Health Consultation

Tarpon Springs Private Wells

STAUFFER CHEMICAL COMPANY (TARPON SPRINGS)

TARPON SPRINGS, PINELLAS COUNTY, FLORIDA

CERCLIS NO. FLD010596013

AUGUST 13, 1999

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

HEALTH CONSULTATION

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Prepared by:

Florida Department of Health
Bureau of Environmental Toxicology
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Health Consultation: A Note of Explanation

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

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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Background and Statement of Issues

In January 1999, a member of the community living near the Stauffer Chemical Company superfund site (Stauffer) in Tarpon Springs, Florida asked the Pinellas County Health Department (Pinellas CHD) to sample a number of private wells in the vicinity of the site (1). There is concern that chemicals in the shallow groundwater under the Stauffer site may be migrating to nearby private wells and contaminating them. In May 1999, the Pinellas CHD completed its sampling and analysis of the wells and requested that the Florida Department of Health (Florida DOH) assess the public health implications of their results (2).

Florida DOH has determined that a health consultation to evaluate the private well data is an appropriate response to the request. This health consultation will assess the public health threat from chemicals found in the private well water samples. The interpretation, advice, and recommendations presented in this report are situation-specific and should not be considered applicable to any other situations.

The Stauffer Chemical Company site in Tarpon Springs (Stauffer) is between Anclote Boulevard and the Anclote River, about one mile east of the Gulf of Mexico, in Tarpon Springs, Pinellas County, Florida (Figures 1 and 2). It is just south of the Pasco/Pinellas County line. The plant, which extracted elemental phosphorus from phosphate ore, is inactive and many buildings and other structures have been dismantled and removed from the site. Currently, about 10 people work on the site performing supervisory, maintenance, and security work.

The main plant site (Figure 3), is south and west of Anclote Road. This area originally included the phosphate ore processing and phosphorus production facilities, waste disposal facilities, office and administration buildings, and several railroad spurs used for receipt of raw materials and shipment of products. The slag storage area to the north (Figure 3), between Anclote Road and Anclote Boulevard, contained production wells for process water and was also used for storage of crushed slag and other waste materials. Florida DOH evaluated this site in 1993 (3) and found that the shallow groundwater under the site was contaminated with various site-related chemicals.

According to 1990 census data (4), approximately 9,500 people live within a one mile radius of the site boundary. Median annual family income ranges from $20,000-53,000. The population is about 96% white and 2% black. About 15% of the people in this area speak Greek as their primary language. Within one mile of the site boundary are a hospital, a mental hospital, a nursing home, two public schools, two children's group homes, a foster home, and twelve daycare centers. There are about 230 private wells within one mile of the site boundary.

In April 1999, the Pinellas CHD collected water samples from six private wells (depths not specified) around the Stauffer site (Figure 3). These samples were analyzed for metals and the radionuclides Radium-226 and Radium-228.

Table 1 shows the maximum level of each chemical of potential health concern in the well water samples. We selected the chemicals of potential concern by comparing the maximum

concentration found to standard comparison values. A comparison value is used as a means of selecting environmental contaminants for further evaluation to determine whether exposure to them has public health significance. Those contaminants that are known or suspected human carcinogens were evaluated for both carcinogenic and non-carcinogenic adverse health effects. For this evaluation, radium was selected because it is of specific concern to the community.

Table 1. Maximum Contaminant Levels in Private Well Samples

CONTAMINANT	MAXIMUM CONCENTRATION (µg/L)
ARSENIC	8.9
MANGANESE	230
RADIUM (pCi/L)	3.7

µg/L - micrograms per liter
pCi/L-picoCuries per liter
Source: (2)

The community near Stauffer is concerned that levels of chemicals in nearby drinking water wells may be increasing over time. The Pinellas CHD has analyzed water samples from private wells near the site on two previous occasions in 1990 (5) and 1997 (6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17). The levels of arsenic and manganese measured during this sampling event are similar to those measured previously. There is no indication of an increase in the levels of these chemicals. Radium was not previously analyzed for in private well water.

Discussion

To evaluate health effects, the Agency for Toxic Substances and Disease Registry (ATSDR) has developed Minimal Risk Levels (MRLs) for contaminants commonly found at hazardous waste sites. The MRL is an estimate of daily human exposure to a contaminant below which non-cancer, adverse health effects are unlikely to occur. ATSDR has developed an MRL for each route of exposure, such as ingestion, inhalation, and dermal contact, and for the length of exposure, such as acute (less than 14 days), intermediate (15 to 365 days), and chronic (greater than 365 days). ATSDR presents these MRLs in Toxicological Profiles. These chemical-specific profiles provide information on health effects, environmental transport, human exposure, and regulatory status. The U.S. Environmental Protection Agency (EPA) has developed reference doses (RfDs) to evaluate non-cancer health effects resulting from exposure to chemicals at Superfund sites.

