

Attention
Residents of Moffett Community Housing

The U.S. Navy would like to invite you to an open house to share information about Moffett Community Housing groundwater activities. The open house will be held at the NASA Ames Research Center Visitor Center as follows:

When: May 3rd, 2001
Time: 7 to 9 p.m.
Where: Visitors Center, Special Events Room
Address: NASA Ames Research Center
Building N-223 R.T. Jones Road
Moffett Field, California 94035-1000

For further information about the open house, please feel free to contact the either of the individuals named here.

Ms. Andrea Muckerman
Moffett Federal Airfield BRAC
Environmental Coordinator
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway, Code 06CH.AM
San Diego, California, 92132-5190
Telephone: 619-532-0911
Fax: 619-532-0995
muckermanam@efdswn.navfac.navy.mil

Major Jeff Cooper
Officer in Charge
U.S. Army
Moffett Housing Project Office
P.O. Box 40
Moffett, CA 94035
Telephone 650-603-8143
jcooper@spd.usace.army.mil

See you there!



Moffett Community Housing
Mountain View, California

RESIDENT OPEN HOUSE GROUNDWATER ACTIVITIES

Date/Time: Thursday, May 3, 2001, 7 to 9 p.m.

Location: Visitors Center, Special Events Room
NASA Ames Research Center
Building N-223 R.T. Jones Road
Moffett Field, California 94035-1000

- This workshop is designed to provide the community with information about groundwater studies, one-on-one contact with project team members, as well as avenues for obtaining additional information. It will also allow the project team to gain an understanding of public thoughts and concerns.
- Community members have the opportunity to discuss the issues directly with representatives for the Navy, Army, NASA, and the state and federal Environmental Protection Agencies at various stations throughout the room. We recommend following the sequence listed below.

STATION OVERVIEW

- STATION NO. 1** **WELCOME** – Provides opportunity to sign in, get an agenda, learn about the purpose of the meeting and get on the project mailing list.
- STATION NO. 2** **MOFFETT HOUSING AND SURROUNDING AREAS** – Presents an overview of the project in relation to housing areas and introduces the project team members and their roles.
- STATION NO. 3** **ENVIRONMENTAL STUDIES** – Presents an overview of the environmental activities conducted to date, explains what was identified and provides information about relevant chemicals.
- STATION NO. 4** **RISK ASSESSMENTS** – Presents an overview of the Risk Assessment process including what it is, how it is conducted, and how it relates to residents.
- STATION NO. 5** **WHAT'S NEXT** – Presents a timeline of and describes the environmental activities to be performed to further evaluate groundwater.
- STATION NO. 6** **YOUR INPUT** – Provides residents the opportunity to speak with project team members and discuss issues that may need further clarification. Feel free to fill out a comment form!

THANK YOU FOR ATTENDING!

MOFFETT FEDERAL AIRFIELD ENVIRONMENTAL PROGRAM PROJECT POINTS OF CONTACT LIST

The Moffett Federal Airfield environmental project team is very interested in hearing from you. If you have questions or concerns, please feel free to contact one of the people named below.

U.S. NAVY REPRESENTATIVES

Ms. ANDREA MUCKERMAN
BRAC Environmental Coordinator
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway, Code 06CH.AM
San Diego, California, 92132-5190
Phone: (619) 532-0911
Fax: (619) 532-0995
E-mail: muckermanam@efdswnavfac.navy.mil

U.S. ENVIRONMENTAL PROTECTION AGENCY REPRESENTATIVES

MR. JOHN HAMILL
Acting Remedial Project Manager
U.S. Environmental Protection Agency
75 Hawthorne Street, MS SFD-3
San Francisco, CA 94105-3901
Phone: (415) 744-2246
Fax: (415) 744-1916
E-mail: h.john@epa.gov

MR. DAVID COOPER
Community Relations Specialist
U.S. Environmental Protection Agency
75 Hawthorne Street, MS SFD-3
San Francisco, CA 94105-3901
Phone: (415) 744-2179
Fax: (415) 744-1796
E-mail: cooper.david@epa.gov

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

DR. LYNN SUER
Remedial Project Manager
Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612
Phone: (510) 622-2422
E-mail: als@rb2swrcb.ca.ca.gov

U.S. NAVY – MEDIA

MR. LEE SAUNDERS
Environmental Public Affairs Officer
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190
Phone: (619) 532-3100
Fax: (619) 532-4927
E-mail:
saunderslh@efdswnavfac.navy.mil

U.S. ARMY HOUSING REPRESENTATIVE

MAJOR JEFF COOPER
Officer in Charge
U.S. Army
Moffett Housing Project Office
P.O. Box 40
Moffett, CA 94035
Phone: (650) 564-9490
Fax: (650) 603-8138
E-mail: jcooper@spd.usace.army.mil

INFORMATION REPOSITORY LOCATION

MOUNTAIN VIEW PUBLIC LIBRARY
585 Franklin Street
Mountain View, CA 94041
Telephone: (650) 903-6337

Internet Access Environmental Web Sites

Southwest Division Naval Facilities Engineering Command:

<http://www.efdswnavfac.navy.mil/DEP/ENV/default.htm>

Department of Defense – Environmental Cleanup Home Page Web Site:

<http://www.dtic.mil/envirodod/index.html>

Department of Defense – Environmental BRAC Web Site:

www.dtic.mil/envirodod/brac/

Department of Defense – Community Involvement RAB Web Site:

www.dtic.mil/envirodod/rab/

Defense Environmental Response Task Force Web Site:

www.dtic.mil/envirodod/brac/dertf.html

U.S. EPA Superfund Web Site:

www.epa.gov/superfund/

Agency for Toxic Substances and Disease Registry – TOXFAQs

<http://www.atsdr.cdc.gov/toxfaq.html>



Moffett Community Housing

Moffett Field, California

April 2001

Groundwater Update

Introduction

This fact sheet presents information about groundwater investigation activities underway at Moffett Community Housing. Moffett Community Housing is located near the city of Mountain View, California and Moffett Federal Airfield, north of Highway 101. Groundwater beneath some of the areas within Moffett Community Housing has been found to contain chemical contaminants, primarily trichloroethene and 1,1,1-trichloroethane. This groundwater is not used for drinking water, so there is no risk to people through ingestion or contact. The Navy plans to conduct tests to find out the nature and extent of chemical contamination in groundwater under the housing areas. The Navy also plans to conduct studies to make sure that the chemicals do not pose a health risk to people living in Moffett Community Housing. The Navy will look at possible cleanup solutions if they are needed.

Public involvement is a very important part of the environmental process. The project team is very interested in forming and keeping an open relationship with the residents living in the housing area and surrounding communities. Please feel free to contact the persons listed on the back of this fact sheet for more information.

Current Environmental Activities

Chemical contaminants have been found in groundwater under the Wescoat Housing area of Moffett Community Housing. These contaminants may have traveled from nearby Superfund sites, the Middlefield Road-Ellis Street-Whisman Road (MEW) site and/or the Naval Air Station

Preliminary evaluations indicate that the chemicals in groundwater do not pose a risk to residents at Moffett Community Housing.

Moffett Field site. Groundwater treatment systems are in place at these sites and cleanup is being performed under a Record of Decision.

In addition, the National Aeronautics and Space Administration (NASA) met with the Air Force in December 1999 to inform them that NASA had detected chemicals in groundwater wells during routine groundwater monitoring. These wells were located on NASA property near the Orion Park housing area of Moffett Community Housing. NASA also conducted environmental sampling within the northeastern portion of Orion Park in 1999. Test results showed that chemicals were present in the groundwater under this area of Orion Park. Based on this information, the Navy sampled the groundwater in 2000. Results of this sampling confirmed the presence of acetone, benzene, 1,2-dichloroethene, toluene, xylenes, and trichloroethene in groundwater under some areas of Orion Park. The source and extent of chemicals in groundwater under Orion Park is currently unknown. The Navy plans to conduct more tests to

find out this information and to determine whether chemicals in groundwater have traveled to any other areas of Moffett Community Housing.

The chemicals identified in groundwater are used as industrial cleaners (solvents) to remove grease from metal parts and in dry cleaning activities. Some of these chemicals are used in household cleaning products.

Preliminary evaluations indicate that the chemicals in groundwater do not pose a risk to residents at Moffett Community Housing. Moffett Community Housing does not use the groundwater for drinking water, so the chemicals do not pose

Southwest Division Naval Facilities Engineering Command

a risk to people through ingestion or contact. The Navy has evaluated the highest levels of chemicals in the groundwater to determine their potential to travel into indoor air. Results indicate that there is little potential for the chemicals to be present in the indoor air at concentrations that might present a risk to residents. However, the Navy intends to more fully evaluate the extent of chemicals in the groundwater and determine the potential for risk to human health.

