

**Health  
Assessment  
for**

OK

SOUTH JERSEY CLOTHING COMPANY

CERCLIS NO. NJD980766828

BUENA BOROUG, ATLANTIC COUNTY, NEW JERSEY

**SEP 27 1990**

Agency for Toxic Substances and Disease Registry  
U.S. Public Health Service

## THE ATSDR HEALTH ASSESSMENT: A NOTE OF EXPLANATION

Section 104(i)(7)(A) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, states "...the term 'health assessment' shall include preliminary assessments of potential risks to human health posed by individual sites and facilities, based on such factors as the nature and extent of contamination, the existence of potential pathways of human exposure (including ground or surface water contamination, air emissions, and food chain contamination), the size and potential susceptibility of the community within the likely pathways of exposure, the comparison of expected human exposure levels to the short-term and long-term health effects associated with identified hazardous substances and any available recommended exposure or tolerance limits for such hazardous substances, and the comparison of existing morbidity and mortality data on diseases that may be associated with the observed levels of exposure. The Administrator of ATSDR shall use appropriate data, risk assessments, risk evaluations and studies available from the Administrator of EPA."

In accordance with the CERCLA section cited, this Health Assessment has been conducted using available data. Additional Health Assessments may be conducted for this site as more information becomes available.

The conclusions and recommendations presented in this Health Assessment are the result of site specific analyses and are not to be cited or quoted for other evaluations or Health Assessments.

SOUTH JERSEY CLOTHING COMPANY  
ATLANTIC COUNTY  
BUENA BOROUGH, NEW JERSEY  
Prepared By:  
Environmental Health Service  
New Jersey Department of Health

Prepared For:  
Agency for Toxic Substances and Disease Registry

## OBJECTIVES

The main Remedial Investigation and Feasibility Study (RI/FS) of the South Jersey Clothing (SJC) Company site is currently in the third year of the work plan. The objectives of this Health Assessment, based upon the current stage of investigation and based upon completed remedial activities at the site, are to:

- \* Assess the nature and magnitude of potential health effects associated with the site and determine the site's degree of public health concern;
- \* Identify, if necessary, immediate actions necessary to minimize exposure to hazards and contamination associated with the site;
- \* Identify, if necessary, gaps in data and information regarding the site;
- \* Document the concerns of the community with regard to the site;
- \* Review remedial activities within the context of potential public health implications;
- \* Assess whether additional health study or investigation of the site is warranted.

## SUMMARY

The South Jersey Clothing Company is a manufacturer of military clothing, located in Buena Borough, New Jersey. Contaminated wastewater and solid production wastes from on-site operations were routinely discharged to the soil on-site. Analytical data has described significant soil and ground-water contamination from trichloroethylene and other volatile organic chemicals. Ground-water contamination downgradient (to the south)

of the site has required the recommended closing of private wells and the installation of a municipal water system. South Jersey Clothing has installed a ground-water treatment system and is in compliance with a 1984 Administrative Consent Order. Municipal water supplies have been made available to affected residents, but utilization is elective. The site was included on the NPL list in October 1989 and is currently ranked 58 out of the 108 sites on the NPL in New Jersey. ATSDR and NJDOH consider the South Jersey Clothing site to be of public health concern. This site is being considered for follow-up health study or evaluation.

#### SITE DESCRIPTION

The South Jersey Clothing Company is one of two identified responsible parties contributing to the ground-water contamination of the Borough of Buena. South Jersey Clothing is located approximately 500 feet from another NPL site, the Garden State Cleaners company. The U.S. Environmental Protection Agency (USEPA) initiated a joint RI/FS between South Jersey Clothing and Garden State Cleaners in the spring of 1989. It is assumed in site literature that the plumes of contamination emanating from these two sites intermingle and contribute to a general ground-water contamination problem in Buena Borough.

South Jersey Clothing is an active manufacturer of military clothing with approximately 10 employees. The company has been in operation since 1940. The site is approximately 1.2 acres in area and is located on Central Avenue in the town of Minotola (Buena Borough). There are two buildings on-site, one of which is presently inactive. Wastewater from the company's dry cleaning operations, contaminated with volatile organic chemicals (most notably trichloroethylene), was routinely discharged onto the soil, thus contaminating underlying ground water. Additionally, process wastes in the form of sludges were dumped on-site and along nearby railroad tracks, and hazardous wastes were stored on-site in drums.

