing the PCE vapors to acceptable levels.

Future Actions

NJDEP is working with USEPA's removal action program to develop a strategy to sample other homes and buildings in the area to determine the degree and extent of the indoor air contamination. Fleet Bank is currently investigating and remediating its property under NJDEP's Voluntary Cleanup Program. To date, two other parties identified as possible contributors to the larger Magnolia Avenue Ground Water Contamination site plume, the defunct Sun Dry Cleaners on Route 35 and the Gulf gasoline service station on Sea Girt Avenue, both in Wall Township, have not entered into agreements with NJDEP to address potential contamination at their sites.

For Further Information

If you have any questions about the Magnolia Avenue Ground Water Contamination site, please contact Heather Swartz or Mark Herzberg, NJDEP Community Relations Coordinators, at (800) 253-5[illegible] or (609) 984-3081

Community Update

Superfund Removal Program

White Swan Cleaners Superfund Site
Sea Girt Borough, Manasquan Borough
and Wall Township, New Jersey

EPA

January 2002

INTRODUCTION

At a December 5, 2001 meeting of the Wall Township Committee, the U.S. Environmental Protection Agency (EPA) announced plans to take over the investigation of the contaminated groundwater plume that underlies a portion of Wall Township and the Boroughs of Sea Girt and Manasquan. The planned investigation includes collecting interior air samples of homes that may be impacted by tetrachloroethylene (PCE) and the investigation of the source of contamination. PCE is the primary contaminant in the ground water plume. The New Jersey Department of Environmental Protection (NJDEP) agreed to continue collecting interior air samples of the homes until EPA was able to initiate the house sampling program. EPA also agreed to pursue listing the Site on the National Priorities List (NPL) in order to provide the full resources of the Federal Superfund Program for the White Swan Cleaners Site.

CURRENT STATUS

The NJDEP sampled interior areas in 22 homes and businesses and has sampled the air in the Sea Girt Elementary School and the Old Mill School in Wall Township. The results of the NJDEP samples ranged from no detectable contaminant vapors to values in excess of 100 ug/m^3.

EPA initiated the house sampling program in late December; has sampled approximately 78 homes to date, has collected air samples at Sea Girt Elementary School and responded to the two homes with elevated concentrations (in excess of 100 ug/m^3) by installing ventilation systems to reduce the PCE vapor levels.

NJDEP and EPA have overseen the removal of five tanks on the Fleet Bank property and have met with the parents, teachers and the school board at the Sea Girt Elementary Schools to explain the sampling results.

FUTURE EPA ACTIVITIES

EPA will collect 24-hour indoor air samples from basements and/or crawl spaces in residences and other buildings, using a grid sampling methodology, throughout the site. EPA expects the results to be made available to each homeowner after the analysis and data validation are completed. All properties tested will receive a letter from EPA reporting the results.

EPA will submit the results to the Agency for Toxic Substances and Disease Registry (ATSDR) for a toxicological evaluation. EPA will conduct additional sampling as necessary to further examine any areas where elevated levels that have been identified by the initial sampling results. EPA will also take corrective actions at any building where the levels of PCE pose an immediate health threat.

BACKGROUND

In 1997, the Monmouth County Health Department (MCHD) became aware of PCE contamination in irrigation wells on Magnolia Avenue in Wall Township. Between 1999 and 2000, MCHD and NJDEP did a joint study of shallow ground water that mapped a plume of PCE and trichloroethylene (TCE) contamination about 2.5 miles long and a mile wide. The plume extends from Wall Township into the Boroughs of Manasquan and Sea Girt and continues to the coastline.

PCE is a volatile organic compound commonly used as a degreasing agent and dry cleaning solvent. TCE, which was also found, is a decomposition product of PCE. Two defunct dry cleaners, Sun Cleaners on Route 35 and White Swan Laundry and Cleaners on Sea Girt Avenue, have been identified as potential sources of the PCE contamination.

Sampling by Fleet Bank at the property of its branch

office on Sea Girt Avenue found high levels of PCE contamination in the shallow ground water. Alerted by the findings at the Fleet Bank property, NJDEP followed up by collecting and analyzing air samples at three residences and one motel. NJDEP immediately installed fans for ventilation in the basement of each building where PCE was detected in the indoor air samples.

COMMUNITY OUTREACH

The agency will issue these fact sheets on a periodic basis to update the community on the progress of its testing and its actions to address indoor air quality problems.

If you have questions or would like additional information about EPA activities, please contact: Cecilia Echols, Community Involvement Coordinator at: 212-637-3678, (800) 346-5009 or email at echols.cecilia@epa.gov

Site Update

WSC 10.6006

Magnolia Avenue Ground Water Contamination

Wall Township, Manasquan Township and Sea Girt Borough, Monmouth County — January 2002

NJDEP, USEPA Conduct Additional Indoor Air Testing in Wall Township

Site History

In 1999, the New Jersey Department of Environmental Protection (NJDEP) and the Monmouth County Health Department (MCHD) conducted a joint study to delineate perchloroethylene (PCE) contamination in the ground water in parts of Wall Township, Manasquan Township and Sea Girt Borough. PCE (which is also commonly referred to as tetrachloroethylene and tetrachloroethene) is a volatile organic compound that is commonly used as a dry cleaning solvent and degreasing agent and considered a possible carcinogen by the United States Department of Health and Human Services.

Testing of shallow irrigation wells conducted as part of the ground water study showed the PCE plume extended from Route 35 in Wall Township east to the ocean, north to Hannabrand Creek and Wreck Pond, and south to Watson Creek and Mack Pond. Levels of PCE in the irrigation wells in this area ranged from below the New Jersey Drinking Water Standard of one part per billion (ppb) to 1,648 ppb. The federal Agency for Toxic Substances and Disease Registry (ATSDR) evaluated the sampling results and concluded the wells were safe to use for irrigation purposes. Periodic sampling of the Sea Girt Borough municipal supply wells between 1999 and 2000 showed that the water from these wells met New Jersey Drinking Water Standards. However, as a precaution, the Borough installed a treatment system at the well field to remove any potential PCE contamination.

In 2001, NJDEP identified two defunct dry cleaners and a gas station as potentially responsible parties for the contamination. One of the identified parties was the former White Swan Dry Cleaners on Sea Girt Avenue in Wall Township, which operated from the mid-1960s to the early 1980s and is now a Fleet Bank. At the request of NJDEP, Fleet Bank installed a ground water monitor well on its property and testing of the well in the early fall of 2001 revealed high levels of PCE in the ground water (approximately 120,000 parts per billion).

Due to the high levels of PCE found in the soil and ground water at the Fleet Bank, NJDEP decided to test the indoor air at four nearby properties in October of 2001. The analytical results received in late November showed PCE vapors were present in every property in at least one area (basement and/or living area). NJDEP immediately installed ventilation systems at these properties.

In early December, NJDEP conducted indoor testing at 18 additional residential properties on Magnolia Avenue, Laurel Avenue and Sea Girt Avenue to evaluate the extent of the PCE contamination in indoor air. NJDEP also conducted indoor air testing at the Old Mill School in Wall Township and the Sea Girt Elementary School in Sea Girt Borough. The United States Environmental Protection Agency (USEPA) agreed to address the Magnolia Avenue Ground Water Contamination site under its emergency removal program and in late December began collecting indoor air samples from basements and crawl spaces at properties close to the Fleet Bank. Meanwhile, Fleet Bank excavated 820 tons of PCE contaminated soil from its property, disposed of the soil at an off-site facility and backfilled the excavation with clean soil. Additional remedial actions are being evaluated to address the PCE contamination that could not be addressed by the soil excavation.

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Site Remediation Program
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NJDEP, USEPA Conduct Air Testing In Wall Township

Current Status

NJDEP sampled indoor air at a total of 22 residential/commercial properties in October and December of 2001, before USEPA assumed the lead for this site. The results for nine of the properties showed that PCE was not present at levels above the analytical detection limit for this compound (approximately 3.38 micrograms per cubic meter, or µg/m3). Levels at the remaining properties ranged between 4.06 µg/m3 and 1,760 µg/m3 PCE. Seven of the properties with detectable levels of PCE had concentrations below 10 µg/m3. The results of the indoor air sampling conducted at the Old Mill School showed that PCE was not present at levels above the analytical detection limit for this compound at the two locations where the samples were collected.

Based on NJDEP's indoor air sampling results from December, USEPA installed ventilation systems at two properties that exhibited PCE vapors at levels exceeding 60 µg/m3. USEPA has collected a second round of indoor air samples at properties where NJDEP found PCE levels above the analytical detection limit but below 60 µg/m3, and plans to collect additional samples from the Old Mill School to confirm that PCE was not present above the analytical detection limit. In addition, USEPA continues to collect air samples from other properties in the area to further delineate the indoor air contamination.

Future

Ventilation systems will be installed at properties with levels of PCE that represent an immediate health concern, as well as at properties with levels of PCE that are elevated but do not represent an immediate health concern. USEPA will coordinate the installation of ventilation systems at properties where PCE is found at levels that represent an immediate health concern. MCHD, using Spill Fund monies provided by NJDEP, will engage a contractor to install ventilation systems at properties where the levels of PCE do not represent an immediate health concern but may over the long term represent a health risk. At this time, the minimum level of PCE that must be present in a building for it to be eligible for a ventilation system is six µg/m3.

If you have any questions about the work conducted by NJDEP at the Magnolia Avenue Ground Water Contamination site, please contact Heather Swartz, NJDEP Community Relations Coordinator, at (800) 253-5647 or (609) 984-3081.

Site Update

Magnolia Avenue Ground Water Contamination

Wall Township, Manasquan Township and Sea Girt Borough, Monmouth County **January 2, 2002**

NJDEP, USEPA Testing Air at Sea Girt Elementary School
Analyses for PCE Prompted by Ground Water Plume

Background

Since 1999, NJDEP has been investigating a large plume of contaminated ground water that extends through parts of Wall Township, Manasquan Township and Sea Girt Borough in Monmouth County. The main contaminant of concern is perchloroethylene (PCE), also known as tetrachloroethylene or tetrachloroethene, a volatile organic compound that is commonly used as a dry cleaning solvent and degreasing agent. The western edge of the PCE ground water plume is located near the intersection of Route 35 and Sea Girt Avenue in Wall Township and it extends north to Hannabrand Creek and Wreck Pond, south to Judas Creek and Mack Pond and east to the ocean. NJDEP completed a source investigation in 2001 that identified two defunct dry cleaning establishments and a gas station in Wall Township as potentially responsible parties for the ground water contamination, including the former White Swan Cleaners on Sea Girt Avenue (now a Fleet Bank).