NASA has provided information indicating that the chemicals in groundwater could travel through the soil into the air. As part of redevelopment studies within Moffett Federal Airfield, NASA recently sampled indoor air at several buildings. These buildings were not located within Moffett Community Housing and were previously used as warehouses and offices. Results of the indoor air sampling indicated that some of these buildings contained chemicals in the indoor air that could potentially pose a risk to human health if continuously exposed over the course of 20 years. Past building uses may be the source of chemicals in the air. However, groundwater under the buildings tested also may have contributed to or been the source of chemicals in the indoor air. Several factors affect the potential for chemicals to travel from groundwater into the air. These include the depth to groundwater, the concentrations of chemicals in groundwater, and whether the building floor slab is cracked or intact.

The chemicals identified in groundwater at this site are used in dry cleaning activities or as industrial cleaners (solvents) to remove grease from metal parts. Some of these chemicals are used in household cleaning products.

Open House

The Navy is inviting the public to an open house on May 3rd, 2001 from 7 to 9 p.m. to share information about Moffett Community Housing groundwater activities. Information regarding the location of the open house will be mailed at a later date. Additional meetings may be held as new information develops.

What's Next

The Navy is moving forward with plans for more studies at Moffett Community Housing. Workplans for these studies will be prepared in Summer 2001. The community and regulators will have the opportunity to review and comment on the workplans. Sampling of groundwater, soil, and air is planned to occur in December 2001. The community will be notified before the sampling occurs. Large portable drilling rigs will be used to drill beneath the ground surface to get samples of the groundwater. Traffic in the sampling area may be impacted.

The sampling results will be used to determine the potential health risk to residents in the area. A draft report presenting the results of the investigation will be prepared in Spring 2002 and provided to Moffett Community Housing residents.

Project Points of Contact

The project team is very interested in hearing from you. If you have questions or concerns, please feel free to contact one of the people named here.

Andrea Muckerman
BRAC Environmental Coordinator
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132-5190
619-532-0911
muckermanam@efdsw.navfac.navy.mil

Major Jeff Cooper
Moffett Housing Project Office
P.O. Box 40
Moffett, CA 94035
650-603-8143
jcooper@spd.usace.army.mil



Moffett Community Housing

VOCs – What Are They?

Volatile Organic Compounds - Organic, or carbon-containing, liquids, including many common solvents, that evaporate readily at room temperature.

- “Volatile” simply means that it evaporates quickly
- Solvents are used in industrial cleaners, paints, and other similar substances. They can be flammable and toxic to varying degrees.

Moffett Community Housing Groundwater Update Preliminary Risk Evaluation

The Preliminary Risk Evaluation was conducted:

- based on existing groundwater data;
- using a conservative risk model to evaluate the potential for chemicals in groundwater to travel through soil to household air (the model used is approved by the U.S. Environmental Protection Agency and the state of California);
- using the highest concentrations of chemicals detected in groundwater;
- assuming that residential exposure was to be 30 years, 6 years as a child and 24 years as an adult.
- assuming that inhalation of gases was to occur 24 hours/day, 350 days/year.

Preliminary evaluations indicate that the chemicals in groundwater do not pose a risk to residents at Moffett Community Housing.



Moffett Community Housing

Baseline Risk Assessment - A tool used to help make decisions about how to address potential risks to humans and the environment.

$$\text{Risk} = \text{Hazard} + \text{Exposure}$$

Hazard: The nature and intensity of impacts that may result if exposure to a toxic substance occurs.

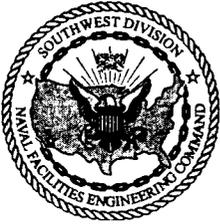
Exposure: The duration and types of ways (pathways) that a person may come into contact with a toxic substance.



Moffett Community Housing

Determine How Exposure Could Occur - Exposure can only occur if all four of the following elements are present:

- A source of contamination (e.g., soil or groundwater)
- A release of the contaminants into the environment (e.g., erosion, wind)
- A person or animal exposed to the contaminants
- A pathway for the contaminants to enter the body (e.g., breathing, ingestion, dermal contact)



Moffett Community Housing

Preliminary Risk Evaluation

- Based on existing groundwater data.
- Conservative risk model was used to evaluate the potential for chemicals in groundwater to travel through soil to household air. This model is approved by the U.S. Environmental Protection Agency and the state of California.
- The highest concentrations of chemicals detected in groundwater were used in this model.
- Residential exposure was assumed to be 30 years, 6 years as a child and 24 years as an adult.
- Inhalation of gases was assumed to occur 24 hours/day, 350 days/year.
- **Preliminary evaluations indicate that the chemicals in groundwater do not pose a risk to residents at Moffett Community Housing.**

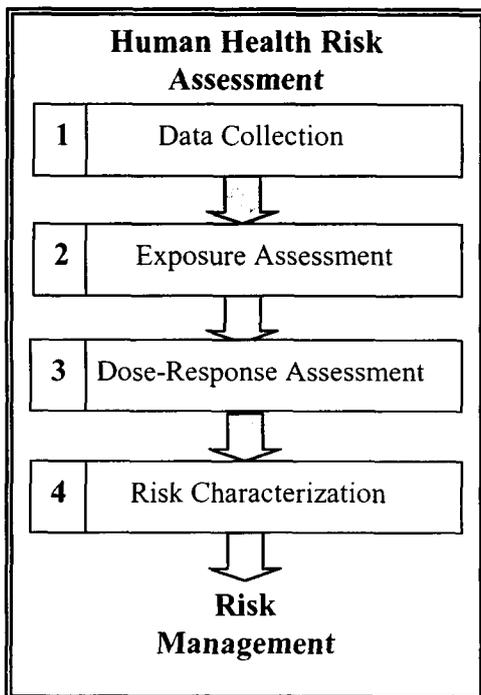


Navy Environmental Health Center Public Health Fact Sheet

Human Health Risk Assessment

What is a Human Health Risk Assessment?

Human health risk assessment is a scientific process developed by the National Academy of Sciences (NAS). The U.S. Environmental Protection Agency has adopted this method to help make decisions about environmental cleanup. Risk assessments estimate the potential effects on human health due to substances in the environment. These estimates build in several safety factors to ensure protection of public health. Risk assessment is a four-step process.



Step 1. Data Collection

Data collection tells us which substances are present and their levels. During this step, we collect samples from soil, water, sediment, plants, fish and/or animals in and around

the area thought to be the site of a chemical release. The samples are analyzed in a laboratory under strict quality control procedures. We compare these levels to the naturally occurring or "background" levels for these substances in the local area. Substances present at levels above background are then screened to determine if they could affect human health. Those substances with the greatest potential to effect human health become the focus of the risk assessment.

Step 2. Exposure Assessment

Exposure assessment answers 3 main questions:

- Who might be exposed?
- How are they exposed?
- How much are they exposed to?

People come in contact with substances in the environment in several ways: breathing, touching, or eating air, water, soil or food. These are referred to as "pathways" of exposure. During the exposure assessment, we estimate the amount of a given substance that could reach a person's lungs, digestive system or skin. All potential pathways of exposure are evaluated. To do this we ask such questions as:

- Do people live or work near the site? For how long?
- Do children play on or near the site? How often?
- Do people drink or bathe with water that comes from the site? How often?
- Do people eat fish from or swim in lakes or streams on the site? How often?

From this information, a "Reasonable Maximum Exposure" or RME is calculated. The RME

represents the highest level of human exposure that could reasonably be expected to occur to the substances identified during step 1. Exposure is calculated for such groups as children, site workers and/or residents. The exposure calculations completed during Step 2 build in factors to ensure the health of the most sensitive members of the population such as, children, pregnant women and the elderly is protected.

Step 3. Dose-Response Assessment

The dose-response assessment addresses potential health effects of the substances and at what “*dose*” these effects are likely to be seen. We use information gathered from the results of laboratory studies on health effects in animals. Researchers around the world conduct these studies. We also use information on previous human exposures that resulted from such things as industrial accidents if it is available. We evaluate each substance’s ability to cause cancer and non-cancer health effects. Non-cancer health effects range from rashes, eye irritation and breathing difficulties to organ damage, birth defects and death.

Step 4. Risk Characterization

In this step, the results of the three previous steps are combined to determine the possible health significance of the environmental exposures. We use two methods. One method calculates the chance of cancer occurring as a result of exposure. The other compares what is known about non-cancer health effects to the concentrations of the substances found in the environment during Step 1.

The likelihood of any cancer resulting from an environmental exposure is expressed as a probability; for example, a 1 in 10,000 chance. In other words, for every 10,000 people that could be exposed, as much as one extra case of cancer may occur as a result of the environmental exposure. An extra cancer case means that one more person could get cancer than would normally have been expected to from all other causes.

The second method addresses the potential for non-cancer health effects. In this method, scientists calculate a “*hazard quotient*” for each exposure pathway and substance identified during Step 1.

The hazard quotient compares the levels of substances in the environment to known safe levels of these same substances. A hazard quotient less than or equal to one (1) indicates that non-cancer effects would not be expected to occur from the environmental exposure. Unlike the result of the cancer assessment, the non-cancer assessment does not predict how much someone’s risk of health effects is increased. For example, a hazard index of 10 does not mean that non-cancer health effects are ten times more likely to occur. However, as the number increases there is some level of additional concern that they could occur.