Since 1981, the site and associated activities have been under the supervision of the New Jersey Department of Environmental Protection (NJDEP). A ground-water treatment system is in place, and the company is complying with the requirements of a 1984 Administrative Constraint Order (ACO) and a NJ Pollutant Discharge Elimination System (NJPDDES) permit. Analytical sampling conducted during NJDEP inspections revealed significant soil and ground-water contamination by volatile organic compounds (VOCs).

#### SITE VISIT

NJDOH personnel visited the site on April 7, 1989, meeting with the owners of South Jersey Clothing and their environmental consultant. An inspection of the site and surrounding area was conducted. There was no visible evidence of the presence of hazardous materials with the exception of the presence of monitoring wells and the air stripping tower of the ground-water treatment system. Stained soils, sludges or physical hazards were not observed on the site. The site was not fenced, and there is no history of trespassing or vandalism.

## COMMUNITY CONCERNS

Community involvement with the site was first documented in 1981 when a resident living to the immediate south contacted the Atlantic County Health Department about a chemical odor in well water. Analysis revealed trichloroethylene in concentrations of approximately 27,000 ppb. Further investigation delineated a plume of contamination to the south of the site, which ultimately resulted in the abandonment of private potable/domestic wells and the construction of a public water supply.

Review of the files of NJDEP and the Atlantic County Health Department revealed the following specific concerns of the community:

- \* Residents were advised to hook up to a municipal water supply at an initial cost of approximately \$2,400 with an annual water fee of \$240. This figure represented an economic hardship to many residents whose well water was contaminated. As a result, it is uncertain if the use of all potentially affected wells has been curtailed. The Atlantic County Health Department has expressed difficulty in enforcing the well restriction. It is probable that some wells remain in use for irrigation and potable purposes. Attempts are being made by residents to recover the service connection and water costs from the New Jersey Spillfund program.
- \* Past exposure to contaminated ground water is a major concern. Although the problem of South Jersey Clothing Company's impact on the ground-water quality was documented in 1981, many residents feel that the contamination problem has been present for a much longer period of time and is not caused solely by the two sites that have been included on the NPL list (South Jersey Clothing and the Garden State Cleaners).

## ENVIRONMENTAL CONTAMINATION AND PHYSICAL HAZARDS

The primary contaminant of concern at the South Jersey Clothing site is trichloroethylene (TCE), with relatively lower concentrations of other volatile organic chemicals also having been identified. The primary environmental pathway associated with this site is ground water. The on-site and off-site soil and air pathways are not presently of concern, but on-site soil contamination may have constituted a significant environmental pathway during the period when SJC disposed of wastewaters and sludges on-site. There is no information available to evaluate the significance of on-site and off-site air pathways during the period when SJC disposed of wastewater and sludges on-site. There is no surface water located on-site or in the immediate environs. Ground water in the area is moving in a southerly direction.

The first reports by the Atlantic County Health Department of volatile organic chemicals in Buena Borough domestic wells (Landisville and Minotola area) occurred in April 1981. Subsequent investigation by NJDEP revealed that South Jersey Clothing had been discharging wastes in the form of liquids and sludges from a dry cleaning operation onto the grounds surrounding the plant. Nearby residents' shallow wells were found to be grossly contaminated with TCE (27,000 ppb) and other organic chemicals.

The dumping of sludge on the site occurred from 1972 until 1981. In 1979, a fire caused the rupture of a 500-gallon tank of TCE, emptying the contents onto the soil. A monitoring well located at the position of the tank leak continues to show trichloroethylene at elevated levels (approximately 50,000 ppb).

An Administrative Consent Order (ACO) was signed by the owners of South Jersey Clothing and NJDEP in 1984. As a result of the ACO, discharge of liquid and solid wastes has ceased, and surface wastes and sludges have been removed. A ground-water treatment system was put into operation on-site in July 1985 and has been operating since. Ground water is extracted at the rate of 25-gallons-per-minute (gpm), processed by air strippers, and discharged back to the ground via an injection well. There are 17 monitoring wells in the vicinity of the site that have been used to delineate and characterize the contaminant plume.

NJDEP has identified ground-water problems unrelated to South Jersey Clothing in Buena Borough. Benzene has been found by NJDEP in a well in the Landisville section of the borough, an area not downgradient of South Jersey Clothing. There are many possible contamination sources in the area that could contaminate the highly permeable Cohansey aquifer. Potential non-point sources of ground-water contamination include spillage from private petroleum product and gasoline tanks, misuse of septic systems and septic tank cleaning chemicals, illegal dumping, and use of fertilizers and pesticides. Such sources are likely contributing to the overall ground-water contamination problem of the area.