Fleet Bank installed monitor wells on its property and sampling of the wells in the early fall of 2001 revealed that the ground water was contaminated with PCE at roughly 120,000 parts per billion, (ppb). (The New Jersey Drinking Water Standard for PCE is 1 ppb.) Due to these high levels, in October 2001 NJDEP began testing indoor air at properties in the path of the plume to determine whether PCE was volatilizing from the ground water and collecting in the homes and other buildings at levels that could be harmful to the occupants. As part of this sampling program, NJDEP and the United States Environmental Protection Agency (USEPA) tested the indoor air at the Sea Girt Elementary School on Bell Place in Sea Girt Borough on three occasions in December 2001. NJDEP tested the indoor air on December 17th at two locations while the normal ventilation systems were turned on, and on December 24th at four locations when all of the ventilation systems were turned off. The December 24th event included testing of the air outside the school to provide an ambient air sample. USEPA tested the indoor air at the school on December 27th at seven locations when the normal ventilation systems and an auxiliary ventilation system that is not routinely used were all turned on, but these results were not available as of January 2, 2002.

Indoor Air Testing Results

Trace levels of PCE and benzene were detected at the Sea Girt Elementary School on December 17th, with lower levels detected on December 24th, as detailed below. Trace levels of benzene were also detected in the air in several locations at the school, and although this is not a contaminant associated with the Magnolia Avenue Ground Water Contamination site, these results are being reported here as well.

12/17/2001 (Normal Ventilation)
results in micrograms per cubic meter (µg/m3)

Location	PCE	Benzene
Office	6.43	10.8
Library	3.52	4.78

12/24/2001 (No Ventilation)
results in micrograms per cubic meter (µg/m3)

Location	PCE	Benzene
Gym	<PQL	9.23
Office	<PQL	<PQL
Library	<PQL	<PQL
Classroom 7	3.79	<PQL
Outdoor Air	<PQL	<PQL

PQL = Practical Quantitation Limit. This is the lowest concentration of the compound that the laboratory can reliably detect with its instrumentation. The PQL for PCE is 3.38 µg/m3 and the PQL for benzene is 1.59 µg/m3.

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Air Testing Underway at Sea Girt Elementary School

NJDEP, USEPA, the New Jersey Department of Health and Senior Services (NJDHSS) and the federal Agency for Toxic Substances and Disease Registry (ATSDR) have reviewed these results and agree that the levels of PCE and benzene found at the school on both days do not present an acute or immediate health risk to the students or staff and that the school is safe to occupy.

NJDEP is working with NJDHSS and USEPA to evaluate possible cancer risks to students and staff at the school for chronic or long-term exposure to PCE and benzene in indoor air. These values will be forwarded to ATSDR for review and once ATSDR has concurred with the values, this information will be forwarded to the Sea Girt School Board.

Future

USEPA has agreed to assume the lead for the Magnolia Avenue Ground Water Contamination site under its emergency removal program and will be conducting future indoor air monitoring. USEPA is also evaluating the Magnolia Avenue site for possible inclusion on the National Priorities List of Superfund site (NPL).

For Further Information

For further information about the Magnolia Avenue Ground Water Contamination site, please contact Heather Swartz, NJDEP Community Relations Coordinator, at (800) 253-5647 or (609) 984-7135.

TETRACHLOROETHYLENE
CAS # 127-18-4

Agency for Toxic Substances and Disease Registry ToxFAQs September 1997

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

Source of Information

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Animal testing is sometimes necessary to find out how toxic substances might harm people and how to treat people who have been exposed. Laws today protect the welfare of research animals and scientists must follow strict guidelines.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 404-639-6359. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

TOWNSHIP OF WALL

2700 Allaire Road
P.O. Box 1168
Wall, New Jersey 07719 - 1168
(732) 449-8444
(732) 449-8996 (FAX)

MAGNOLIA PROJECT TIMELINE

November 19, 1998	The Monmouth County Board of Health (MCBOH) notifies the New Jersey Department of Environmental Protection (NJDEP) and the Township of Wall that it is conducting a study of shallow irrigation wells in the Sea Girt Estates area of the Township. MCBOH reports that levels of tetrachloroethylene (PCE) above allowable limits have been found in some shallow irrigation wells. Shallow irrigation wells are defined as wells drilled up to a depth of 50 feet. The MCBOH advises that it will continue to test wells and attempt to determine the source of the PCE contamination. However, since most shallow irrigation wells are closed for the winter, more meaningful results will not be available until Spring, 1999.
February, 1999	The Township of Wall mails letters to all residents of Sea Girt Estates notifying them of the MCBOH investigation. The Township recommends that shallow irrigation wells not be utilized until the conclusion of the ongoing investigation. The information which the Township has received from MCBOH does not relate to either drinking water supply or to deeper irrigation wells. The Township requests that the MCBOH hold a public informational meeting for residents of Sea Girt Estates.
March, 1999	The Township notifies residents of Sea Girt Estates that a public informational meeting will be conducted on March 31, 1999.
March 31, 1999	Public informational meeting held at municipal building for residents of Sea Girt Estates. Representatives of the MCBOH and the NJDEP are present. They outline the investigation being conducted and respond to questions raised by residents. More than 60 people attend the meeting.

April 19, 1999	The Township mails a letter to all residents of Sea Girt Estates (a copy of which is attached) summarizing the information provided by the MCBOH and NJDEP at the public informational meeting.
April, 1999-July, 1999	MCBOH continues to sample irrigation wells. Approximately 70 homeowners request that irrigation wells be sampled in Sea Girt Estates. Additional testing is performed in an attempt to delineate the contamination plume.
July, 1999-October, 1999	Tests continue by MCBOH and NJDEP. The Federal Agency For Toxic Substances and Disease Registry (ATSDR) is requested to review the results.
April, 1999-October,1999	Press releases by MCBOH, NJDEP and Township detail investigation efforts and the extent and concentration of the contamination plume.
October 18, 1999	MCBOH announces finding of ATSDR that the levels of PCE contamination in ground and surface waters do not pose a health concern or hazard when used for non-potable purposes. Health officials determine that it is safe to use shallow irrigation wells to water lawns and gardens if PCE levels are found to be not more than 1.5 to 2 parts per million.
Nov. 1999-Nov. 2000	NJDEP and MCBOH continue investigation and testing to determine sources of contamination and extent of contamination plume.
December 6, 2000	Representatives of NJDEP attend meeting of Township Committee. NJDEP advises that 2 sources of contamination have been identified. The Summit Bank (now Fleet Bank) location on Sea Girt Avenue and the former Sun Cleaners site at the Manasquan Circle on Route 35. NJDEP advises that Summit Bank will cooperate in investigation and remediation. The Sun Cleaners property is in bankruptcy/foreclosure.
January, 2001	The Township Committee authorizes action to obtain funding for an environmental investigation and potential remediation of the Sun Cleaners site on Manasquan Circle since NJDEP is pursuing Summit Bank/Fleet Bank location.

February, 2001	Wall Township retains its own environmental consultant for investigation Sun Cleaners property.
March, 2001	Township of Wall authorizes filing of application to Hazardous Site Discharge Remediation Fund (HDSRF) to conduct remedial investigation of Sun Cleaners property on Manasquan Circle.
April, 2001	Township files application for HDSRF funding for Sun Cleaners.
October, 2001	Township is awarded grant of $133,871.00 from HDSRF municipal grant program and awards contract to environmental consultant to proceed with preliminary assessment and site investigation on Sun Cleaners property. NJDEP informs Township that one of the monitoring wells at Fleet Bank has shown increased contamination readings. NJDEP advises Township that another tank on Fleet Bank property, previously unknown, has been found. NJDEP advises that air quality testing in surrounding homes would be started.
November 29, 2001	NJDEP reports to Township that unacceptable air quality levels in homes closest to Fleet Bank have been found and NJDEP will expand the testing area.
November 30, 2001	Township issues a press release concerning NJDEP notification pertaining to air quality and begins notifying residents directly of NJDEP findings. Township advises residents of public meeting to be held on December 5, 2001, at request of Township.
December 5, 2001	NJDEP and United States Environmental Protection Agency (USEPA) representatives appear at public meeting and explain that the Fleet Bank site, the cleanup and further investigation is being taken over by the USEPA. Wall Township requests that ATSDR representatives attend a public meeting to address any and all health implications. USEPA and NJDEP agree to expedite further air quality testing in the Sea Girt Estates area.

December 13, 2001	Fleet Bank begins cleanup of the property. Second tank uncovered and soil removal begins.
December 18, 2001	Township receives notification from NJDEP that grant funding from the HDSRF for the Sun Cleaners site on Manasquan Circle has been withdrawn. Township has been advised that EPA/NJDEP will take jurisdiction of Sun Cleaners remediation. No further action by Township should be taken.
January 11, 2002	Township delivers notice of January 16 meeting to all residents of Sea Girt Estates.
January 16, 2002	At Township's request, representatives of EPA, NJDEP and ATSDR to be present at public meeting to discuss preliminary results and assess and quantify any and all health risks to residents.

ministrator Howley Jr.

designate more units for sale and fewer for rent. Re-

Beachfront South sometime this spring.

has made smooth progress with its plans for the Pier

munity and the people of Long Branch."

Photos by TANYA BREEN/Staff Photographer

lly Millaway in her new classroom in the Midtown section of Neptune.

hildhood Center nes 120 children

neant to unite Neptune community

cause of its standing as an Abbott district. The state mandates that Abbott districts provide a full-day educational program for the township's 3- and 4-year-olds.

Bank finds air tainted, closes Wall branch

Testing discovers slightly elevated levels of tetrachloroethylene, a dry cleaning chemical and possible carcinogen.

By NAOMI MUELLER
COASTAL MONMOUTH BUREAU

WALL — Fleet Bank officials have temporarily closed the Sea Girt Avenue branch after finding a slightly elevated level of tetrachloroethylene — a possible carcinogen linked to damage of the nervous system.

The decision to close the branch was made by Fleet officials Friday. Fleet spokesman Steve Lubetkin said the decision was a "conservative and proactive" one that will protect bank customers and employees, as well as make them feel more at ease.