After completing the calculations for each substance and exposure pathway, a total environmental risk is calculated and uncertainty assessed. The results of the risk assessment are used to determine if corrective action is needed. If corrective action is needed, the risk assessment also helps to determine how much is needed.

Risk Management

Risk management is planning and implementing strategies to reduce or eliminate health risk resulting from environmental exposures. Human health risk assessments help in this decision-making process. In addition to risk assessments, several other factors are considered in deciding whether or not an environmental cleanup is needed. These factors include state and federal regulations, cost, treatment techniques, technical feasibility and community acceptance.

For further information

Should you have questions or require additional information please contact the Navy Environmental Health Center, Environmental Programs Directorate at (757) 462-5548.

Moffett Community Housing Groundwater Activities Schedule of Events

Site Discovery

Orion Park

- 1999 – NASA identified trichloroethylene (TCE) and 1,2 dichloroethene in groundwater samples collected from monitoring wells located on the northeastern boundary. Based on these data, it was considered likely that groundwater contamination is present beneath Orion Park.
- 2000 – Navy sampled groundwater on the southern boundary of Orion Park. Results of this sampling suggest the presence of Volatile Organic Compounds (VOCs), consisting of acetone, benzene, 1,2 – dichloroethene, toluene, xylenes, and TCE.

Wescoat Housing

- 1998 – Groundwater sampling results of the Regional Groundwater Plume from Superfund Site Middlefield Road-Ellis Street Whisman Road (MEW) shows a portion of the TCE plume is beneath a portion of the Wescoat Housing area.

Screening Human Health Risk Assessment

- 2001 – Preliminary evaluations indicate that the chemicals in groundwater do not pose a risk to residents at Moffett Community Housing.

Site Characterization Workplan

- May 2001 – Initiate development of Site Characterization Workplan
- August/September 2001 – Agency review of Draft Site Characterization Workplan
- October/November 2001 – Respond to agency comments and issue Final Site Characterization Workplan

Site Characterization Field Activities

- December 2001 - Collection of air, soil and groundwater samples from both Orion Park and Wescoat housing areas.
- January 2002 – Installation of permanent groundwater monitoring wells based on results from December 2001 sampling results.

Baseline Human Health Risk Assessment

- February 2002 – Initiate development of Site Characterization and Baseline Human Health Risk Assessment.
- June/July 2002 – Agency review of Site Characterization and Baseline Human Health Risk Assessment.
- September 2002 - Respond to agency comments and issue Final Site Characterization and Baseline Human Health Risk Assessment.



Moffett Community Housing

Site Characterization – Once a site is identified, studies of soil, groundwater, ambient air and other environmental media are conducted to better evaluate, or “characterize,” the degree of contamination.

Site Characterization is performed to find out:

- What chemicals have been released to the environment
- How much is present and at what concentrations
- How deep and how far it has spread

Data collected will be used for assessing risks to human health and the environment.



Moffett Community Housing

Why Conduct a Baseline Risk Assessment?

- Key component of the remedial investigation.
- To estimate potential adverse effects on human health and the environment.
- To determine if cleanup is necessary.

How a Baseline Risk Assessment is Performed

- Identify contaminants of potential concern.
- Identify who could be exposed and how exposure could occur.
- Use contaminant concentration data in a mathematical model.
- Overestimate the potential risk to provide a margin of safety (this is called the “conservative approach”).

Moffett Community Housing Groundwater Update Frequently Asked Questions

When did the Navy become aware of chemicals in groundwater?

NASA met with the Air Force in 1999 to inform them that NASA had detected chemicals in groundwater wells during routine groundwater monitoring. These wells were located on NASA property near the Orion Park housing area. NASA also conducted environmental sampling within the northeastern portion of Orion Park in 1999. Test results showed that chemicals were present in the groundwater under this area of Orion Park. Based on this information, the Navy sampled the groundwater in 2000. Results of this sampling suggest the presence of acetone, benzene, 1,2-dichloroethene, toluene, xylenes, and trichloroethene in groundwater in some areas of Orion Park. Additional studies are needed at Orion Park, as discussed below. Chemicals in groundwater under the Wescoat Housing area are from nearby Superfund sites. Groundwater treatment systems are in place at those sites.

Is either my family or myself at risk?

No. Preliminary evaluations indicate that the chemicals in groundwater do not pose a risk to residents at Moffett Community Housing. Since residents in the community do not drink or use groundwater from this area, there is no risk of exposure through ingestion or contact (i.e., cooking, washing, bathing etc.) The Navy intends to characterize the full extent of chemicals in groundwater throughout Orion Park and Wescoat Housing in order to confirm the preliminary risk evaluation.

There is a possibility that volatile chemicals in groundwater might travel through soil into household air. The Navy performed a preliminary evaluation, which used the highest concentrations of chemicals in groundwater to estimate the potential for chemicals to travel into household air. Results indicated that chemicals in groundwater do not pose a risk to residents breathing household air.

What is the Navy doing about it?

The Navy plans to take the following steps as part of the environmental investigation and risk assessment process:

1. Site Characterization to determine the level and extent of chemicals in groundwater during December 2001;
2. Baseline Human Health Risk Assessment, based on groundwater investigation data collected December 2001. This Baseline Human Health Risk Assessment will be performed between February and September 2002.

Why should I care?

Environmental issues are a reality in our communities today. The good news is that our understanding and ability to deal with environmental concerns is greater than it ever has been. A more refined knowledge of the way compounds move in the ground, water and air and new cleanup technologies help ensure that long-term environmental solutions are appropriate and effective.

Environmental issues often involve straightforward concepts that need not be explained using technical jargon. When you understand the issues, you can make better decisions for you and your family. Being informed also allows you to have a voice in what happens in your community. Your opinions help regulators determine which environmental solutions will be most appropriate for you, your family and your community.

What exactly is TCE?

TCE is short for trichloroethene, which is a chemical compound. Trichloroethene and other chemicals dissolved in the groundwater below Moffett Community Housing are primarily man-made compounds which do not exist in nature. Years ago, these chemicals were created to be used as cleaners (solvents) for commercial industry.

Trichloroethene continues to be used today in a variety of ways. TCE is part of everyday household cleaning products such as spot carpet cleaners. TCE is an effective cleaner and is not dangerous when used as intended.

How did the chemicals get into the groundwater?

Dissolved compounds in groundwater along the eastern half of the Wescoat housing property are from nearby Superfund sites. Currently, we do not know where the chemicals in groundwater under Orion Park came from. Nearby Superfund sites are possible sources. However, there is no information available right now that links groundwater contamination from these Superfund sites with groundwater under Orion Park. The Navy will perform studies in the near future to evaluate potential sources of groundwater contamination under Orion Park.

Are there any other chemicals in the groundwater beside TCE?

Yes. To date, other compounds have been detected in groundwater at very low concentrations. These other compounds include acetone, benzene, 1,2-dichloroethene, toluene, and xylenes.

Who is keeping track of all this?

The primary regulatory agency responsible for overseeing the environmental work at Moffett Community Housing is the United States Environmental Protection Agency (U.S. EPA). The Regional Water Quality Control Board also participates in oversight of the environmental activities.

What's being done about the groundwater?

In cooperation with the U.S. EPA and the Army, the Navy is preparing workplans which will outline a more comprehensive investigation of the groundwater, soil and vapor at the Moffett Community Housing. Current plans call for soil sampling, vapor monitoring and groundwater sampling to be performed.

Is there anything I can do?

It's important to get involved, stay interested and ask questions. Attend the public information sessions. The more you know, the better able you will be to contribute to the process.

What is a Risk Assessment?

A Risk Assessment is a study performed to identify the possible risk to human health and the environment from hazardous or toxic substances. This simple Risk Equation explains it best:

$$\text{Risk} = \text{Hazard} + \text{Exposure}$$

A Risk Assessment is a tool designed to help the lead agency, the affected community and society at large to make wise decisions about what is the most appropriate solution to address contamination at a hazardous waste site.

What does this Risk Equation mean?

It is important for Risk Assessors to consider both the nature of the **hazard** and the potential for **exposure** when assessing risk. A particular contaminant can be *highly toxic* (hazardous), but if there are no exposure “pathways” (inhaling, ingesting, or skin contact,) the actual risk may be low to nonexistent. On the other hand, a substance may have relatively *low toxicity*, but if humans will be exposed to it persistently over a long period of time, the risk could be significant.

What does a Risk Assessment evaluate?

There is a wide array of effects that can be assessed when looking at the potential risk from hazardous substances in the environment. For example, emissions from automobile tailpipes could be assessed for everything from their potential to cause global warming, to reduced visibility, to the increased difficulty of breathing.

At sites with hazardous substances in the soil or groundwater, it is common to evaluate the *most serious* potential health consequences, such as the potential for causing cancer. It is the job of the Risk Assessor to look at other **relevant** risks depending on the nature of the hazard, the types of exposure, and who may be exposed.