The USEPA Preliminary Assessment for the South Jersey Clothing site addressed the contaminant concentrations of the liquid sludge and solid sludge wastes. Samples of liquid waste indicated the presence of TCE in the 100 parts per million range. Samples of sludge waste indicated the presence of TCE in the parts per thousand range. TCE has been detected in the soil on the site at 940 ppm.

The most recently (February 13, 1989) and maximum detected concentrations of TCE in the monitoring wells on or near the site are presented in Table 1. The results of the analyses of samples taken in December 1981, when analysis included parameters other than TCE, are presented in Table 2.

It is likely borough residents utilized contaminated water before the public water system became available. For example, in a sample taken on May 5, 1982, the J.P. Cleary School water supply tested positive for volatile organics, necessitating the use of bottled water and point source filters. Of 11 samples taken, 6 showed greater than 100 ppb of total organics (NJDEP personal communication).

The South Jersey Clothing site has no outstanding physical hazards. Although the property is unfenced, it is flat and relatively featureless.

#### QUALITY ASSURANCE/QUALITY CONTROL

Analysis of samples collected by NJDEP was performed at the New Jersey Department of Health laboratories. Specific information relating to QA/QC is not available for review and evaluation.

## DEMOGRAPHICS

The South Jersey Clothing site is located in a mixed residential, commercial, and light industrial section of Buena Borough. The surrounding area is rural and predominantly agricultural in nature. According to the Atlantic County Health Department, there are approximately 1,000 homes within the boundaries of Buena Borough with a population of approximately 4,000 people. Outside the Borough limits, there are trailer parks which contain approximately 1,300 additional persons. Additionally, by assuming 1.5 persons per acre of agricultural land, NJDEP estimates that an additional 10,000 persons may be threatened by irrigation with contaminated ground water. There are approximately 40 homes which are directly in the path of the contamination plume.

Potential sensitive populations in Buena Borough would include children and elderly that live in the Borough. Of particular concern is the J.P. Cleary School, which is downgradient of the South Jersey Clothing site. Volatile organic chemicals had been detected in potable water at the school (see Environmental Contamination section).

## ENVIRONMENTAL DATA GAPS

There is some data describing the nature and extent of South Jersey Clothing's contribution to the ground-water contamination of Buena Borough. The Remedial Investigation Report, when available, will provide additional data regarding the contamination associated with the site. The additional site data and information contained in the RI/FS, when available, will be reviewed and evaluated for future addenda to this Health Assessment.

Additional study and investigation beyond the scope of the present RI/FS work plan may be necessary to comprehensively describe the nature and sources of contamination not attributed to South Jersey Clothing or the Garden State Cleaners sites.

## EXPOSURE PATHWAYS

Present exposure pathways at the South Jersey Clothing site are predominantly related to the use of contaminated ground water for potable/domestic purposes and irrigation. Use of such ground water for domestic purposes could result in ingestion of, inhalation of, or dermal exposure to contaminants. There are no documented human exposure pathways presently associated with the on-site air and soil media. Human exposure pathways associated with on-site soils and air may have been significant during the period when SJC disposed of wastewater and sludges on-site. Although data demonstrate high concentrations of TCE in on-site soils during this period, there is no information regarding air quality. SJC has ceased on-site disposal of wastewater, and sludges have been remediated. Residual concentrations present in on-site soils do not constitute a significant exposure pathway.

All water used for drinking and irrigation in Buena Borough was once dependent on ground water. Although a public water supply system was made available in the Borough in 1985, all Borough residents may not have access to, or may not have elected to, utilize public water.

#### PUBLIC HEALTH IMPLICATIONS

The level of public health concern has diminished with the implementation of a municipal water supply in 1985. It is unclear whether all residents have access to and are utilizing public water. There are potential public health concerns associated with those homes that have yet to utilize the public water supply where available, and with the area-wide ground-water problem in Buena Borough, which is a combination of site-related and non site-related contamination.

In humans, exposure to high concentrations of the primary contaminant of concern at the site (TCE) has been noted to affect the central nervous system and to cause eye, nose, and throat irritation. Animal tests have demonstrated that TCE, at concentrations that exceed the exposure concentrations associated with this site, is capable of affecting the central nervous system, immune system, liver, and kidney. Although human data are inadequate to categorize TCE as a human carcinogen, TCE has caused liver, kidney, and lung cancer in animals and is currently listed by the USEPA as a Class B2 (suspected human) carcinogen.