"We are acting as proactively and conservatively as we can to make sure people are safe and comfortable," he said.

Bank officials were prompted to do the tests based on air quality tests that found higher-than-acceptable levels of tetrachloroethylene in nearby homes. The air contamination was discovered by state Department of Environmental officials, who tested the air after Fleet found high levels of tetrachloroethylene, a dry-cleaning and metal-degreasing chemical, in soil on their property.

The tetrachloroethylene is believed to have spread from underground sewer tanks which at one time contained the chemical. The tanks were removed from the bank property, home of the former White Swan Cleaners, in December.

Although Fleet officials did not release the exact

See **Air,** Page **B2**

ENGINEER LEFT SUICIDE NOTE

Train decapitates

Air tests prompt branch to shut

From Page **B1**

results from the tests conducted by the company's private environmental consultants, Lubetkin said the level of tetrachloroethylene found in the building's air was well below the Occupational Safety and Health Administration guidelines. It was slightly above the state's acceptable level for residential exposure, he said.

"We wanted everyone to have a certain comfort level that we are doing everything in our power to protect them, even if that means overreacting," Lubetkin said.

The branch's employees learned about the test results Friday afternoon and began work yesterday at one of three area Fleet branches. Signs posted on the building's doors, as well as in several other locations on the property, told customers that the branch would be closed for renovations.

A security guard hired by the bank greeted customers as they drove into the parking lot. He had candy to help ease the blow.

Temporarily closing the facility will allow bank officials to renovate the branch's ventilation system. The upgraded ventilation system will better filter the air entering the building. Completing the renovation while the bank is open would be very disruptive, Lubetkin said.

The branch will remain closed until officials are "satisfied that the air customers and employees breath does not contain elevated levels" of tetrachloroethylene, Lubetkin said. He estimated that the remediation and installation of a new ventilation system will take several weeks.

THOMAS P. COSTELLO/Staff Photographer

A sign posted outside the Fleet Bank on Sea Girt Avenue near Route 35 in Wall announced that the branch is closed for renovations.

Lubetkin said a final report has not been issued and that the bank's environmental consultants are still evaluating the results.

According to the state Department of Health and Senior Services, breathing tetrachloroethylene may irritate the lungs and can cause coughing and shortness of breath. Higher exposure can cause a build-up of fluid in the lungs, headache, dizziness, nausea, vomiting and a loss of consciousness.

Long-term exposure to the chemical may damage the liver and kidneys and affect the nervous system. It may also damage the developing fetus in pregnant women, the state reports.

While the branch is closed, customers can use any other Fleet Bank branch. Three branches — Route 35 and 18th Avenue in Wall, 405 Union Ave. in Brielle and the branch in the Wall Pathmark, 1933 Highway 35 — are near the site.

The branch's night deposit customers were given keys for other area branch locations, and bank officials will make appointments with customers trying to gain access to their safe deposit boxes from noon to 2 p.m. on Mondays, Wednesdays and Fridays and from 9 a.m. to noon on Saturdays, Lubetkin said. The bank's ATM, which was closed yesterday to allow officials to reprogram that machine, is expected to be open today, Lubetkin said.

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AIR, WATER TESTS POSITIVE

Chemical found in 3 Wall homes

By NAOMI MUELLER
COASTAL MONMOUTH BUREAU

WALL — Environmental tests have found a high level of tetracholoethylene — a solvent linked to damage of the nervous system — in the air in basements of three homes and a motel, all behind the site of a former dry cleaning store.

In addition, tests conducted last month by Fleet Bank, as part of the state Department of Environmental Protection's voluntary clean-up program, found 120,000 parts of tetracholoethylene per billion parts of water, said Ken Kloo, department bureau chief. No more than one part of tetracholoethylene per billion parts of water is acceptable, according to the New Jersey Drinking Water Standard and the state's groundwater quality standard.

Representatives from DEP and EPA will attend

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tonight's Township Committee meeting at 7:30 p.m. in the Wall municipal building, Allaire Road. Information about the meeting was sent by the township to area residents.

As a result of the water tests, the DEP used summa canisters to monitor the air in three homes and the Sea Girt Lodge motel. Kloo said the DEP received the results of those tests last week, learning that the contamination levels at each of those properties was higher than the legal limit.

Ventilation systems were installed in two of the homes and the motel on Friday, with access denied by the owners of the third home, Kloo said.

Now, DEP officials are meeting with the federal Environmental Protection Agency to develop a plan for further sampling of other homes in the neighborhood, Kloo said. He did not know yesterday how many homes would be tested or when those tests would be conducted.

Tetracholoethylene is used as a solvent for cleaning metal parts and as an ingredient in adhesives, paint removers, typewriters and spot removers. Drinking or breathing high levels of the solvent may affect the nervous system, damage the liver and lungs, cause an abnormal heartbeat and may result in death, according to the Agency for Toxic Substances and Disease Registry, a branch of the U.S. Department of Health and Human Services.

Although small amounts of tetracholoethylene can dissolve in water, it can remain underground for a long time. The chemical also quickly evaporates, making it common to find the vapor in the air, the registry reports.

Although local health officials learned about the contamination in 1997, it was first discovered in 1990 when a Magnolia Avenue resident, who worked as a chemist, tested his irrigation well, as well as the irrigation wells of two of his neighbors, Kloo said.

Lester Jargowsky, director of the Monmouth County Health Department, said the chemist did not report his findings to the health department until 1997. That year county officials tested several other irrigation wells and learned that many more were contaminated, Jargowsky said.

In 1999, the county health department requested help from the DEP, which explored the extent and source of the contamination. The source was determined to be the now-closed Sun Cleaners on Atlantic Avenue Circle, the former White Swan Cleaners on Sea Girt Avenue and the Gulf gas station, also on Sea Girt Avenue, Kloo said.

White Swan Cleaners went out of business in 1983 and last year, after learning that they were a source of some of the contamination, Sun Cleaners filed for bankruptcy last year, Kloo said. The Gulf station, at the intersection of Route 35 and Sea Girt Avenue, knows about the contamination and is not participating in any remediation of the property, he said.

The highest levels of water contamination were found in the ground of Fleet Bank's property, some distance from the branch building, said bank spokesman Steven Lubetkin. Environmental testing of the air has found no irregularities and no Fleet employees are ill as a result of the chemicals, he said.

An employee at Sea Girt Lodge declined to comment about the situation, saying she did not want the publicity.

Summit officials began working with DEP to clean up the site last year. The cleanup was taken over by Fleet officials when they bought the company in March, Lubetkin said.

Lubetkin said Summit officials did not know about the contaminated groundwater when they bought the property and that he doubts Ocean County National Bank was aware of the problem when it owned the property.

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EPA will join inquiry into Wall contaminant

By NAOMI MUELLER
COASTAL MONMOUTH BUREAU

WALL — The federal Environmental Protection Agency will take over the investigation of air quality in homes surrounding a former dry cleaning store known to have leaked tetracholoethylene - a solvent linked to damage of the nervous system - but not before the state tests the air in more than 20 homes.

Those tests will begin immediately, with the state Department of Environmental Protection contacting residents whose homes will be tested beginning today. Homes throughout a neighborhood off Sea Girt Avenue will be tested, as will Old Mill School, as the DEP and EPA work to determine how far the contamination has spread.

Although Ken Kloo, DEP bureau chief, tried to assure township officials and the more than 80 residents who attended last night's Township Committee meeting that everything would be done to determine the extent of the problem as quickly as possible, several raised objections that more summa canisters — used to conduct the tests — would not be used.

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"There have to be more canisters out there," Committeeman John Devlin said. "If it involves 1,000 homes and you test 100 homes, there are going to be 900 people out there wondering what the levels are in their homes."

But the resources to test more homes at one time, Kloo replied, are just not available.

On Friday, environmental tests found a high level of tetracholoethylene in the air in basements of three homes and the Sea Girt Lodge, all behind a Fleet Bank branch located on what was once the site of White Swan Cleaners, which closed in 1983.

In addition, groundwater tests conducted last month by Fleet Bank, as part of the DEP's voluntary cleanup program, found 120,000 parts of tetracholoethylene per billion parts of water, Kloo said. The legal limit is no more than one part per billion, according to the New Jersey Drinking Water Standard and the state's groundwater quality standard.

As a result of the water tests, the DEP used summa canisters to monitor the air in the three homes and motel. Kloo said the DEP received the results of those tests last week, learning that the contamination levels at each of those properties was higher than the legal limit.

Only one in one million people exposed to tetracholoethylene for 24 hours, 365 days a year for 30 years, will develop cancer as a result of the known carcinogen, Kloo said. Yet the slim possibility was not enough to quell residents' concerns.

"I want to know how safe the water is to drink. Can I drink it? Can I give it to my dog to drink? I spend a lot of time in my basement. I don't know what to do at this point," said Marisa Murray, who moved to Willow Drive two years ago.

Until their homes are tested, Kloo said, residents can open their basement windows and keep their children from spending time in the basement.

Concerns also were expressed about the presence of benzene, found in the basements of two homes - one at 8.5 times the legal limit and the other at 84 times the legal limit - but not found in groundwater. Kloo said he suspects the benzene, a natural part of crude oil and gasoline and a known carcinogen, is from something stored in the homes and not from the plume.

But resident Andy Joseph, who learned about the high level of tetracholoethylene and benzene in his basement Friday, was not so sure. Joseph said he cannot think of any reason why the benzene level in his basement would be 84 times the legal limit, unless it is from a Gulf station, which DEP officials have identified to be a source of some of the contamination.

On the advice of his attorney, Joseph refused to allow DEP officials to install a fan that would help clean the bad air out of his basement, which he uses as a home office. He was the only person who refused the installation, accepted by two other homeowners and the motel owners.

ASBURY PARK PRESS, PG AA1
Dec. 2001

Contaminated soil to be removed

Chemical found in air, water and soil at Wall site

By **NAOMI MUELLER**
COASTAL MONMOUTH BUREAU

WALL — Fleet Bank officials, under the auspices of the state Department of Environmental Protection, will begin removing soil from the bank's Laurel Avenue property as a way of stopping more contaminants from spreading and seeping into the ground water.

Digging at the site began early last week, a little more than a week after DEP tests found high levels of tetracholoethylene — a possible carcinogen commonly used as a degreasing agent and dry-cleaning solvent — in the air in basements of three Laurel Avenue homes as well as the Sea Girt Lodge, all behind the bank branch, the site of a former dry-cleaning store.