What are “conservative assumptions”?

Perfect information on the hazards associated with toxic substances as well as where they exist, how much there is, and how they might move through the environment is never attainable. As a result, Risk Assessors always have to make certain assumptions about what is known and what is not known. To make up for this uncertainty and to make sure that human health is protected by a wide safety margin, Risk Assessment typically uses what are known as “conservative” assumptions. This means that Risk Assessors assume the **worst case scenario**.

Why do Risk Assessments sound scary?

Because Risk Assessors use conservative assumptions (they assume the worst) and tend to focus on the most serious potential health consequences, the results can sound scary. To fully understand their meaning as well as their implications for cleanup at a hazardous waste site, it is important to get the whole picture, ask lots of questions, and participate in looking at the potential costs and benefits of a variety of alternatives for addressing contamination.

(fold in half to mail your comments)

Place
Postage
Here

Ms. Andrea Muckerman
BRAC Environmental Coordinator
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway, Code 06CH.AM
San Diego, CA 92132-5190

(tape to close)

MOFFETT FEDERAL AIRFIELD

RESTORATION ADVISORY BOARD MEMBERSHIP APPLICATION

The Department of Defense (DOD) recognizes the importance of stakeholder participation in our Installation Restoration Programs (IRP). Therefore, Moffett Federal Airfield has established a Restoration Advisory Board (RAB). The RAB is intended to improve public participation by involving the community in the Navy's environmental restoration decision-making process. All RAB meetings are open to the public.

The RAB includes community volunteer members who reflect the diverse interests of the local community. RAB members serve as a liaison with the community and are available to meet with community members and groups. RAB members have an opportunity to provide input on installation restoration activities. RAB members spend a fairly significant amount of time each year supporting the RAB. The RAB meets regularly and reviews and comments on plans and activities relating to the ongoing environmental studies and restoration activities at Moffett Federal Airfield. Members will be expected to serve a full term.

CONDITIONS FOR MEMBERSHIP

Restoration Advisory Board (RAB) members are volunteering to serve a two-year term and attend all RAB meetings. Duties and responsibilities will include reviewing and commenting on plans and activities associated with the Navy's Installation Restoration Program at Moffett Federal Airfield. Technical experts will be made available to the RAB. Members will be expected to be available to community members and groups to facilitate the exchange of information and/or concerns between the community and the RAB.

Priority for RAB membership will be given to local residents that are impacted/affected by the Moffett Federal Airfield.

Name: _____ Daytime Telephone Number: _____
Address: _____
Street: _____ Fax Number: _____
Apt.#: _____ Evening Telephone Number: _____
City: _____
State: _____ Email Address: _____
Zip: _____

If you are interested in participating on the RAB for Moffett Federal Airfield, please complete the enclosed RAB Application and return it to:

Ms. Andrea Muckerman
Moffett Federal Airfield BRAC Environmental Coordinator
Southwest Division, Naval Facilities Engineering Command
1220 Pacific Highway, Code 06CH.AM
San Diego, California, 92132-5190
Fax: 619-532-0995
muckermanam@efdswn.navy.mil

PLEASE ANSWER THE FOLLOWING QUESTIONS

1. Are you affiliated with any group related to restoration or base closure activities? If yes, list the group and your position, if applicable.
2. Briefly state why you would like to participate on the RAB.
3. What has been your experience working as a member of a diverse group with common goals?
4. The community co-chairperson will be selected by community members of the RAB. Please indicate if you are interested in being considered for the community co-chairperson position on the RAB.

Yes, I would like to be considered.

5. Are you willing to voluntarily serve on the RAB?

Yes, I am willing to serve.

By submitting this form, you are aware of the time commitment that this appointment will require of you.

Signature

Date

Print Name

PRIVACY ACT STATEMENT: The personal information requested on this form is being collected in order to determine interest in and qualification for membership on the Restoration Advisory Board. The information will be reviewed by a selection panel and will be retained in a file at Moffett Federal Airfield. The information will not be disseminated. Providing information on this form is voluntary.



Xylene

CAS# 1330-20-7

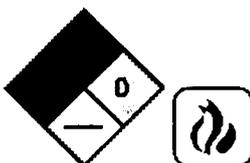
September 1996

p-Xylene

C_8H_{10}

[Stereo Image](#)

[XYZ File](#)



NFPA Label Key

[Material Safety Data Sheet](#)
(University of Utah)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about xylene. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. 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. It's important you understand this information because this substance may harm you; refer to the glossary for definitions of any technical words.

SUMMARY: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. This substance has been found in at least 658 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is xylene? (Pronounced zy'leen)

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar and is formed during forest fires. You can smell xylene in air at 0.08-3.7 parts of xylene per million parts of air (ppm) and begin to taste it in water at 0.53-1.8 ppm.

Chemical industries produce xylene from petroleum. It's one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

What happens to xylene when it enters the environment?

- Xylene has been found in waste sites and landfills when discarded as used solvent, or in varnish, paint, or paint thinners.
- It evaporates quickly from the soil and surface water into the air.
- In the air, it is broken down by sunlight into other less harmful chemicals.
- It is broken down by microorganisms in soil and water.
- Only a small amount of it builds up in fish, shellfish, plants, and animals living in xylene-contaminated water.

How might I be exposed to xylene?

- Breathing xylene in workplace air or in automobile exhaust.
- Breathing contaminated air.
- Touching gasoline, paint, paint removers, varnish, shellac, and rust preventatives that contain it.
- Breathing cigarette smoke that has small amounts of xylene in it.
- Drinking contaminated water or breathing air near waste sites and landfills that contain xylene.
- The amount of xylene in food is likely to be low.

How can xylene affect my health?

Xylene affects the brain. High levels from exposure for **short periods** (14 days or less) or **long periods** (more than 1 year) can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of people to **high levels** of xylene for **short periods** can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at **very high levels**.

Studies of unborn animals indicate that **high concentrations** of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to **low levels** of xylene during pregnancy.

How likely is xylene to cause cancer?

The **International Agency for Research on Cancer (IARC)** has determined that xylene is not classifiable as to its carcinogenicity in humans.

Human and animal studies have not shown xylene to be carcinogenic, but these studies are not conclusive and do not provide enough information to conclude that xylene does not cause cancer.

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

Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a

high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office.

Has the federal government made recommendations to protect human health?

The **EPA** has set a limit of 10 ppm of xylene in drinking water.

The **EPA** requires that spills or accidental releases of xylenes into the environment of 1,000 pounds or more must be reported.

The **Occupational Safety and Health Administration (OSHA)** has set a maximum level of 100 ppm xylene in workplace air for an 8-hour workday, 40-hour workweek.

The **National Institute for Occupational Safety and Health (NIOSH)** and the **American Conference of Governmental Industrial Hygienists (ACGIH)** also recommend exposure limits of 100 ppm in workplace air.

NIOSH has recommended that 900 ppm of xylene be considered immediately dangerous to life or health. This is the exposure level of a chemical that is likely to cause permanent health problems or death.

Glossary

Evaporate:

To change from a liquid into a vapor or a gas.

Carcinogenic:

Having the ability to cause cancer.

CAS:

Chemical Abstract Service.

PPM:

Parts per million.

Solvent:

A liquid that can dissolve other substances.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for xylenes (Update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

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.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-800-447-1544
Fax: 404-639-6359



U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry

[Link to ToxFAQs Home Page](#)

[Link to ATSDR Science Corner](#)

[Link to ATSDR Home Page](#)

ATSDR Information Center / ATSDRIC@cdc.gov / 1-800-447-1544



1,1,1-Trichloroethane

CAS# 71-55-6

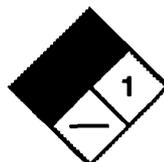
September 1996

1,1,1-Trichloroethane

$C_2H_3Cl_3$

[Stereo Image](#)

[XYZ File](#)



[NFPA Label Key](#)

[Material Safety Data Sheet](#)
(University of Utah)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about 1,1,1-trichloroethane. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important 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.

SUMMARY: Exposure to 1,1,1-trichloroethane usually occurs by breathing contaminated air. It is found in building materials, cleaning products, paints, and metal degreasing agents. It can cause unconsciousness and other effects if inhaled in **large amounts**, but usually the effects will disappear after exposure ends. This substance has been found in at least 696 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is 1,1,1-trichloroethane? (Pronounced tri klor'o eth ane)

1,1,1-Trichloroethane is a colorless liquid with a sharp, sweet odor. Even though it is usually found as a liquid, it evaporates quickly and becomes a vapor. It is also known as methyl chloroform, methyltrichloromethane, and trichloromethylmethane; its registered trade names are Chloroethene NU and Aerothene TT. Use of trade names is for identification only and does not imply endorsement by the Agency for Toxic Substances and Disease Registry, the Public Health Service, or the U.S. Department of Health and Human Services.

1,1,1-Trichloroethane does not occur naturally in the environment. It is found in many common products such as glue, paint, industrial degreasers, and aerosol sprays. By 1996, 1,1,1-trichloroethane will no longer be made in the United States due to its effects on the ozone layer.