To estimate exposure from ingestion of chemicals in drinking water, we made the following assumptions: 1) children drink 1 liter (L) of water per day and weigh 15 kg, 2) adults drink 2 L of

water per day and weigh 70 kg, and 3) they were exposed to the maximum concentration measured for each chemical.

Arsenic

The maximum estimated daily dose of arsenic from ingestion of private well water is less than ATSDR's chronic oral MRL for adults, but not for children (18). The dose for children is in the same range as the No Observed Adverse Effect Level (NOAEL) for people exposed to arsenic in water. The NOAEL is the level of exposure at which effects may be produced; however, these effects are not considered signs of illness. The maximum level of arsenic occurred at a place of business where children are not likely to be present on a continuous basis. Therefore, we do not expect any non-carcinogenic illnesses in adults or children from exposure to arsenic in private well water.

Arsenic is a known human carcinogen. Ingestion of arsenic over a period of many years can increase the risk of skin cancer and possibly various types of internal cancers (18). However, the maximum estimated daily dose of arsenic from drinking private well water is about 100 times less than the cancer effect level in humans. This dose is also about 3 times less than the amount provided in a normal diet (18). Therefore, it is unlikely that an increased cancer rate would occur in people exposed to arsenic in the private wells near the Stauffer site.

Manganese

Manganese is an essential element necessary for normal human growth and maintenance of health. ATSDR has not established an MRL for manganese (19). However, EPA has derived a chronic oral RfD for manganese in food. EPA recommends that a modifying factor be applied to this RfD if it is used for assessments involving nondietary exposures (20). The maximum estimated daily dose of manganese from groundwater is less than EPA's modified RfD for manganese in both children and adults. Therefore, no illnesses are likely in children or adults exposed to manganese in private well water.

Radium

There is no ATSDR MRL or EPA RfD for radium (21). A Maximum Contaminant Level (MCL) of 5 pCi/L has been established for radium in drinking water. The maximum level of radium found in private well water is less than the MCL. Based on studies of radium dial painters, the lowest total intake level of Radium-226/228 associated with a malignancy was 1.03 μCi/kg (microCuries per Liter) (21). The maximum lifetime total intake of Radium-226/228 from private well water is about 500 times less than this level. Therefore, we do not expect any illnesses in children or adults from exposure to radium in private well water.

Child Health Considerations

Because children may consume water from these wells, the health effects from exposure to chemicals in young children are a special concern. Children are smaller than adults, resulting in higher doses of chemical exposure per body weight. Children are often more sensitive to the effects of chemical exposures than adults and can sustain permanent damage if toxic exposures occur during critical growth stages. Most importantly, children depend completely on adults for risk identification and management decisions, housing decisions, and access to medical care.

As detailed in the discussion section above, children are not likely to be exposed to chemicals in private well water at a level sufficient to cause any illnesses.

Conclusion

Based upon the information reviewed, we conclude that carcinogenic and non-carcinogenic illnesses are unlikely in children or adults from exposure to chemicals in private well water near the Stauffer site.

Recommendations

Because there is continued community concern about chemicals in private well water near the Stauffer site, the Florida Department of Health recommends that, until site remediation is completed, periodic well samples be analyzed for site-related chemicals to ensure timely detection of any increases. If additional information becomes available concerning chemicals found in private wells near this site, Florida DOH will evaluate that information to determine what actions, if any, are necessary.

References

1. Pinellas County Health Department. Letter to Carlene Hobbs, Tarpon Springs resident, from D. Wayne Wyatt, Pinellas CHD, confirming request to sample area private wells. January 19, 1999.

2. Pinellas County Health Department. Letter to Carlene Hobbs, Tarpon Springs resident, from D. Wayne Wyatt, Pinellas CHD, forwarding results of area private well samples and providing notification that Florida DOH will evaluate the test results. May 21, 1999.

3. Florida Department of Health. Preliminary Public Health Assessment for Stauffer Chemical Company/Tarpon Springs, Tarpon Springs, Pinellas County, Florida. FDOH: Tallahassee, August 4, 1993.

4. Geolytics, Inc. 1996. CensusCD-ROM Census Data Files.

5. Pinellas County Health Department. Letter to Tammy Stouter, Florida DOH, from D. Wayne Wyatt, Pinellas CHD, regarding analysis results of private well samples near Stauffer Chemical Co. July 18, 1990.