"I think the DEP recognized that people were very interested in getting rid of the source of the contaminants," said Richard Salkie, chief of the removal process for the Environmental Protection Agency, which will take over the investigation soon.

A month before receiving those test results, Fleet Bank, which is participating in the DEP's voluntary cleanup program, found 120,000 parts of tetracholoethylene per billion parts of water in the ground water. The legal limit is no more than one part per billion, according to state standards.

The dry cleaner's original septic tank was removed last week and is believed by the DEP and EPA to be the primary source of contamination. Removal of the soil surrounding the tank will begin after Fleet officials file a work plan with the DEP. That plan is expected to be filed next week, said DEP spokeswoman Loretta O'Donnell.

Fleet Bank bought the site in March from Summit Bank, which had bought it from Ocean National Bank. Before that, the site was home to White Swan Cleaners, which went out of business in 1983.

The EPA's first concerns are the air quality and the immediate impact the contamination will have on residents. Once those are determined the EPA will begin looking at other contamination sources, said EPA on-site coordinator Tom Budroe.

Two nearby sites, a Gulf gasoline station and the now-closed Sun Cleaners on Route 35, have also been identified by DEP as

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contributing other contaminants, which are still under investigation.

Last Monday, summa canisters used to the measure the levels of tetracholoethylene in the air were installed in 23 homes on Boxwood Drive and Laurel, Sea Girt and Magnolia avenues and in the Old Mill Elementary School. An additional canister will be placed in the Sea Girt Elementary School this week, O'Donnell said.

Basements in homes in the immediate area were tested, as were some homes on West Magnolia Avenue where extremely high amounts of the solvent were found in the irrigation wells. Some homes farther away from the source also were tested, which will allow DEP and EPA officials to determine how far the contamination has spread. The results of those tests are expected within two weeks, O'Donnell said.

In early January, the EPA will place an additional 100 canisters in area basements. Most of the canisters will be placed in homes immediately surrounding the ground water plume. The others will be strategically placed to help the EPA determine how much of an area is contaminated, Budroe said.

Although the septic tank was empty when it was discovered, DEP officials believe the tank was likely filled with tetracholoethylene, which leaked into the ground water. O'Donnell said the DEP does not know whether the tank was filled but knows that the plume is about 1½ miles long and at some point meets contamination from the other two sites, O'Donnell said.

Now that the septic system has been removed, contaminants will no longer leak into the soil or ground water, EPA officials said. Because contaminants will flow slowly from the plume to the ocean, nearly two miles away, existing chemicals may remain underground for 30 years or longer, Salkie said.

Some of the contaminants will flow out without disruption, and other parts will cling to the soil and take much longer to be cleansed, Budroe said.

The EPA can speed the cleansing process through soil vapor extraction or by pumping and treating the ground water. Each process will be considered after the remediation is completed and the site is classified under the Superfund program, Salkie said.

The soil will either be taken to a landfill or will be incinerated, depending on how contaminated it is, Budroe said. The remediation will either be paid for by those the EPA determines are responsible for the contamination or, if they do not have enough money, with Superfund money, he said.

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Asbury Park Press

Air tests results mixed near ex-dry cleaner site

By NAOMI MUELLER
COASTAL MONMOUTH BUREAU

WALL — Air samples from canisters put in homes and two schools near the site of a former dry cleaning store to measure tetracholoethylene levels were mixed. Officials must now continue efforts to determine how far the contamination has spread.

Bob VanFossen, director of the state Department of Environmental Protection's division of responsible party remediation, said test results from some of the 18 homes, on Boxwood Drive and Laurel, Sea Girt and Magnolia avenues, came back with nondetectable levels of tetracholoethylene. Tests from other homes, he said, showed elevated levels of the possible carcinogen, commonly used as a degreasing agent and dry-cleaning solvent.

The DEP began contacting homeowners yesterday and will continue today, VanFossen said, and the numbers will be released after every homeowner is contacted. A second round of testing will be conducted in all homes where tetracholoethylene was detected, VanFossen said.

At the Old Mill School, tetracholoethylene was not detected, while initial testing on Dec. 17 found higher than acceptable levels of the chemical at Sea Girt Elementary School, VanFossen said.

Representatives from the DEP, the federal Environmental Protection Agency, the state Department of Health and Senior Services and the Agency for Toxic Substances and Disease Registry presented the initial findings at the Board of Education's Wednesday night meeting.

Results from the Dec. 17 testing in the administrative office and library at Sea Girt Elementary found a tetracholoethylene level of 6.43 micrograms per cubic meter in the administrative office and a level of 3.52 micrograms per cubic meter in the library.

Those findings, significantly higher than the federal government's suggested level of 0.5 micrograms per cubic meter, led the DEP to do more testing on Dec. 24 and Dec. 28.

Although the DEP's policy prevents them from releasing the results of that sampling until the numbers are checked, VanFossen said the results showed lower levels.

"The trends are down, and we don't think it's a concern for the school," VanFossen said.

Other public meetings will be scheduled to discuss the findings, said Mayor Edward H. Thomson.

Underground sewer tanks that contained tetracholoethylene were removed from behind the Fleet bank, the home of the former White Swan Cleaners on Laurel Avenue. VanFossen said DEP officials believe most of the underground contamination and soil have been removed, leaving them with the task of addressing high levels of the chemical in the ground water.

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Wall Township

At plume site, workers attack source, Devlin garners support of senators

By Jonathan C. Hall

Progress is being made on two fronts this week in addressing the Magnolia Plume problem.

At the source, workers attacked what is presumed to be the major contributor to a plume of perchloroethylene [PCE] contamination under Sea Girt Avenue.

Meanwhile, Committeeman John Devlin apprised Senators Jon Corzine [D-NJ] and Robert G. Torricelli [D-NJ], as well as Governor-elect Jim McGreevey, of the plume situation, winning their support in a quest to get more resources for testing PCE levels in the indoor air of homes near the site.

On Monday, environmental specialists at the site of Fleet Bank, the former location of White Swan Cleaners, began removing PCE-saturated soil and shipping it off-site for proper disposal.

Fleet spokesman Steve Lubetkin said that the people hired by Fleet, who are working under the supervision of a case manager from the state Department of Environmental Protection [DEP], already sent out truckloads of contaminated soil, and should be finished digging by the end of the week.

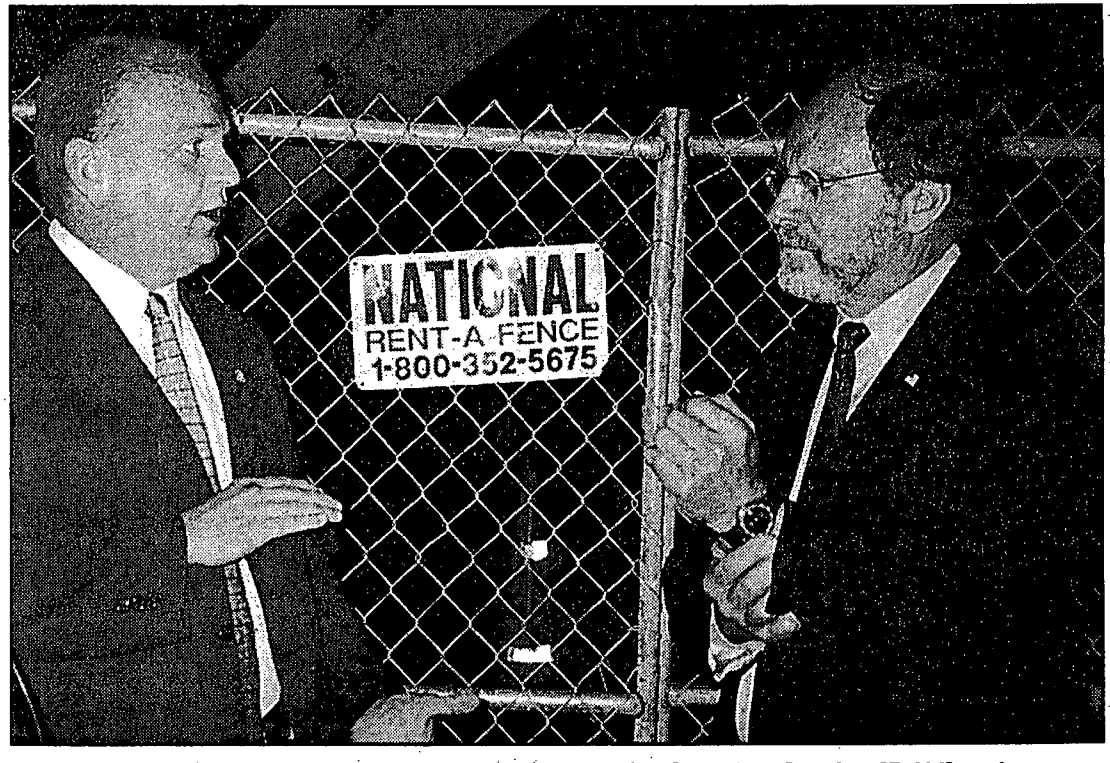
"They have taken out a pretty substantial load of soil in the last few days," Mr. Lubetkin said. He reported that six truckloads were removed from the site on Monday, 10 truckloads Tuesday, and an expected 10 to 15 truckloads yesterday.

The former White Swan Cleaners is believed to be the company that contributed to the pollution; Fleet Bank did not have anything to do with the plume. However, as the owner of the building now, Fleet has taken responsibility for the matter on its property and is working closely with and cooperating with state and federal agencies in an attempt to remediate the site.

According to Mr. Lubetkin, the contaminated soil is being shipped to an approved hazardous waste facility in accordance with all applicable regulations. When the soil removal process is completed, Mr. Lubetkin said, workers will begin backfilling the hole with clean sand.

Mr. Lubetkin added that Fleet's environmental consultants would continue testing and monitoring the site in cooperation with the DEP and Environmental Protection Agency [EPA].

The removal of contaminated soil from the Fleet site comes on



Wall Committeeman John Devlin [left] consults with Sen. Jon Corzine [D-NJ] at the remediation site on Sea Girt Avenue where soil containing a high concentration of perchloroethylene is being removed this week. Committeeman Devlin has been instrumental in getting Sen. Corzine and Sen. Robert Torricelli [D-NJ] involved in addressing the problem and pushing for more home testing in the Sea Girt Estates area.