What happens to 1,1,1-trichloroethane when it enters the environment?

- Most of the 1,1,1-trichloroethane released into the environment is evaporated into the air, where it may last for about 6 years.
- It may travel to the ozone layer, where sunlight can break it down into chemicals that destroy the ozone layer.
- Contaminated water from hazardous waste sites may also contaminate surrounding soil and nearby surface or groundwater.
- From lakes and rivers, most of the 1,1,1-trichloroethane evaporates quickly into the air.
- Water can carry 1,1,1-trichloroethane through the soil and into the groundwater where it can evaporate and pass through the soil as a gas, then be released to the air.
- Organisms living in soil or water may also break down 1,1,1-trichloroethane.
- It will not build up in plants or animals.

How might I be exposed to 1,1,1-trichloroethane?

- Breathing contaminated air; it is used in many building materials, so you are likely to be exposed to higher levels indoors than outdoors or near hazardous waste sites.
- Breathing contaminated air in the workplace while using cleaning products, aerosol sprays, paint, and metal degreasing agents.
- Ingesting contaminated drinking water and food.
- Allowing liquids containing it to touch your skin.

How can 1,1,1-trichloroethane affect my health?

If you breathe air containing high levels of 1,1,1-trichloroethane for a **short time** you may become dizzy, light-headed, and may lose your balance. These symptoms will disappear if you stop breathing contaminated air. Breathing **much higher levels** may cause unconsciousness, low blood pressure, and loss of heartbeat. The effects of breathing 1,1,1-trichloroethane for a long time are not known. In animals such as rats and dogs, exposure to high levels damages the breathing passages, affects the nervous system, and causes mild effects on the liver.

After pregnant rats or rabbits were exposed to 1,1,1-trichloroethane, effects on the offspring, such as delayed development and changes in the setting of the bone structure, were usually only seen at levels that were toxic to the mother. It isn't known whether this chemical affects human reproduction or development.

There are no studies in people to tell whether harmful health effects occur from eating food or drinking water contaminated with 1,1,1-trichloroethane. Placing **large amounts** of it in an animal's stomach has caused effects on the nervous system, mild liver damage, unconsciousness, and even death.

If your skin comes into contact with 1,1,1-trichloroethane, you might feel some irritation. Studies in animals have shown that skin contact may affect the liver and **very large amounts** may cause death.

How likely is 1,1,1-trichloroethane to cause cancer?

No information is available to show that 1,1,1-trichloroethane causes cancer. The **International Agency for Research on Cancer (IARC)** has determined that 1,1,1-trichloroethane is not classifiable as to its human carcinogenicity.

Is there a medical test to show whether I've been exposed to 1,1,1-trichloroethane?

Breath, blood, and urine samples can be tested to determine if you have recently been exposed to 1,1,1-trichloroethane. These tests can sometimes estimate how much 1,1,1-trichloroethane has entered your body. Blood and breath tests need to be taken within a few hours of exposure, and urine tests need to be taken within 1-2 days. These tests, however, can't tell whether your health will be affected as a result of your exposure. The exposure tests aren't routinely available in hospitals and clinics because special equipment is required to perform them.

Has the federal government made recommendations to protect human health?

The **EPA** has set a limit of 0.2 parts of 1,1,1-trichloroethane per million parts of drinking water (0.2 ppm). **EPA** has recommended that the level of 1,1,1-trichloroethane in lakes and streams shouldn't exceed 18 ppm to prevent possible health effects from drinking water or eating contaminated fish.

The **Occupational Safety and Health Administration (OSHA)** has set a workplace exposure limit of 350 ppm for an 8-hour workday, 40-hour workweek.

Glossary**Carcinogenicity:**

Ability of a substance to cause cancer.

CAS:

Chemical Abstract Service.

Long time:

Lasting one year or longer.

PPM:

Parts per million.

Short time:

Lasting 14 days or less.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for 1,1,1-trichloroethane. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

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.

For more information, contact

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-800-447-1544
Fax: 404-639-6359



U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry

[Link to ToxFAQs Home Page](#)

[Link to ATSDR Science Corner](#)

[Link to ATSDR Home Page](#)

ATSDR Information Center / ATSDRIC@cdc.gov / 1-800-447-1544



Trichloroethylene (TCE)

CAS# 79-01-6

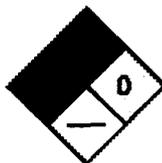
September 1997

Trichloroethylene

C_2HCl_3

[Stereo Image](#)

[XYZ File](#)



[NFPA Label Key](#)

[Vermont SIRI MSDS Archive](#)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-800-447-1544. 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: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it is present in most underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene easily dissolves in water, and it remains there for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil, where it may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment

How can trichloroethylene affect my health?

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

Breathing large amounts of trichloroethylene may cause impaired heart function, coma, and death. Breathing it for long periods may cause nerve, lung, kidney, and liver damage. Breathing small amounts for short periods of time may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Drinking large amounts of trichloroethylene may cause nausea, liver and kidney damage, convulsions, impaired heart function, coma, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, nervous system effects, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. However, these results are inconclusive because the cancer could have been caused by other chemicals.

The **International Agency for Research on Cancer (IARC)** has determined that trichloroethylene is not classifiable as to human carcinogenicity.

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

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The **EPA** has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L).

The **EPA** has also developed regulations for the handling and disposal of trichloroethylene.

The **Occupational Safety and Health Administration (OSHA)** has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity:

The ability of a substance to cause cancer

CAS:

Chemical Abstracts Service

Evaporate:

To change into a vapor or gas

Milligram (mg):

One thousandth of a gram

Nonflammable:

Will not burn

PPM:

Parts per million

Sediment:

Mud and debris that have settled to the bottom of a body of water

Solvent:

A chemical that dissolves other substances

Reference

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for trichloroethylene (update). Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

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.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-800-447-1544
Fax: 404-639-6359



U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry

[Link to ToxFAQs Home Page](#)

[Link to ATSDR Science Corner](#)

[Link to ATSDR Home Page](#)

ATSDR Information Center / ATSDRIC@cdc.gov / 1-800-447-1544



TRICHLOROETHYLENE

What is Trichloroethylene?

Trichloroethylene is a man made chemical. At room temperature, it is a colorless liquid with an odor like ether or chloroform. Trichloroethylene evaporates very quickly. Originally developed as an anesthetic for surgery, trichloroethylene is now used as an industrial cleaner (solvent) to remove grease from metal parts. It is used as a solvent in other ways, too. Trichloroethylene is also often used in making other chemicals. Trichloroethylene is commonly called TCE.



TCE is used in many consumer products. Examples include typewriter correction fluid, paint removers, paint strippers, adhesive glues, spot removers, cleaning fluids for rugs, and metal cleaners.



What happens to trichloroethylene in the environment?

Industrial processes are the main sources of TCE in the environment. It is commonly found in air and water. Once it is released into the air, TCE will break down within a few weeks. TCE breaks down more slowly in surface water and soil than in air, and it can pass through the soil into underground water.

How are people exposed to trichloroethylene?

Most exposures to TCE occur in the workplace. The general public is exposed to no or very low levels of TCE.



Exposure of the general population to TCE is mainly through breathing industrial emissions, drinking water that contains TCE, or using consumer products containing low levels.

TCE does not accumulate or build up in the cells of plants or animals, so it is not typically found in our food chain. For most people, the level of exposure to TCE through food, beverages, or drinking water is very low. Higher exposure can result from drinking well water containing TCE, usually as a result of landfills and waste sites containing TCE.

If you use city or municipal drinking water, then exposure to TCE in your water should be low. The United States Environmental Protection Agency (EPA) as well as State and local governments regulate and monitor these public water supplies to ensure they are safe to drink. EPA has established a drinking water standard of 5 parts per billion (ppb) of TCE.

Can trichloroethylene affect my health?

The health effects from TCE differ depending on the amount of TCE to which a person is exposed and how long the exposure lasts. Levels of TCE in the normal environment are generally well below levels of those in the workplace. Health effects similar to those described below are unlikely to be observed in the general public.

Dizziness, headache, slowed reaction time, sleepiness, and facial numbness have occurred in workers breathing TCE or in people who use TCE-containing products in small, poorly ventilated areas. Concentrations causing these effects are higher than the allowable occupational exposure level (50 parts per million). Irritation of the eyes, nose, and throat also occur under these conditions. These effects on the central nervous system have also been seen in people who accidentally drank several ounces of undiluted TCE. More severe effects on the central nervous system, such as unconsciousness and possibly death, can occur from drinking or breathing higher levels of TCE. In general, the effects that result from one or several exposures to TCE disappear when exposure ends. Levels of TCE in the normal environment are generally well below levels of those in the workplace.

Studies in animals show that ingesting or breathing levels of TCE that are higher than typical environmental levels can produce nervous system changes; liver and kidney damage; effects on the blood; tumors of the liver, kidney, lung, and male sex organs; and possibly cancer of the tissues that form the white blood cells (leukemia). Results of a few studies in some pregnant animals exposed to TCE in air or food showed effects in unborn animals or in newborns. None of these effects have been definitely shown to occur in humans.