6. Pinellas County Health Department. Letter to Industrial Production from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

7. Pinellas County Health Department. Letter to Clarence Hobbs from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

8. Pinellas County Health Department. Letter to Henderson Prestress Concrete from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

9. Pinellas County Health Department. Letter to Brock Residence from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

10. Pinellas County Health Department. Letter to Anclote Auto from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

11. Pinellas County Health Department. Letter to Residence 1201 Hickory Lane from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

12. Pinellas County Health Department. Letter to Resident 2105 Wallace Blvd. from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

13. Pinellas County Health Department. Letter to Dorothy LaLonde from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

14. Pinellas County Health Department. Letter to George Georgiau from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

15. Pinellas County Health Department. Letter to Resident 1389 Rainville Rd. from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

16. Pinellas County Health Department. Letter to Resident 374 Jeru Blvd. from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

17. Pinellas County Health Department. Letter to Edith and George Worker from D. Wayne Wyatt, Pinellas CHD, regarding water quality analysis results. March 10, 1997.

18. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Arsenic (Update). ATSDR: Atlanta, April 1993.

19. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Manganese (Update). ATSDR: Atlanta, September 1997.

20. U.S. Environmental Protection Agency. Integrated Risk Information System: Manganese. October 5, 1998.

21. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Radium. ATSDR: Atlanta, December 1990.

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CERTIFICATION

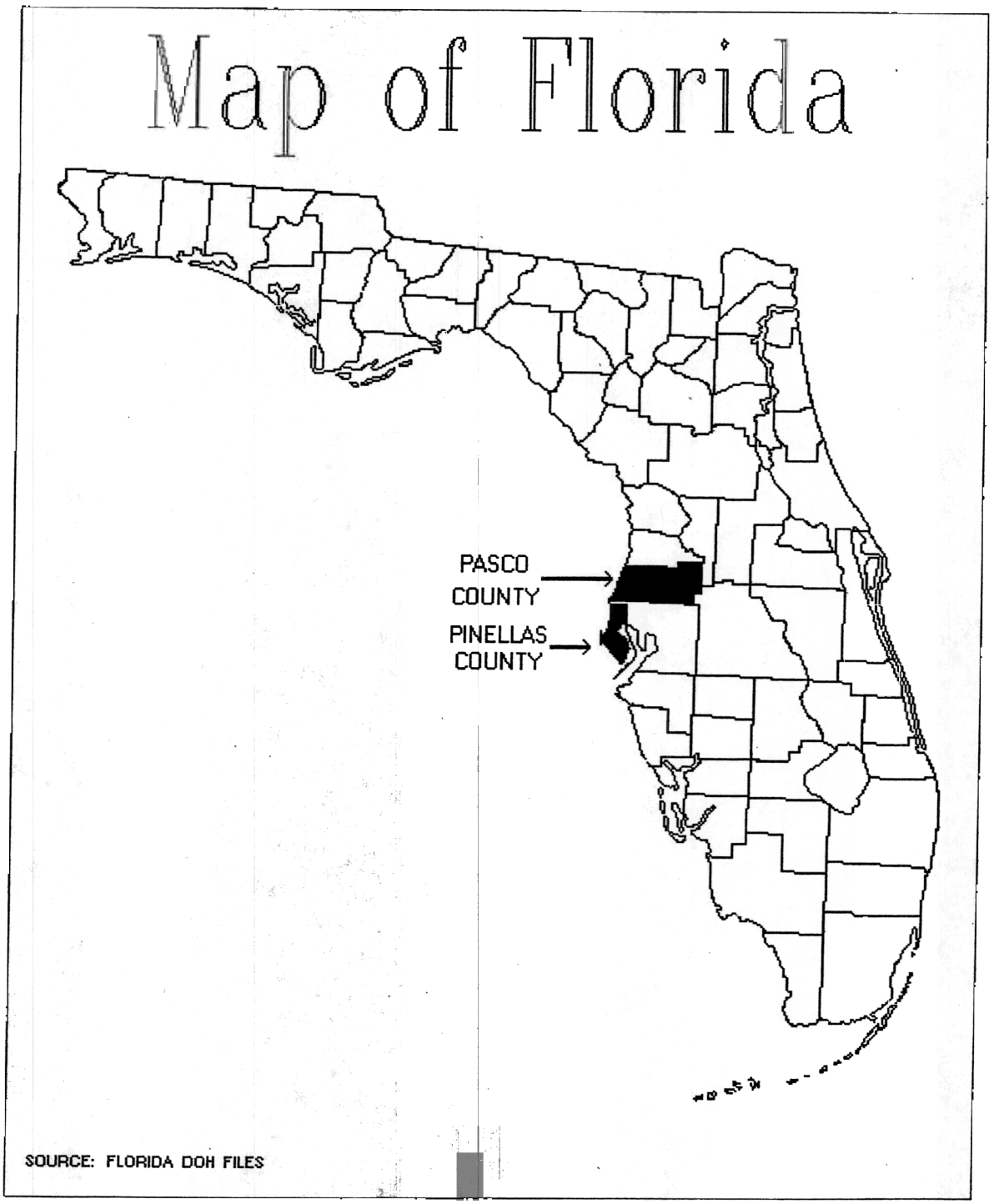
This Tarpon Springs Private Wells Health Consultation was prepared by the Florida Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