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the heels of last week's excavation of what was believed to be the main septic tank of the former White Swan Cleaners. White Swan, a dry-cleaners, was one of three responsible parties named by the DEP last year after its investigation of a PCE plume in the groundwater under Sea Girt Avenue.

PCE, also called perchloroethylene or tetrachloroethylene, is a hazardous chemical solvent used as an agent in dry-cleaning and degreasing processes. With prolonged exposure, PCE can cause nervous system damage and possibly cancer.

Higher-than-anticipated levels of PCE detected this September in a monitoring well at the Fleet site prompted concern for the safety of indoor air in nearby homes. High concentrations of PCE can percolate through the ground and basement walls to be released into the air.

Initial testing of several residences on Sea Girt Avenue, as well as the Sea Girt Motor Lodge, indicated some PCE contamination at all locations. The DEP uses self-contained summa canisters to sample air in the homes and businesses, and then must send the canisters out to a lab to be analyzed. The whole process takes about three weeks.

Last week, the DEP deployed 20 canisters in area homes, as well as the Old Mill School, to determine the extent of the problem. However, DEP representative Ken Kloo and the EPA on-site coordinator, Tom Budroe, who will take jurisdiction of the site in the near future, have warned residents and the local government that the canisters and the labs that can read them are limited. Most are tied up with work at the World Trade Center site, they said.

Mr. Budroe said that he plans to test roughly 150 homes in the area. The EPA indicated that it could be six months before any

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usable information comes out of the testing.

But while the DEP and EPA await results from summa canisters deployed last week, Wall Township's elected officials have been actively seeking help to put more canisters out and test more homes in less time.

Committeeman Devlin said that he has been in conversation with Senators Corzine and Torricelli, pressing them to do something in Washington to speed along the process and give residents some closure regarding the plume threat. Mr. Devlin also showed Sen. Corzine around the remediation site at Fleet earlier this week.

In response, Sen. Corzine exerted pressure on the federal EPA yesterday, stating, "It is important that the EPA has become involved in this investigation. But they must move forward aggressively.

"It is vital for the health and safety of Wall Township residents that the testing be conducted swiftly," Sen Corzine said.

Sen. Torricelli also expressed his commitment to see the plume problem through. "I am deeply concerned about the levels of tetrachloroethylene found in some homes and the [Sea Girt Motor] Lodge," Sen. Torricelli said.

"I have been in contact with the EPA who have assured me that they will extend sampling beyond what the state has sampled. The EPA and my office will continue to work with residents and town officials to keep everyone informed and updated on the events," the senator pledged.

Committeeman Devlin offered his assurances that elected officials at all levels of government are working on the plume problem.

"With help from Senators Corzine and Torricelli, I have faith that we can get all the summa canisters needed for testing in the affected area of Sea Girt Estates," Committeeman Devlin said.

"I want to assure the Sea Girt Estates residents that everything possible will be done by the local, state, and federal government," Mr. Devlin said, "to make certain their safety, health, and well-being are protected."

According to Committeeman Devlin, only by testing the homes in the affected area for PCE contamination will the DEP and EPA allay residents' fears. "Additional testing will provide the knowledge necessary to give all of the families affected by the plume their peace of mind," Mr. Devlin said.

SHAWN HUBER PHOTO

This week, workers hired by Fleet Bank, in conjunction with officials from the Department of Environmental Protection, began removal of perchloroethylene-laden dirt from the site of the Sea Girt Avenue bank branch. The soil removal project follows last week's excavation of an old leach tank used for disposal of the contaminant by White Swan Cleaners, which operated there until 1983.

Asbury Park Press Thursday, Jan. 10, 2002 Pg. B1

Tests show tainted air in 9 homes

Wall homeowner puts up for sale sign, files intent to sue

By NAOMI MUELLER
COASTAL MONMOUTH BUREAU

WALL — Half of the 18 homes tested within the past month by the state Department of Environmental Protection had detectable levels of tetracholoethylene, according to test results released by DEP this week.

Tetracholoethylene, used in dry cleaning and metal degreasing, is a possible carcinogen and may damage the liver, kidneys and nervous system.

Nine of the 18 homes tested had between four and more than 150 micrograms of tetracholoethylene per cubic meter of air, said Bob VanFossen, director of the DEP's division of responsible party remediation.

The federal government suggests that tetracholoethylene not be higher than 0.5 micrograms per cubic meter. Tetracholoethylene cannot be detected when there is less than 3.3 micrograms per cubic meters.

Andy Joseph, Begonia Avenue, one of the first residents whose basement was found to have high levels of tetracholoethylene and benezene, put his home up for sale Monday. He has also filed a tort claim against the township, Monmouth County and the state, claiming he was exposed to toxic chemicals and other environmental hazards due to the township's negligence.

"There is no worse feeling in the world as being uncomfortable in your own home," said Joseph, who bought his home in May 1999. "I just don't want to be there."

His attorney, Ron Venturi, said the claim allows Joseph to file a lawsuit against those entities. Right now, Venturi said they are still working to determine who the suit should be filed against.

"Our contention is that (the township) knew there was a problem but that they still issued building permits and certificates of occupancy and allowed

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people to come in and live when their health and welfare was in danger," he said. "And that is fundamentally wrong."

The homes were tested to help the DEP and EPA determine how far contamination from underground sewer tanks that contained tetracholoethylene has spread. The tanks were removed from behind Fleet Bank, the home of the former White Swan Cleaners on Laurel Avenue.

VanFossen has said that DEP officials believe most of the underground contamination has been removed, leaving them with the task of addressing high levels of the chemical in the ground water.

Although VanFossen would not release the exact numbers, saying not all home owners had been notified of the results, he said two homes had readings of more than 150 micrograms of tetracholoethylene. Remediation has begun in those two homes, said DEP spokeswoman Loretta O'Donnell.

Meanwhile, the exploration and remediation process is being handed over to the federal Environmental Protection Agency, which will continue sampling the air in area homes.

Richard Salkie, the EPA's chief of the removal process, said his agency will likely test at least 150 homes before analyzing the data and working to determine how far the contamination has spread and what the best way to remediate the problem will be.

The process will be discussed, as will the results and possible health implications in a public meeting at 7 p.m. on Jan. 16 in the municipal building. Representatives from the DEP, EPA, state health department and the Agency for Toxic Substance and Disease Registry will attend the meeting.

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Asbury Park Press
Thursday, January 17, 2002

p. B1

Officials: Chemical in Wall homes not a threat

By NAOMI MUELLER
COASTAL MONMOUTH BUREAU

WALL — Exposed to tetrachloroethylene 24 hours a day, 365 days a year, for 70 years, only one in a million people will develop cancer, health officials last night told the more than 300 people who came to the municipal complex to learn whether the dry cleaning chemical threatens their health.

"There is no immediate health threats posed with the levels we are seeing today," said Artie Block, a regional representative with the Agency for Toxic Substances and Disease Registry, the federal health agency that analyzed the tests for tetrachloroethylene completed in 24 homes and businesses. "Take that home with you."

Representatives from the ATSDR, the state Department of Environmental Protection, the federal Environmental Protection Agency and the state Department of Health and Human Services addressed the crowd, cautioning that the results are not enough to make an absolute statement about the future.

Tetrachloroethylene, used in dry cleaning and metal degreasing, was found in about half of the 24 homes tested by the DEP and was believed to have leaked into the ground water from underground tanks that contained the chemical. The tanks and surrounding soil were removed from

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Behind Fleet Bank, the home of the former White Swan Cleaners on Sea Girt Avenue, at the beginning of December to stop additional contaminants from seeping into the ground water.

Since then, officials have been testing the air quality in homes to determine how far the contamination spread. So far, they have tested 110 homes and plan to test 200 homes, said Richard Salkie, the EPA's chief of the removal process. Testing began in the area immediately surrounding the tanks believed to have contained tetrachloroethylene and is slowly being conducted closer and closer to the ocean, he said.

Besides being a possible carcinogen, tetrachloroethylene is believed to harm several organs, including the kidneys and liver. Yet unless exposed to tetrachloroethylene for a long period of time, residents should not expect to experience those health effects either, said Jim Pasqualo, a project manager with the state Department of Health and Human Services.

"These levels are not something that will make you sick in six months or two years," he said. "It is something that poses a chronic health threat."

Of the 24 properties that have been tested, two have tested at levels high enough to warrant immediate concerns, said Thomas Budroe, the EPA's on-site coordinator. In those homes, ventilation systems that flush out the bad air have been installed.

Begonia Avenue resident Andy Joseph lives in one of those homes.

Joseph, who bought his home in May 1999, put his house up for sale two weeks ago. The reason, he said, is because he doesn't feel safe. Not only is he concerned about elevated levels of tetrachloroethylene found in his home, but Joseph said he is also concerned about the high level of benzene found in his basement.

Yesterday, Joseph learned that his home would be retested.

Yet despite finding elevated levels of benzene in some properties, including Joseph's and the Old Mill School, Salkie said the EPA is not concerned about benzene contamination because they are not finding it on a consistent basis.

The EPA plans to resample the Old Mill School on Saturday. Although no tetrachloroethylene has been found at the school, slightly elevated levels of benzene, a natural part of crude oil and gasoline and a known carcinogen, has been found.

Although initial tests of Sea Girt Elementary School found higher than acceptable levels of tetrachloroethylene at the school, subsequent tests found nondetectable levels of the chemical.

Roberta Rettig, the mother of a second-grader at Old Mill School, said she came to the meeting concerned that spending six hours a day, 200 days a year, for six years would put her daughter at an increased risk of cancer.

Rettig said she left the meeting more informed and a bit more at ease.

Other residents said they did not get the immediate answers they were looking for.

Fairview Drive resident Joanna Swaun, the mother of 2-year-old triplets, said she is concerned about the level of tetrachloroethylene at the site of the former Sun Cleaners, another site identified by the DEP as a possible contaminant.

"I am in the process of refinishing my basement, and I need to know if I will be harming them if I have them down there," said Swaun, who would like the area to serve as a playroom for her children.

Budroe said a preliminary study of former Sun Cleaners site has been completed but has not been released to the public. In addition, the EPA has begun testing homes surrounding that site and expects the results at the end of this week, he said.