The EPA is currently reevaluating the carcinogenic classification for TCE. The International Agency for Research on Cancer has determined that TCE is a probable human carcinogen based on limited human data and sufficient data in experimental animals. The American Conference of Governmental Industrial Hygienists have determined that TCE is not suspected as a human carcinogen.

For more information: If you have questions regarding the information in this fact sheet, please contact the Navy Environmental Health Center, Environmental Programs Directorate at (757) 462-5548.



ToxFAQs

Toluene

CAS# 108-88-3

September 1995

TolueneC₇H₈[Stereo Image](#)[XYZ File](#)

NFPA Label Key

[Material Safety Data Sheet](#)
(University of Utah)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about toluene. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important 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.

SUMMARY: Exposure to toluene happens mostly through breathing it in workplace air, in automobile exhaust, or during deliberate glue sniffing or solvent abuse. It is also used in many consumer products. Breathing high levels of toluene affects the brain and can cause headaches, confusion, dizziness, sleepiness, and memory loss. This chemical has been found in at least 869 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is toluene?

(Pronounced tol'yoo-eeen')

Toluene is a colorless liquid with a distinctive sweet and pungent smell. It occurs naturally in crude oil and in the tolu tree. You can smell toluene at 8 parts of toluene per million parts of air (ppm) and taste it in water at 0.04 ppm to 1 ppm.

Toluene is produced during the process of making gasoline and other fuels from crude oil, in making coke from coal, and as a by-product in the manufacture of styrene.

It is also used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes.

What happens to toluene when it enters the environment?

- Toluene has been found in waste sites and landfills when discarded as used solvent or in paints, paint thinners, and nail polish.
- It does not stay in the environment long.
- It is readily broken down by microorganisms in the soil.
- It evaporates quickly from the soil and surface water into the air.
- Toluene in the air combines with oxygen to form benzaldehyde and cresol, which can be harmful to people.
- Toluene can be taken up by fish, shellfish, plants, and animals living in water, but high levels do not build up.

How might I be exposed to toluene?

- People may be exposed through breathing toluene in workplace air or in automobile exhaust.
- Sniffing glue or using solvents improperly could lead to high exposures.
- Breathing contaminated air or touching it when working with gasoline, kerosene, heating oil, paints, and lacquers puts people at the greatest risk of exposure to toluene in air and on the skin.
- High exposures can occur at home and outdoors while using gasoline, nail polish, rubber cement, paints, paintbrush cleaners, stain removers, fabric dyes, inks, and adhesives.
- Drinking contaminated water or breathing air near waste sites and landfills could lead to higher exposures.
- The amount of toluene in food is likely to be low.
- People are also exposed to toluene by breathing cigarette smoke that has small amounts of toluene in it.

How can toluene affect my health?

Toluene affects the brain. Low-to-moderate levels from long-term exposure can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea and loss of appetite, and hearing loss.

Inhaling a high level of toluene in a short time can make you feel light-headed, dizzy, or sleepy. It can cause unconsciousness, and even death.

Repeated exposure to high levels can cause permanent brain and speech damage, vision and hearing problems, loss of muscle control, and poor balance. It can also cause memory loss and decreased mental ability.

Toluene also affects the kidneys.

Several studies have shown that unborn animals were harmed when high levels of toluene were breathed by their mothers. Babies can have neurologic problems and retarded growth and development if their mothers breathe a high level of toluene during pregnancy. We do not know if toluene harms the unborn child if the mother is exposed to low levels of toluene during pregnancy.

How likely is toluene to cause cancer?

The Department of Health and Human Services and the International Agency for Research on Cancer have not classified toluene for carcinogenic effects. Studies in workers and animals indicate that toluene does not cause cancer.

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

Laboratory tests can detect toluene or its breakdown products in exhaled air, blood, or urine. These tests are only useful within 12 hours of exposure and do not tell if harmful effects will occur. These tests are not routinely available at your doctor's office.

Has the federal government made recommendations to protect human health?

The Environmental Protection Agency (EPA) has set a limit in drinking water of 1 ppm toluene. EPA recommends that children should not drink water containing more than 20 ppm toluene for 1 day, or 2 ppm for longer lengths of time (7 years). Adults should not drink water containing more than 7 ppm toluene for longer times.

The EPA requires that spills or accidental releases of toluene into the environment of 1,000 pounds or more must be reported to EPA.

The Occupational Safety and Health Administration (OSHA) set a maximum level of 200 ppm toluene in workplace air for an 8-hour workday, 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends an exposure limit of 100 ppm of toluene in workplace air and the American Conference of Governmental Industrial Hygienists (ACGIH) recommends an exposure limit of 50 ppm in workplace air.

Glossary**Carcinogenic:**

Ability to cause cancer.

Long-term:

Lasting one year or longer.

PPM:

Parts per million.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1994. Toxicological profile for toluene (update). Atlanta, GA.: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

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.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-800-447-1544
FAX: 404-639-6315



**U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry**

[Link to ToxFAQs Home Page](#)

[Link to ATSDR Science Corner](#)

[Link to ATSDR Home Page](#)

ATSDR Information Center / ATSDRIC@cdc.gov / 1-800-447-1544



1,2-Dichloroethene

CAS# 540-59-0, 156-59-2, 156-60-5

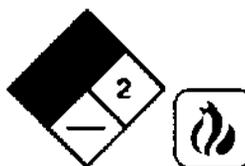
September 1997

trans-1,2-Dichloroethene

$C_2H_2Cl_2$

[Stereo Image](#)

[XYZ File](#)



NFPA Label Key

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions (FAQs) about 1,2-dichloroethene. For more information, call the ATSDR Information Center at 1-800-447-1544. 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: Exposure to 1,2-dichloroethene occurs mainly in workplaces where it is made or used. Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired. cis-1,2-Dichloroethene has been found in at least 146 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA). trans-1,2-Dichloroethene was found in at least 563 NPL sites. 1,2-Dichloroethene was found at 336 sites, but the isomer (cis- or trans-) was not specified.

What is 1,2-dichloroethene?

1,2-Dichloroethene, also called 1,2-dichloroethylene, is a highly flammable, colorless liquid with a sharp, harsh odor. It is used to produce solvents and in chemical mixtures. You can smell very small amounts of 1,2-dichloroethene in air (about 17 parts of 1,2-dichloroethene per million parts of air [17 ppm]).

There are two forms of 1,2-dichloroethene; one is called cis-1,2-dichloroethene and the other is called trans-1,2-di-chloroethene. Sometimes both forms are present as a mixture.

What happens to 1,2-dichloroethene when it enters the environment?

- 1,2-Dichloroethene evaporates rapidly into air.
- In the air, it takes about 5–12 days for half of it to break down.
- Most 1,2-dichloroethene in the soil surface or bodies of water will evaporate into air.
- 1,2-Dichloroethene can travel through soil or dissolve in water in the soil. It is possible that it can contaminate groundwater.
- In groundwater, it takes about 13–48 weeks to break down.
- There is a slight chance that 1,2-dichloroethene will break down into vinyl chloride, a different chemical which is believed to be more toxic than 1,2-dichloroethene.

How might I be exposed to 1,2-dichloroethene?

- Breathing 1,2-dichloroethene that has leaked from hazardous waste sites and landfills
- Drinking contaminated tap water or breathing vapors from contaminated water while cooking, bathing, or washing dishes
- Breathing 1,2-dichloroethene, touching it, or touching contaminated materials in the workplace

How can 1,2-dichloroethene affect my health?

Breathing high levels of 1,2-dichloroethene can make you feel nauseous, drowsy, and tired; breathing very high levels can kill you.

When animals breathed high levels of trans-1,2-dichloroethene for short or longer periods of time, their livers and lungs were damaged and the effects were more severe with longer exposure times. Animals that breathed very high levels of trans-1,2-dichloroethene had damaged hearts.

Animals that ingested extremely high doses of cis- or trans-1,2-dichloroethene died.

Lower doses of cis-1,2-dichloroethene caused effects on the blood, such as decreased numbers of red blood cells, and also effects on the liver.

The long-term (365 days or longer) human health effects after exposure to low concentrations of 1,2-dichloroethene aren't known. One animal study suggested that an exposed fetus may not grow as quickly as one that hasn't been exposed.

Exposure to 1,2-dichloroethene hasn't been shown to affect fertility in people or animals.

How likely is 1,2-dichloroethene to cause cancer?

The EPA has determined that cis-1,2-dichloroethene is not classifiable as to its human carcinogenicity. No EPA cancer classification is available for trans-1,2-dichloroethene.

Is there a medical test to show whether I've been exposed to 1,2-dichloroethene?