#### CONCLUSIONS AND RECOMMENDATIONS

Based upon information reviewed, ATSDR and NJDOH have concluded that this site is of public health concern because of the risk to human health resulting from probable exposure to hazardous substances at concentrations that may result in adverse human health effects. As noted in the Environmental Contamination and Physical Hazards section above, human exposure to volatile organic chemicals may occur and has probably occurred in the past via the domestic use of contaminated ground water.

In accordance with CERCLA as amended, the South Jersey Clothing Company site has been evaluated for appropriate follow-up with respect to health effect studies. Since human exposure to on-site and off-site contaminants may be occurring and has probably occurred in the past, this site is being considered for follow-up health effects studies. After consultation with Regional EPA staff and State and local health and environmental officials, the Division of Health Studies, ATSDR, and NJDOH will determine if follow-up public health actions or studies are appropriate for this site. ATSDR will be considering sites for inclusion in the benzene subregistry, and this site will be included in the consideration.

An area-wide ground-water contamination problem exists in Buena Borough. While current remedial investigations adequately define the contributions of identified sites, additional investigation is indicated to identify other non site-related sources and remedial actions necessary to protect the public health.



The site's degree of public health concern has diminished since a municipal water supply was made available to alleviate dependence upon private domestic wells. However, utilization of the municipal water supply is not mandatory and involves significant costs. It is possible contaminated wells continue to be used for potable and domestic purposes. It is recommended that all residents utilize the public water supply system.

When indicated by public health needs, and as resources permit, the evaluation of additional relevant health outcome data and community health concerns, if available, is recommended.

CERTIFICATION

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



Technical Project Officer, SPS, RPB, DHAC

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



Division Director, DHAC, ATSDR

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## REFERENCES

Administrative Consent Order between South Jersey Clothing and New Jersey Department of Environmental Protection, January, 1984.

United States Environmental Protection Agency (USEPA), Hazardous Ranking Score Documentation, January, 1983.

USEPA, Preliminary Site Assessment, May 1984. Vance, Skinner Company, Draft Status - 1989: Justification for Change, March 1989.

### File Reviews:

NJDEP, March 1989.

Atlantic County Health Department, March 1989.

DEP/DWR Southern Enforcement, March 1989.

### Interviews:

NJDEP/DWR Southern Enforcement, March 1989.

Atlantic County Health Department, March 1989.

Consultant to South Jersey Clothing, March 1989.

TABLE 1 - TCE Concentrations in Ground Water - South Jersey  
Clothing site

Well*	Location	Concentration February 1989	Maximum Reported Concentration (Month/Year)
1	Upgradient	NA	6 (12/82)
4	Upgradient	NA	NA
9	Upgradient	ND	ND (02/89)
2	On-site	32,000	79,000 (06/84)
3	On-site	500	32,000 (01/83)
5	Downgradient	340	78,000 (10/84)
6	Downgradient	150	700 (10/83)
7	Downgradient	45	32,000 (04/84)
8	Downgradient	14	1,000 (12/82)
10	Downgradient	230	5,200 (12/87)
11	Downgradient	76	68,000 (04/84)
12	Downgradient	4,900	36,000 (10/84)

All Concentrations In Parts Per Billion (ppb)

New Jersey MCL for TCE = 1 ppb

\* NJDEP Monitoring Wells

NA = Not Analyzed; ND = None Detected

TABLE 2 - Ground-Water Contamination - South Jersey Clothing site

COMPOUND (ppb)	MONITOR WELL NUMBER *				MCL
	1	2	3	4	
Trichloroethylene .....	ND	9860	286	ND	1
1,2 Dichloroethane .....	ND	59	ND	ND	2
1,1,1 Trichloroethane .....	ND	5	ND	ND	26
Tetrachloroethylene .....	ND	28	1	ND	1
Benzene .....	ND	22	ND	ND	1
Toluene .....	ND	82	ND	ND	NA
Ethylbenzene .....	ND	11	ND	ND	NA
p-Xylene .....	ND	46	ND	ND	44
o-Xylene .....	ND	47	ND	ND	44
N-propylbenzene .....	ND	2	ND	ND	NA
Bromobenzene .....	ND	34	ND	ND	NA
Benzofuran .....	ND	37	ND	ND	NA
Cyclopropylbenzene .....	ND	43	ND	ND	NA

All Concentrations in Parts Per Billion (ppb)

ND = Not detected; MCL = NJ Maximum Contaminant Level

NA = NJ MCL Has not been established or is pending.

\* = Responsible Party Ground-Water Remediation Monitor Well (all wells located on-site); data from December 1981 sampling.