Representatives from the DEP and EPA met with people whose homes tested positive for tetrachloroethylene in private conferences for three hours before last night's meetings.

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Coast Star
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Residents pack plume meeting

By Jonathan C. Hall

Airborne contamination, released into the indoor air of homes from a plume of perchloroethylene [PCE] beneath Sea Girt Avenue in Wall and the surrounding community, is not an immediate health threat.

That is the resounding message of numerous local, state, and federal agencies responding to the recent discovery of indoor air contamination in several Wall Township homes.

Representatives from the township committee, the New Jersey Department of Environmental Protection [DEP], the New Jersey Department of Health and Senior Services, the federal Environmental Protection Agency [EPA], and the federal Agency for Toxic Substances and Disease Registry [ATSDR], held an open public meeting at the Wall Municipal building last night. Over 300 residents packed the room.

A panel of officials divulged updated information regarding the PCE plume and answered residents' questions. A pediatrician was also on-hand to address the specific concerns of parents and child-bearing women who may live in the affected area. Many officials were available after the meeting to speak individually to concerned residents.

Artie Block, a regional representative of the ATSDR, summed up the two primary "take-away" points that health experts can offer based on the information they have now: no residents are threatened by an acute exposure to PCE from this plume; and, given the low concentrations of PCE found, the threat from chronic exposure is minimal.

Still, Mr. Block cautioned, officials have only "a small amount of information to make a total interpretation of what's going on in the town."

"These are the messages as of today," Mr. Block said, "we may have to change our messages."

PCE, also called tetrachloroethylene, perclene, perchlor, and perc, is an agent used in dry-cleaning and de-greasing processes. If inhaled over a long period of time, PCE can cause a whole host of health defects, including nervous system damage and cancer.

Tom Budroe, the EPA's on-scene coordinator for the plume site, said he has and his colleagues have been working on the plume problem "full-time" over the past few weeks. He estimated that since Dec. 27, when the EPA began setting canisters in homes in the

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area in question, the agency has sampled air from about 110 homes. Results from those tests should start coming back by the end of this week, Mr. Budroe said.

Of the 24 locations where indoor air has already been tested for PCE and the results analyzed, roughly half have shown readable levels of the contaminant. Richard Salkie, of the EPA's Superfund Removal Program, said that positive readings ranged from 4 to hundreds of micrograms per cubic meter. Of that range of readings, officials said, only the higher ones are "of concern."

Depending upon the concentrations, explained Jim Pasqualo, of the Department of Health and Senior Services, the EPA will pursue either intervention strategies, by installing ventilation systems in individual homes, or remediation strategies, through vapor extraction methods that treat the PCE in the soil itself.

Ventilation systems, similar to those used for expelling radon gas from a home, have already been installed in two of the homes yielding higher concentrations of PCE.

By intervening in such instances with ventilation equipment that can bring PCE concentrations down, Mr. Pasqualo explained, residents will be protected from any risk while the EPA works out a long-term solution.

Moreover, according to Mr. Pasqualo, the concentrations of PCE so far discovered in the air of peoples' homes are no cause for alarm. Breathing in such concentrations 24 hours a day, 365 days a year for 70 years, Mr. Pasqualo said, would yield instances of cancer in the population from a low of one in 1 million to a high of one in 10,000.

At Old Mill School, a place of particular concern to Wall residents with respect to contamination, PCE has not been detected. Elevated levels of the hazardous chemical benzene, found in gasoline and paint thinners, were detected in the school's basement and elevator shaft.

Still, officials claimed that the school is completely safe for students and staff, and that given their level of exposure, they are not at risk for any ill-effects.

"Let me put it to you this way," said Richard Nickle, emergency response coordinator of the ATSDR, "I am a father of four. I would not have a problem with my kids going to Old Mill School."

Finding a low level of benzene is not too unusual, said the EPA's Mr. Budroe yesterday. "It's such a prevalent chemical that's used in everything," he said.

Mr. Budroe did add, though, that the EPA would be back at Old Mill to do further testing to determine for sure that there is no problem. He attributed the EPA's caution on the matter to the sensitive nature of the school's population: children.

The PCE plume has become a hot topic in Wall since alarmingly high levels of the contaminant were detected in a monitoring well on the Fleet Bank property on Sea Girt Avenue, formerly White Swan Cleaners.

The DEP's subsequent testing of four nearby homes confirmed fears that PCE concentrations were high enough for the chemical to percolate through basement walls and escape into the air inside buildings.

Several of the residents closest to the plume source purchased their homes there relatively recently.

One of those residents, Andy Joseph, of Begonia Avenue, has put his house up for sale, and may sue the township for damages. His attorney, Ron A. Venturi, issued a tort claim notice to the state, county and township, expressing Mr. Joseph's intent to file a claim against those entities for their negligence.

Mr. Venturi claims that the township knew about the plume problem when it issued certificates of occupancy for his and other residences, and should have investigated the problem to determine its extent.

"The main thrust of that tort claim notice is that we believe the public entities were negligent to investigate the problem they knew existed on Laurel [Drive] and Begonia [Avenue]," Mr. Venturi explained. "Their lack of action put the health and welfare of citizens on the line."

Wall Mayor Ned Thomson has countered the claim, saying that not only was the township unaware of the problem when Mr. Joseph's building permit was issued, but that the real health risk posed by the plume was not known by anyone until November 2001.

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Jan 31, 02

EPA expects air contamination results soon, says ventilation is working in affected homes

By Jonathan C. Hall

Within a few weeks, the Environmental Protection Agency [EPA] says it should have a handle on how big and how bad indoor air contamination from the perchloroethylene [PCE] plume under Sea Girt Avenue is.

Already, said one EPA official this week, the ventilation systems installed in three homes have proven effective in treating the problem.

Andy Confortini, the EPA's new official in charge of residential air testing at the plume site, spoke yesterday from his cell phone between sampling events at the eastern edge of the sampling grid in Sea Girt.

"I can see the ocean from here," Mr. Confortini said. But, he said, the EPA believes that the extent of indoor air contamination related to the plume has not been so extensive. "I don't expect to see anything out here by the ocean," Mr. Confortini said.

He explained that the EPA has sampled about 155 homes to date, along with 25 additional testings in homes and businesses close to the plume source, and at Old Mill and Sea Girt Elementary schools. In an area stretching from Route 35 to the ocean, and from Sea Girt Avenue north to Wreck Pond, the EPA will have sampled the air of homes on every block by the end of this week, Mr. Confortini said.

Within two to three weeks, he said, the EPA will have "a real good indication" of the extent of the indoor air contamination, as results continue to come in from the samples taken earlier this month.

Mr. Confortini explained that the EPA currently uses two laboratories to analyze air samples taken with the summa canister devices. One laboratory, in North Carolina, analyzes and turns around results in 30 days. The other laboratory, used for tests in areas of urgent concern, can turn around the results in just 48 hours.

The 48-hour lab, Mr. Confortini explained, has been used for retesting in those homes where the EPA has installed ventilation and filtration units, similar to those used to rid homes of radon gas.

The ventilation and filtration system are designed to remove the volatile component from the air in the basements of those homes, Mr. Confortini said, and "the system appears to be working."

He added that he has seen a "tremendous drop-off" in the levels of PCE contamination in the air of those three homes outfitted with a ventilation unit.

Although results from 10 more homes came back, the EPA has refused release of those results until the data had been fully analyzed and the affected residents themselves notified. Mr. Confortini said that the information given in those results had yet to be double-checked and validated before the letters would go out.

Test results will be flooding back to the EPA over the next few weeks, Mr. Confortini said, reflecting the agency's strategy for getting more homes in the Sea Girt Avenue area tested in a timely fashion.

EPA technicians have been out in the field on a steady, ongoing basis since the end of December, deploying summa canisters in residents' basements and living areas.

Earlier in the investigation, official worried that limited numbers of the canisters would make it impossible to test the entire plume area quickly. Unlike the Department of Environmental Protection [DEP], who deployed the first set of 20-odd canisters in a single spurt, the EPA technicians have been in the field almost full-time, arranging with residents to deploy and collect canisters as they become available.

Mr. Confortini said that the agency's goal of sampling 200 homes has nearly been met, and that it will be a matter of the time it takes to get those results back before the agency can know exactly what it's dealing with.

Meanwhile, Tom Budroe, the EPA's on-scene coordinator for the team investigating the plume site, is launching a soil investigation this week to begin looking at the extent of PCE contamination in the ground.

Wall Township

MICHELE JOHNSON PHOTO

Wall resident Andy Joseph's [above] home is one of a number of homes in the path of the plume of PCE contamination to be put on the market recently. As a new homeowner, Mr. Joseph is filing a tort claim against Wall Township, which, he claims, issued the building permit and certificate of occupancy for his home knowing there was a problem.

Law firms disagree on viability, profitability, of PCE plume claims

By Jonathan C. Hall

Outside the Jan. 16 public meeting in the basement of the Wall Municipal Complex, where officials from various state and federal agencies addressed over 300 residents concerned with the shown a willingness to represent residents in claims arising from the PCE contamination debacle.

Attorneys Ron A. Venturi, of Point Pleasant, and Peter C. Lucas, of Ocean Township, say they are representing several resi-

money-maker." But, Mr. Venturi said, his clients have a legitimate claim and a right to get to the bottom of the problem.

"Where there's smoke, there's fire," Mr. Venturi said starkly, implying that there may be more

By Jonathan C. Hall

Outside the Jan. 16 public meeting in the basement of the Wall Municipal Complex, where officials from various state and federal agencies addressed over 300 residents concerned with the [redacted]e of perchloroethylene [PCE] [redacted]amination under Sea Girt Avenue, a number of area residents signed a document expressing their desire to pursue a legal claim against responsible parties, whoever they may one day be determined to be.

After undertaking a preliminary investigation, several law firms recently declined to represent the residents in the matter.

Hobbie, Corrigan, Bertucio, and Tashjy, of Eatontown; Wilentz, Goldman, and Spitzer, of Woodbridge; and Gordon and Gordon, of West Orange, issued a joint letter last week to the residents declining their request for the firms' legal services for "any current or potential litigation related to" the contamination.

The letter cited two principal reasons for the firms' decision not to represent the residents: "the fact that the site has been under investigation since 1997, and ... the fact t[redacted]the Agency for Toxic S[redacted]nces and Disease Registry [the federal health agency that analyzed the completed sampling results that were taken from 24 homes and business in the area around Fleet Bank] has determined that there is no health threat posed by the levels of PCE measured."