Tests are available to measure concentrations of the breakdown products of 1,2-dichloroethene in blood, urine, and tissues. However, these tests aren't used routinely to determine whether a person has been exposed to this compound. This is because after you are exposed to 1,2-dichloroethene, the

breakdown products in your body that are detected with these tests may be the same as those that come from exposure to other chemicals. These tests aren't available in most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The **EPA** has set the maximum allowable level of cis-1,2-dichloroethene in drinking water at 0.07 milligrams per liter of water (0.07 mg/L) and trans-1,2-dichloroethene at 0.1 mg/L.

The **EPA** requires that any spills or accidental release of 1,000 pounds or more of 1,2-dichloroethene must be reported to the **EPA**.

The **Occupational Health Safety and Health Administration (OSHA)** has set the maximum allowable amount of 1,2-dichloroethene in workroom air during an 8-hour workday in a 40-hour workweek at 200 parts of 1,2-dichloroethene per million parts of air (200 ppm).

Glossary

Carcinogenicity:

Ability of a substance to cause cancer

CAS:

Chemical Abstracts Service

Fertility:

Ability to reproduce

Ingest:

To eat or drink something

Milligram (mg):

One thousandth of a gram

PPM:

Parts per million

Solvent:

A chemical that can dissolve other substances

Source of Information

This ToxFAQs information is taken from the 1996 Toxicological Profile for 1,2-Dichloroethene 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?

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.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-800-447-1544
Fax: 404-639-6359



**U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry**

[Link to ToxFAQs Home Page](#)

[Link to ATSDR Science Corner](#)

[Link to ATSDR Home Page](#)

ATSDR Information Center / ATSDRIC@cdc.gov / 1-800-447-1544

What is Benzene?

Benzene is a naturally occurring compound.

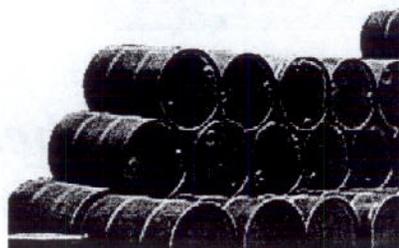


Properties

- ◆ Colorless liquid
- ◆ Sweet odor
- ◆ Evaporates quickly
- ◆ Dissolves only slightly in water

*Benzene is made by separating it from the other natural components found in coal and oil.
It is widely used in the United States.*

Benzene is one of the top 20 chemicals produced annually in the United States.



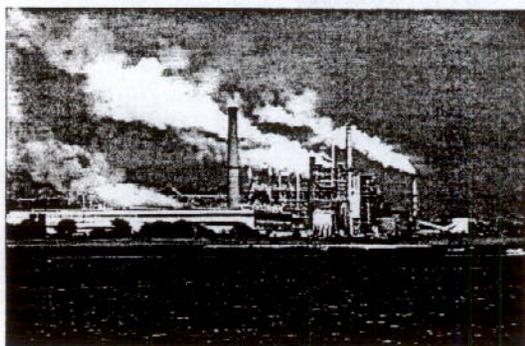
Benzene is used to make other chemicals and household products.

- ◆ Gasoline
- ◆ Glues, adhesives, paint strippers, and some art supplies
- ◆ Household cleaning products
- ◆ Plastics, man-made rubber, and pesticides



Benzene in The Environment

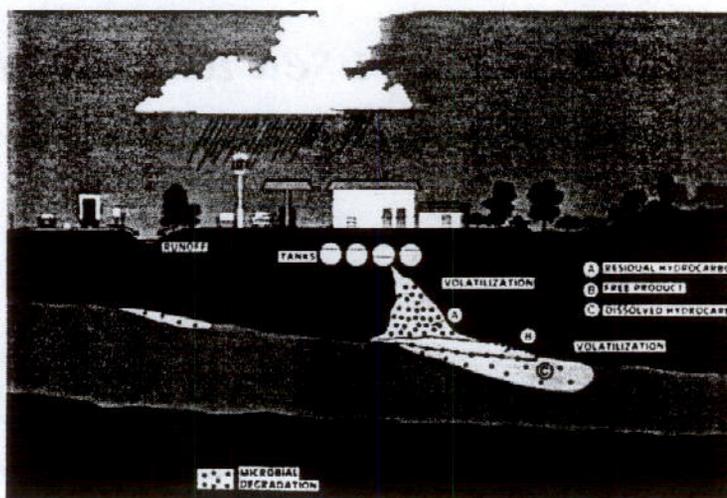
Benzene is produced naturally by volcanoes and forest fires. It is also present in many plants and animals and in fossil fuels such as coal and oil.



Industrial processes are the main sources of benzene in the environment

What happens to benzene when it enters the environment?

- ◆ Benzene evaporates very quickly into the air. It can pass into the air from water and soil.
- ◆ It reacts with other chemicals in the air and usually breaks down within a few days.
- ◆ Benzene in the air can attach to rain or snow and be carried back down to the ground.
- ◆ It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- ◆ Benzene does not build up in plants or animals.



Health Effects of Benzene

How are People Exposed to Benzene?

- ◆ Working in industries that manufacture or use benzene is the greatest source of exposure.
- ◆ Outdoor air contains low levels of benzene from motor vehicle exhaust, evaporation from gasoline stations, and tobacco smoke.
- ◆ Indoor air contains higher levels of benzene from products such as glues, furniture waxes, detergents and paints.
- ◆ Consuming water that contains benzene which usually results from a spill or leak during the handling and storage of gasoline.



Short-term Health Effects

- ◆ Skin, eye, and Respiratory tract irritation
- ◆ Headache, drowsiness and dizziness
- ◆ Very high exposures can result in unconsciousness and even death.

Long-term Health Effects

- ◆ Benzene is known to cause cancer in people.
- ◆ Long-term exposure to high levels of benzene in air can cause leukemia which is a cancer of the blood-forming organs.
- ◆ Benzene exposure can result in anemia.
- ◆ It may affect the immune system.





BENZENE

What is benzene?

Benzene, also known as benzol, is a colorless liquid with a sweet odor. It evaporates very quickly into the air, dissolves slightly in water, and is highly flammable. Benzene is given off naturally from volcanoes and forest fires. It is also a natural part of crude oil, gasoline, and cigarette smoke.



Benzene is widely used in many man-made products. Examples include plastics, nylon, lubricants, dyes, detergents, drugs, pesticides, and some types of rubber. It is one of the top 20 chemicals ranked for highest volume produced in the United States each year.



What happens to benzene in the environment?

Industrial processes are the main sources of benzene in the environment. It is commonly found in air, water, and soil. Once it is released into the air, benzene will either react with other chemicals present in the air and break down within a few days or it can attach to rain or snow and be carried back down to the ground. Benzene breaks down more slowly in water and soil than in air, and it can pass through the soil into underground water.

How are people exposed to benzene?

Most people are exposed to a small amount of benzene on a daily basis.



Exposure of the general population to benzene is mainly through breathing air that contains tobacco smoke, emissions from gas stations, exhaust from motor vehicles, and industrial emissions.

Benzene does not accumulate or build up in the cells of plants or animals, so it is not typically found in our food chain. For most people, the level of exposure to benzene through food, beverages, or drinking water is very low. Higher exposure can result from drinking well water containing benzene, usually as a result of leaking underground gasoline storage tanks or from landfills and waste sites containing benzene.

If you use city or municipal drinking water, then exposure to benzene in your water should be low. The United States Environmental Protection Agency as well as State and local governments regulate and monitor these public water supplies to ensure they are safe to drink.

Can benzene affect my health?

The health effects from benzene differ depending on the amount of benzene to which a person is exposed and how long the exposure lasts, i.e. short or long term exposure.

Short Term Exposure - Breathing very high levels of benzene or eating or drinking food containing very high levels of benzene can result in death. Health effects from exposure to high levels of benzene range from headaches and dizziness or vomiting to rapid heart rate and convulsions.

Long Term Exposure – Most data involving effects of long-term exposure to benzene are from studies of workers employed in industries that make or use benzene. These workers were exposed for 365 days or more to levels of benzene in air far greater than the levels normally encountered by the general population.



The major effect of benzene from long-term exposure is on the blood. Benzene affects the bone marrow. This can cause a decrease in red blood cells leading to anemia. The **Department of Health and Human Services (DHHS)** has determined that benzene is a known human carcinogen. Long-term exposure to high levels of benzene in the air can cause leukemia, a cancer of the blood-forming organs.

It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men. Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed high levels of benzene for long periods of time.

For more information: If you have questions regarding the information in this fact sheet, please contact the Navy Environmental Health Center, Environmental Programs Directorate at (757) 462-5548.

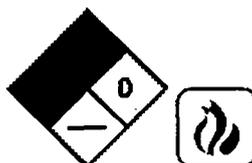


Acetone

CAS# 67-64-1

September 1995

Acetone
C₃H₆O
[Stereo Image](#)
[MDL Molfile](#)



NFPA Label Key

[Vermont SIRI MSDS Archive](#)

Agency for Toxic Substances and Disease Registry

This fact sheet answers the most frequently asked health questions about acetone. For more information, you may call the ATSDR Information Center at 1-800-447-1544. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important 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.