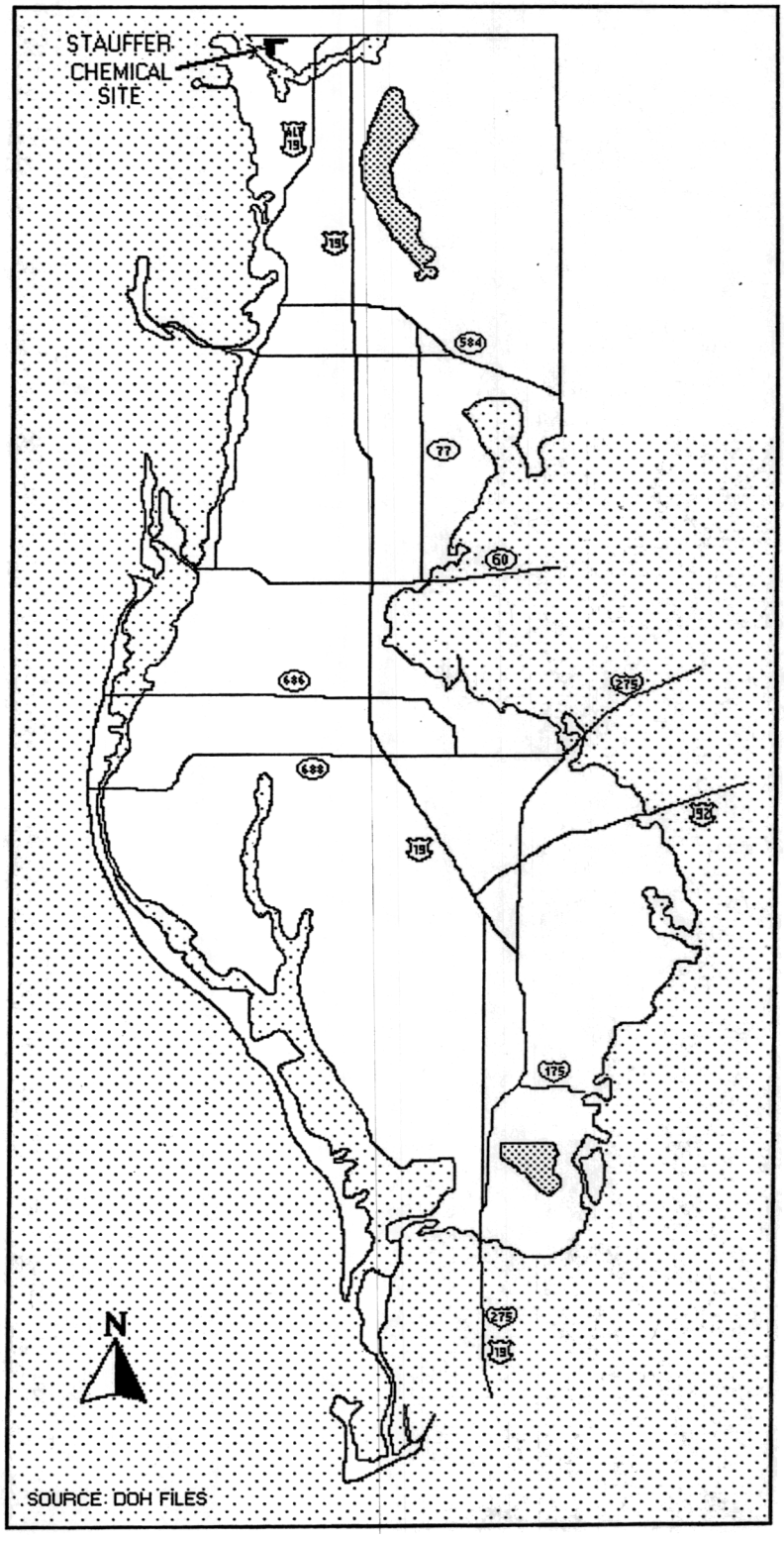
Roberta Erlwein
Technical Project Officer
Division of Health Assessment and Consultation (DHAC)
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.

Richard Gillig
Chief, SSAB, DHAC, ATSDR

Figure 1. State Map Showing Location of Pinellas and Pasco Counties.




STAUFFER
CHEMICAL
SITE
ALT
19
19
584
77
60
686
275
688
19
75
175
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19
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SOURCE: DOH FILES

Figure 3. Locations of Private Well Samples