The letter stresses that a viable claim may exist, but that the three law firms were unwilling to pursue it.

Norman Hobbie, the attorney who made the decision for his firm, did not return phone calls seeking comment. The two other law firms involved also did not return calls seeking comment.

Some law firms, however, have shown a willingness to represent residents in claims arising from the PCE contamination debacle.

Attorneys Ron A. Venturi, of Point Pleasant, and Peter C. Lucas, of Ocean Township, say they are representing several residents in the Sea Girt Avenue/Sea Girt Estates area whom Mr. Hobbie's firm declined. Mr. Venturi and Mr. Lucas also have clients in the Camp Evans area, where residents face a similar problem with PCBs in the soil left by the U.S. Army.

So far, one tort claim has been filed against Wall Township by the two attorneys on behalf of Begonia Avenue resident Andy Joseph, who unknowingly built his home in the path of the plume just a few years ago. The claim charges the township with negligence in issuing the building permit and certificate of occupancy for Mr. Joseph's home without adequately investigating a problem that, Mr. Venturi contends, the township knew about.

Now, Department of Environmental Protection [DEP] tests of the indoor air in Mr. Joseph's home show significant concentrations of PCE and benzene contamination.

"It is our opinion that the township knew there was a problem and did not investigate it thoroughly," Mr. Venturi said. "Their lack of action put the health and welfare of citizens on the line."

Mr. Joseph put his home up for sale several weeks ago. According to Mr. Venturi, his client feels unsafe in his own home and wants out.

"He's young, he's got his whole life ahead of him," said Mr. Venturi of Mr. Joseph, "and he has trouble sleeping at night knowing his house is contaminated."

Mr. Venturi reported that a number of new homeowners around Laurel Drive may sign onto the tort claim against the township. Indeed, a large amount of "for sale" signs seems to be spreading through residential neighborhoods in the plume's path.

For many, a major issue at stake is not only the health implications of being exposed to PCE contamination, but the effect the contamination has had on property values.

He suggested that some law firms might be skittish about representing residents in this matter because it is not likely to be "a big money-maker." But, Mr. Venturi said, his clients have a legitimate claim and a right to get to the bottom of the problem.

"Where there's smoke, there's fire," Mr. Venturi said starkly, implying that there may be more to the PCE contamination problem than the government agencies assessing the problem are letting on.

At the public meeting earlier this month, officials from the federal Environmental Protection Agency [EPA] and Agency for Toxic Substances and Disease Registry [ATSDR] said unequivocally that the levels of PCE so far detected in area homes do not constitute an immediate health threat.

But Mr. Venturi suggested that with government agencies overseeing an assessment of the contamination and its health implications, there is an inherent conflict of interests. "It's the fox watching the chicken coop," Mr. Venturi said.

He claimed that residents should be afforded the money to have their homes tested by an independent outfit. If they are not, he added, his clients' homes would nevertheless be tested independently.

"Even if it has to come out of our pockets," Mr. Venturi said.

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EPA addresses Sea Girt residents' plume concerns

By Courtney A. Fagan

What once simply plagued Wall Township, has spread. The plume commonly known as the "Magnolia Project," has been renamed by the EPA the White Swan Cleaners Site Investigation, and seems to be creating more health concerns than originally thought.

The Sea Girt Real Estate Owners [SGREO] hosted a meeting on Monday with Environmental Protection Agency [EPA] representative Andy Confortini to address Sea Girt residents' growing concerns with the plume and to seek answers as to what was happening.

SGREO board member, Dr. Brian J. Buckley, began by explaining what, exactly was detected in Sea Girt, and how it could have gotten there.

Perchloroethylene [PCE], an organic solvent, used by dry cleaners, had been dumped into a dry well, otherwise known as a "big hole in the ground," Dr. Buckley said.

Dr. Buckley noted that the organic solvent drifted from Wall into Sea Girt. It was originally detected about two to three years ago in Sea Girt and was addressed at a public meeting.

It since has been determined by officials that the plume originated at the site of the former White Swan Cleaners on Sea Girt Avenue in Wall, and is heading towards the ocean. The site is now home to a Fleet Bank branch, which recently closed due to air quality concerns there. Fleet says it will re-open the branch once air filtration systems are installed.

The meeting held in Sea Girt several years ago covered irrigation issues, such as sprinkler systems that may have pulled from the contaminated ground water, allowing for the movement and spread of the plume.

Even though it had been determined that there were not enough chemicals detected in the water to cause any harm, Councilman Thomas Branch did not want to take any chances back then, and took the lead and determined that Sea Girt residents would not be subjected to PCE contaminated water.

He started the initiative to acquire an air scrubber, and once the scrubber was installed, the residents of Sea Girt rested easy.

That is until the testing started up once again.

The DEP recently decided to add a sampling of Sea Girt Elementary School air to their testing area in Wall, and found a detectable amount of PCE at the school.

However, subsequent testing showed barely measurable amounts, and after placing a ventilation fan in the gym, there were no measurable levels of PCE detected.

The school is also looking to install a new heating and cooling unit, which would also help alleviate the levels of PCE in the air.

Once the tests were taken in the school and the PCE was discovered, replacing the heating and cooling unit jumped from just being something needed to bring the school up to code regulations, to becoming a piece needed for increasing the air turnover rate and providing for the health safety of the students.

In order to expedite this purchase, Councilman Branch visited with Chris Smith, and then-Acting Governor Donald DiFrancesco. It has now been determined that the funds will be made available at an expedited rate to get the HVAC installed in the school.

As soon as they secure a contractor and an engineer, the units will be installed. They are aiming to have it done during the summer.

As Dr. Buckley stated, "We have the money waiting for the project, instead of the project waiting for the money, which is a very good way to be, and that is owed largely to the efforts of Councilman Branch and Superintendent John Gibbs."

Recently, the DEP has relinquished control

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SHAWN HUBER PHOTO

Andy Confortini, [above] of the Environmental Protection Agency [EPA], addressed Sea Girt residents regarding the White Swan Cleaners Site Investigation during Monday's Sea Girt Real Estate Owners [SGREO] meeting. Currently 225 homes have been tested, 40 of which are in Sea Girt.

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of the plume investigation to the EPA, who plans to test on a more routine basis.

As Dr. Buckley finished giving the overview of what has happened to date, EPA representative Andy Confortini stepped up to further explain what the EPA is doing, and what they have found.

He explained that they have no results yet from their in-home testing trials. It is still too early.

Mr. Confortini then went over to the aerial view map of the plume site that he had brought with him, and began to explain the target areas that they are testing.

"At the end of the week, we will have tested 250 homes and businesses in the investigation site area," he said.

They started testing at the Fleet Bank area, and then radiated out towards the ocean. They have looked at homes and businesses in Manasquan, Wall and Sea Girt. At the time of the meeting, the EPA had tested 225 homes, 40 of which were located in the Borough of Sea Girt. They are now looking to test the area west of highway 35.

One resident said he had heard that the Fleet Bank in Wall had high-level readings of PCE, and that employees there had become ill. Mr. Confortini assured the resident that was just a rumor, and closing the bank was just a precautionary move.

He also explained that they will place an air system in the bank which allows for direct intake distribution. If there is still PCE detected after the interior has been replaced and the air ventilation system has been used, the EPA will then take further action.

At the Fleet Bank site they discovered that there were four dry wells measuring at 8 feet in circumference and 14 feet deep. One simply overflowed into another and eventually when all were filled it flowed into the sand to head out towards the ocean. These wells had been filled over a span of 20 years.

Mr. Confortini also mentioned that the plume seems to have fanned out. The EPA saw a high concentration around the immediate former Swan Cleaners site, and due to those readings they installed three air venting systems in surrounding houses, and are slated to install two more air venting systems along Laurel Avenue.

The air venting systems help pull air out of the house and recirculate it, causing for decreased levels of PCE being detected in those homes.

However, he also informed the residents of Sea Girt that they have also detected levels of benzene around the Fleet Bank, and about two blocks down near the Route 35 circle. Benzene is a known carcinogen.

As the data starts to pile in, the EPA will further be able to locate the source and surrounding areas of the plume, as well as how far it extends.

He also asserts that those findings will be confidential. However, if the property owner wishes to share his or her findings with neighbors, the EPA has no control over that.

Also as those results come in, they will start to develop concentration lines around the site picture, to further help aid in determining the source.

At this point, the residents could no longer sit still and listen. One resident made the point that these confidentiality issues could be a state problem.

He questioned what would happen if someone was interested in buying a house on the contaminated land — would they be made aware of the plume that lies beneath their floor boards?

Mr. Confortini explained the information could be found out on a "general basis." He showed a tax map of the area, and explained that contaminated homes would be marked in a general block, and from there you could, most likely, determine which house the block is implying, however, it will never be specifically named by street number.

These tax maps "are very simple for someone to go to the tax office and look at," Mr. Confortini explained.

Another resident asked if the lawn sprinkler systems installed by many residents in the towns aided in helping to make the PCE and benzene airborne.

Mr. Confortini acknowledged that was a good question, however, that is something that the EPA is still investigating, and could not

Residents voice concerns as

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plume takes new shape

give a definite answer.

He did, however, say that due to the winter months and the lack of sprinkler use, the groundwater is moving in one direction, which may allow for the contamination to be narrowed and allow for detection of the boundaries of the plume.

At this point, Dr. Buckley interjected, saying that there have been no groundwater readings featuring traces of benzene. There have been readings featuring PCE, but not benzene.

"If benzene is found in the groundwater that will be very bad, that's about as bad as it can get. However, the PCE is almost as bad," Dr. Buckley said.

There are a lot of values associated with PCE exposure, and Dr. Buckley doesn't recommend residents voluntarily expose themselves to PCE, but even if it is in the groundwater forever, there is not enough to pose a health risk.

Mr. Confortini further explained that when they are testing basements and houses, they are testing for approximately 60 chemicals. There are different factors that contribute to what will show up as a contaminant, including the permeability of a basement, the number of cracks a basement has and the current weather conditions.

He also made it known that the plume has moved. The EPA is still investigating to see if where they moved the soil by the bank liberated the contaminant, or even helped it move faster.

"There is an immense amount of information to be considered right now," said Mr. Confortini.