SUMMARY: Exposure to acetone results mostly from breathing air, drinking water, or coming in contact with products or soil that contain acetone. Exposure to moderate-to-high amounts of acetone can irritate your eyes and respiratory system, and make you dizzy. Very high exposure may cause you to lose consciousness. This chemical has been found in at least 572 of 1,416 National Priorities List sites identified by the Environmental Protection Agency.

What is acetone? (Pronounced as'ah-tone)

Acetone is a manufactured chemical that is also found naturally in the environment. It is a colorless liquid with a distinct smell and taste. It evaporates easily, is flammable, and dissolves in water. It is also called dimethyl ketone, 2-propanone, and beta-ketopropane.

Acetone is used to make plastic, fibers, drugs, and other chemicals. It is also used to dissolve other substances.

It occurs naturally in plants, trees, volcanic gases, forest fires, and as a product of the breakdown of body fat. It is present in vehicle exhaust, tobacco smoke, and landfill sites. Industrial processes contribute more acetone to the environment than natural processes.

What happens to acetone when it enters the environment?

- A large percentage (97%) of the acetone released during its manufacture or use goes into the air.
- In air, about one-half of the total amount breaks down from sunlight or other chemicals every 22 days.
- It moves from the atmosphere into the water and soil by rain and snow. It also moves quickly from soil and water back to air.
- Acetone doesn't bind to soil or build up in animals.
- It's broken down by microorganisms in soil and water.
- It can move into groundwater from spills or landfills.
- Acetone is broken down in water and soil, but the time required for this to happen varies.

How might I be exposed to acetone?

- Breathing low background levels in the environment
- Breathing higher levels of contaminated air in the workplace or from using products that contain acetone (for example, household chemicals, nail polish, and paint)
- Drinking water or eating food containing acetone
- Touching products containing acetone
- For children, eating soil at landfills or hazardous waste sites that contain acetone
- Smoking or breathing secondhand smoke.

How can acetone affect my health?

If you are exposed to acetone, it goes into your blood which then carries it to all the organs in your body. If it is a small amount, the liver breaks it down to chemicals that are not harmful and uses these chemicals to make energy for normal body functions. Breathing moderate-to-high levels of acetone for short periods of time, however, can cause nose, throat, lung, and eye irritation; headaches; light-headedness; confusion; increased pulse rate; effects on blood; nausea; vomiting; unconsciousness and possibly coma; and shortening of the menstrual cycle in women.

Swallowing very high levels of acetone can result in unconsciousness and damage to the skin in your mouth. Skin contact can result in irritation and damage to your skin.

The smell and respiratory irritation or burning eyes that occur from moderate levels are excellent warning signs that can help you avoid breathing damaging levels of acetone.

Health effects from long-term exposures are known mostly from animal studies. Kidney, liver, and nerve damage, increased birth defects, and lowered ability to reproduce (males only) occurred in animals exposed long-term. It is not known if people would have these same effects.

How likely is acetone to cause cancer?

The Department of Health and Human Services, the International Agency for Research on Cancer, and

the Environmental Protection Agency (EPA) have not classified acetone for carcinogenicity.

Acetone does not cause skin cancer in animals when applied to the skin. We don't know if breathing or swallowing acetone for long periods will cause cancer. Studies of workers exposed to it found no significant risk of death from cancer.

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

Methods are available to measure the amount of acetone in your breath, blood, and urine. The test can tell you how much acetone you were exposed to, although the amount that people have naturally in their bodies varies with each person. The tests can't tell you if you will experience any health effects from the exposure.

The test must be performed within 2-3 days after exposure because acetone leaves your body within a few days. These tests are not routinely performed at your doctor's office, but your doctor can take blood or urine samples and send them to a testing laboratory.

Has the federal government made recommendations to protect human health?

The EPA requires that spills of 5,000 pounds or more of acetone be reported.

The Occupational Safety and Health Administration (OSHA) has set a maximum concentration limit in workplace air of 1,000 parts of acetone per million parts of air (1,000 ppm) for an 8-hour workday over a 40-hour week to protect workers.

The National Institute for Occupational Safety and Health (NIOSH) recommends an exposure limit of 250 ppm in workplace air for up to a 10-hour workday over a 40-hour workweek.

Glossary

Carcinogenicity:

Ability to cause cancer

Evaporate:

To change into a vapor or a gas

Ingesting:

Taking food or drink into your body

Long-term:

Lasting one year or longer

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1994. Toxicological profile for acetone. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

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.

For more information, contact:

Agency for Toxic Substances and Disease Registry
Division of Toxicology
1600 Clifton Road NE, Mailstop E-29
Atlanta, GA 30333
Phone: 1-800-447-1544
FAX: 404-639-6359



**U.S. Department of Health and Human Services
Public Health Service
Agency for Toxic Substances and Disease Registry**

[Link to ToxFAQs Home Page](#)

[Link to ATSDR Science Corner](#)

[Link to ATSDR Home Page](#)

ATSDR Information Center / ATSDRIC@cdc.gov / 1-800-447-1544

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N44255-95-D-6030 (RAC II)

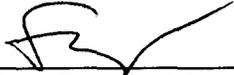
Document Control No. 01-0207

File Code: 10.0

TO: Contracting Officer
 Naval Facilities Engineering Command
 Southwest Division
 Mr. Richard Lovering, 02R1.RL
 1220 Pacific Highway
 San Diego, CA 92132-5190

DATE: 05/17/01
 DO: 0090
 LOCATION: Moffett Fed. Airfield

FROM:



 Neil Hart, Program Manager

DESCRIPTION: Letter Re: Community Relations Support for Moffett Federal Airfield,
Transmittal: Moffett Community Housing Resident Open House Mailer and Meeting Materials,
05/14/01

TYPE: Contract/Deliverable DO Deliverable Notification
 Other

VERSION: N/A REVISION #: N/A
 (e.g. Draft, Draft Final, Final, etc.)

ADMIN RECORD: Yes No Category Confidential
 (PM to Identify)

SCHEDULED DELIVERY DATE: N/A ACTUAL DELIVERY DATE: 05/17/01

NUMBER OF COPIES SUBMITTED: 0/7C/7E

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

NAVY:

FWENC:

OTHER: (Distributed by FWENC)

A. Muckerman (06CHAM)
O/IE
W. Doctor (5NENWD)
1C/IE
A. Patterson (06CHAP)
1C/IE
M. Parker (06CTMP) 1C/IE
A. Tamayo (06CTAT) 1C/IE
D. Silva (05GDS) 2C/2E

P. Everds
L. Rivero

NAVY:
Basic Contract File
(02R1) 1C

Date/Time Received

May 14, 2001



Luis Rivero
Foster Wheeler Environmental Corporation
1230 Columbia Street, Suite 640
San Diego, CA 92101

RE: Community Relations Support for Moffett Federal Airfield
Transmittal: Moffett Community Housing Resident Open House Mailer and Meeting Materials

Dear Mr. Rivero:

I am pleased to inform you that the Moffett Community Housing (MCH) resident open house announcement flier (attached) was hand delivered on 26 April 2001, to all occupied units as per a list provided by U.S. Army Major Jeff Cooper, of the Moffett Housing Project Office. They were mailed to all individuals on Lead Remedial Project Manager Andrea Muckerman's "fact sheet list" on 25 April.

Also, this letter serves as formal transmittal of the materials produced by Katz and Associates and made available at the 03 May 2001, MCH resident open house. The meeting was held NASA Ames Research Center Visitor Center from 7 to 9 p.m., in the Special Events Room. These materials include:

1. Agenda
2. Points of Contact List/Environmental Web Sites Information
3. MCH Groundwater Update Fact Sheet
4. Handouts/Posters:
 - VOC – What are They?
 - Preliminary Risk Evaluation
 - Baseline Risk Assessment
 - NEHC Human Health Risk Assessment Fact Sheet
 - Schedule of Events
 - Site Characterization
6. MCH Groundwater Frequently Asked Questions
6. Comment Form
7. Meeting Evaluation Form
8. Restoration Advisory Board Application
9. Mailing List Form
10. ATSDR ToxFAQs handouts:
 - Xylene

continued

- 1,1,1 – Trichloroethane
- Trichloroethylene (and NEHC Trichloroethylene Fact Sheet)
- Toluene
- 1,2 – Dichloroethene
- Benzene (and NEHC Benzene Fact Sheet)
- Acetone

If you have any questions about this transmittal, its contents or the resident open house, please do not hesitate to call me at 858-452-0031 x390.

Very truly yours,



Karen Linehan
Community Relations
Moffett Federal Airfield

Attachment: 1 copy

Cc: DC File, FWENC
P. Everds, FWENC
A. Muckerman, SWDIV
W. Doctor, SWDIV
A. Patterson, SWDIV
M. Parker, SWDIV
A. Tamayo, SWDIV
D. Silva, SWDIV Administrative Record File



MAILING LIST FORM

Moffett Community Housing

Name

Address

City/State/Zip Code

Organization/Constituency Represented/Interested Citizen