When asked how far he has tested, he responded that would fall into the confidential information, but gave a rough estimate to the crowd that they had tested to around where the Talbot's store is on Route 35 and are were currently getting ready to head south of the 35 circle to test that area.

One resident expressed concern about the Brookside School, located on Route 35 north of the site.

Mr. Confortini said they would look into testing the school, and also reiterated the fact that they are still in an information-gathering state. They are testing as many places as possible, gathering the results, correlating those results and weighing in all the factors that may contribute to the detectability. "There are many, many pieces to get together before we can truly conclude anything," he finished.

He also said that, "It may not be in places today, but that doesn't mean it won't be there tomorrow." He said testing will increase as they are having more testing canisters made available.

He explained that most tests take about 30 days to get back, however there is emergency testing that takes 48 hours.

Once results come in, there are drafted form letters that will be sent to the property owner based on the readings garnered from their property.

They are also seriously looking at the former dry cleaners site on the circle, and the gas station on the circle, as well.

"It started out as PCE, now it's turning into benzene. We think there may be another source. It could possibly be a creek. In order to determine this we need to really investigate what topographical changes have been made over the years," he explained.

Dr. Buckley said that the time of the dumping 20 to 30 years ago was known as the "Golden Age." However, he asserts it is more like the "Dark Age."

"The PCE made for a great degreaser and cleaner. People would just wash their hands with it and put it on everything. This happened throughout the U.S., we just happen to have the misfortune to be so heavily populated that it pools in greater concentrations," Dr. Buckley said.

Mr. Confortini explained that they have been seeing residual levels in homes and that the PCE has become impregnated in rugs, couches, and curtains, but due to the air units that have been installed in various locations, those levels have been lessened.

When it comes down to it, Mr. Confortini explains that the plume has moved, currently they are testing to find the true source of the plume.

Dr. Buckley reasserted that "there is a lot to get rid of. The best we can do right now is find it and do a pump-n-treat for many years, and hope that the bugs in the soil will also help chew it out."

The SGREO will meet again April 8 at 7:30 p.m. in the school media center. Superintendent John Gibbs will present the school budget, and in June there will be a special meeting on fire safety, which is not just for kids anymore, said Buckley.

The Coast Star
Thursday, Feb. 14, 2002

EPA tentatively identifies

By Jonathan C. Hall

The Environmental Protection Agency [EPA] has finished sampling the indoor air of homes in the Sea Girt Avenue area, said project leader Andy Confortini this week.

With roughly 240 samples taken and 140 results returned, Mr. Confortini said, the agency is starting to get a clearer picture of the perchloroethylene [PCE] contamination problem.

In November 2001, the PCE from a plume under Sea Girt Avenue was discovered to be finding its way into the indoor air of homes in the area, prompting state and federal environmental and health agencies to stand up and take notice. PCE is a hazardous chemical used in dry-cleaning, and a possible carcinogen over long periods of low-level exposure.

It is believed that, many decades ago, the chemical was dumped into the ground from the White Swan Dry Cleaners site on Sea Girt Avenue. That building is now home to Fleet Bank, which is closed as a result of the plume for air remediation. The chemical may have also been dumped into the ground from at least one other location in the area, as well, officials have said.

The EPA has been sampling homes and some businesses, as well as Old Mill and Sea Girt elementary schools, since just before the new year. However, much of the data remains to be validated and analyzed by the EPA to make it meaningful.

Mr. Confortini was, therefore, hesitant to speak generally about the data, suggesting that new

Wall Township

PCE drop-off east of Old Mill Road

nformation could change the picture somewhat. Still, Mr. Confortini did say that from the results he has seen, there appears to be a drop-off in PCE concentrations east of Old Mill Road.

"Preliminary information seems to indicate a significant decrease in concentrations of the contaminant somewhere in or around Old Mill Road," said Mr. Confortini. But, he said, residents east of Old Mill should not assume that their properties are unaffected, since every situation has to be evaluated in and of itself.

Mr. Confortini confirmed that the area most affected by the contamination lies due northeast of the plume source under the Fleet Bank branch on Sea Girt Avenue. Some areas tested have shown little or no detection of PCE, such as the residential community off Atlantic Avenue, east of the Manasquan Circle.

Mr. Confortini said he hopes to ultimately plot contour lines showing the distribution and intensity of PCE contamination visually on a map for residents to see. The difficulty of doing so, he explained, is that the EPA must preserve residents' confidentiality rights regarding contamination on their property.

So far, the EPA has sampled air from at least one home on practically every block between Route 35 and the ocean [see map]. By the end of this week, Mr. Confortini said, the agency will have installed seven basement ventilation systems designed to remove the contaminant from indoor air.

A mysterious addendum to the EPA's indoor air investigation is the detection of benzene in a number of households. Benzene is a carcinogen more hazardous than PCE found in gasoline and other products.

"Everywhere we've gone we've seen benzene," Mr. Confortini said, meaning that benzene is being detected randomly over the whole sweep of property tested by the EPA, not in isolated areas.

"There doesn't appear to be any trend associated with the benzene contamination," Mr. Confortini added, "but we're still evaluating any potential correlation [with the PCE contamination]."

Mr. Confortini suggested that the benzene being detected may have multiple and more localized sources, ranging from underground gas tanks installed during the energy crunch of the 1970s to gasoline products inside residents' homes.

While results continue to pour in, Mr. Confortini said the EPA will try to give residents the answers they may be looking for regarding the extent of the problem. Letters to residents whose homes have been tested and whose results have been returned are being reviewed this week by the EPA and various health agencies before being sent, Mr. Confortini said.

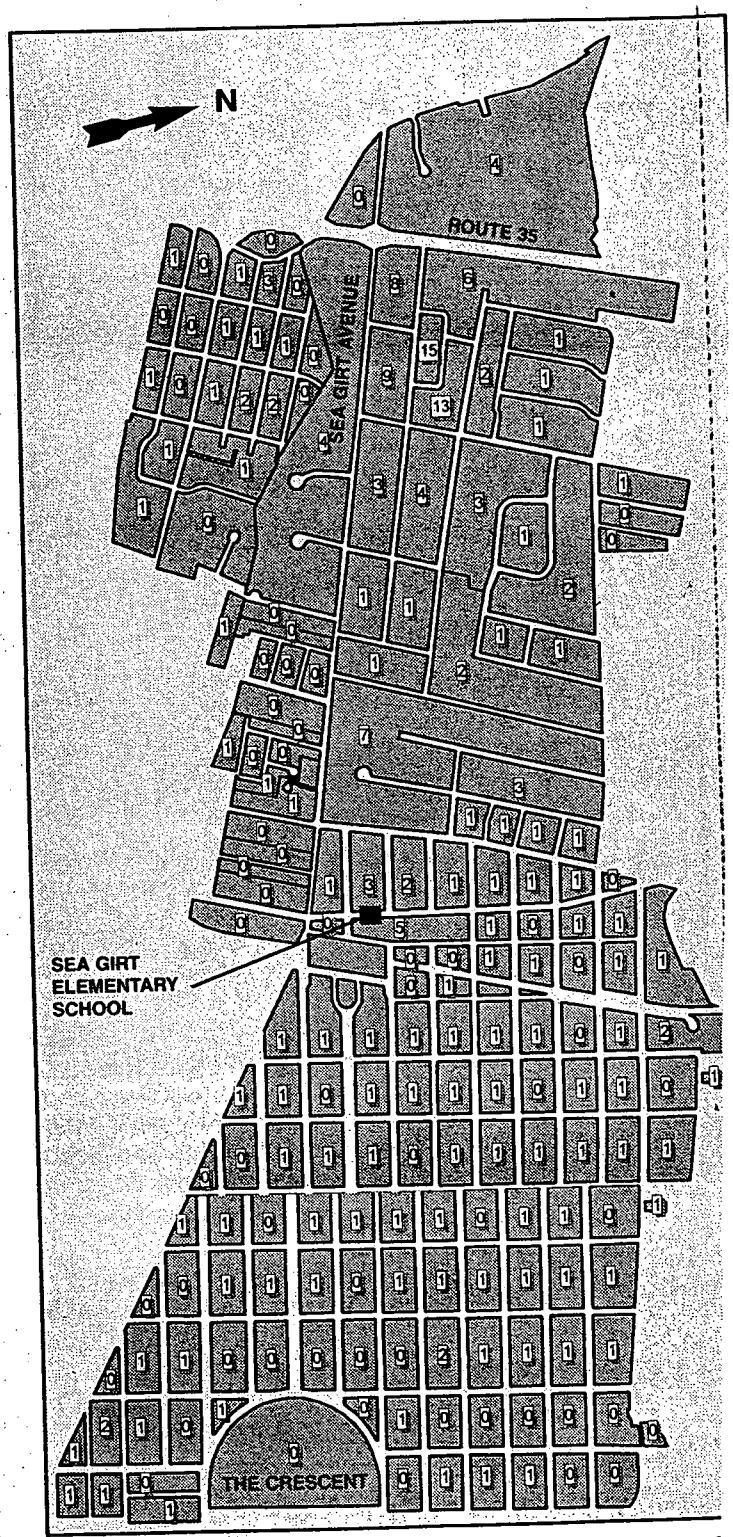
Also this week, the EPA's Tom Budroe launched a soil investigation near the presumed source of the contamination on the Fleet Bank branch site and the former Sun Cleaners across Route 35.

Mr. Budroe's team will be taking soil cores from the site to gather information on PCE contamination there, but their "geoprobe" appartus broke down yesterday, delaying the investigation.

The bank branch itself has been closed for several weeks after tests of its air quality revealed higher-than-anticipated levels. Fleet closed the branch temporarily to install an updated ventilation system to address the contamination.

Fleet spokesman Steve Lubetkin said that the bank is "not yet satisfied" with its progress in addressing the air quality concerns inside its Sea Girt Avenue branch. Only ATM transactions and by-appointment deposit box transactions are being conducted on-site.

Mr. Lubetkin said that the EPA technicians working at the site should not be cause for alarm to customers using the branch for those transactions. "We are not aware of any elevated concern," he said.



A map provided by the EPA [above] shows the extent of air sampling the agency has done since it learned of l contamination escaping from the ground into the ai homes in the area. Figures on the map tell the numbe indoor air samples taken per tax block as of Feb. 5, 2002. EPA's Andy Confortini said that some further sampling been conducted since the map was created, and that agency hopes to put contour lines visually depicting the tamination problem once all results come back.