

Health Consultation

CONTINENTAL TURPENTINE AND ROSIN
CROSS CITY, DIXIE COUNTY, FLORIDA
CERCLIS NO. FLD004069415

MAY 11, 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: 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.

You May Contact ATSDR TOLL FREE at
1-888-42ATSDR

or

Visit our Home Page at: <http://atsdr1.atsdr.cdc.gov:8080/>

HEALTH CONSULTATION

CONTINENTAL TURPENTINE AND ROSIN

CROSS CITY, DIXIE COUNTY, FLORIDA

CERCLIS NO. FLD004069415

Prepared by:

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

Summary

The Dixie County Health Department asked the Florida Department of Health (FDOH) for technical assistance in evaluating thirteen drinking water wells near the Continental Turpentine processing plant in Shamrock, Florida. The wells included: nine private drinking water wells, a community well owned by the US Forest Service, and a cluster of three municipal wells owned by Cross City. We found that water from all the private wells and the community well had concentrations of either manganese, iron, or sodium above the Florida State drinking water health standards. However, none of these contaminants were found to be in concentrations that present a health risk. The municipal wells sampled showed no violations of the drinking water standards and present no public health risk.

Background and Statement of Issues

The Florida Department of Health (FDOH), through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) in Atlanta, Georgia, evaluates the public health significance of hazardous waste sites in Florida. In February 1999, The Bureau of Environmental Toxicology was contacted by the Dixie County Health Department requesting technical assistance in determining public health impact to drinking water wells near the Continental Turpentine site.

Continental Turpentine occupied a 60-acre site in Shamrock, Dixie County, Florida (Figure 1) from 1958 to 1981. The facility operations consisted of grinding pine stumps and distilling of turpentine and other pine tree products. During the facility's operation, Continental Turpentine produced raw pine resin and refined pine rosin-derived products. The property contained an office, numerous pressure tanks, a production well and an above ground bulk tank where isopropyl alcohol, toluene and diesel fuel were stored. Plant operations ceased in 1984 and the property was sold to A-C Sons, Inc., in 1985 (1).

On September 9 and 10, 1991; a Site Inspection (SI) was conducted by ABB Environmental Services, Inc., for the Florida Department of Environmental Regulation (FDER) to determine the presence and nature of contamination at the site. ABB Environmental found that benzene, chromium, and lead were in concentrations above the drinking water standards in the ground water beneath the site and high concentrations of polycyclic aromatic hydrocarbons (PAHs) were found in pond sediments on the site. The drinking water aquifer is between 2 to 4 feet below ground level in the area. Based on the results of the SI, FDER determined site clean-up was a medium priority (1).

In May 1992, due to citizen concerns about possible ground water contamination from the Continental Turpentine site, Dixie County Health Department sampled seven private wells and one community well near the site for metals, volatile organic compounds (VOCs) and Base Neutral Acids. None of the wells showed signs of ground water degradation coming from Continental Turpentine. Again, in February 1999, due to citizen concern regarding the site, the

Dixie County Health Department sampled private and municipal wells near the area for a similar suite of contaminants (Figure 1). On March 2, 1999, the Department of Environmental Protection, FDOH, and the Dixie County Health Department made a collaborative site visit (SV). The site did not appear to present an immediate public health threat but could be a potential safety concern to trespassers (2).

Methodology

This health consultation evaluates available data for nine private wells and one community well in the area of the Continental Turpentine site. Municipal drinking water wells tested were in compliance with state water quality standards and require no additional action (3,4).

The chemicals of interest are sodium, iron, and manganese, which were found to be above Florida's drinking water standards in either the 1992 or 1999 well sampling episodes (3,4). The results of the sampling are given in Table 1.

Since these chemicals were found to be above the drinking water standards, we assessed the risk of a person becoming ill from drinking the well water. We estimated how much of the chemical a person might be exposed to from drinking water. The amount of a chemical that a person drinks, adjusting for his/her body weight, is called an exposure dose. A chemical's harmfulness is related to the size of the exposure dose.

Children's Health Section

Because some body functions work differently in adults and children, we estimated exposure doses for two age groups: an adult, and a young child. We used standard assumptions about body weight and the amount of water consumed per day in our dose estimates (Table 2)(5). We compared our dose estimates to those found in scientific studies.

Discussion

There is not enough information to determine if the elevated concentrations of sodium, iron or manganese in the domestic wells are related to the Continental Turpentine site. Therefore, we do not know if there is a completed exposure pathway connecting the domestic wells to the site. We do know that sodium, iron, and manganese are naturally occurring metals in ground water (6,7). There is also ample evidence that the use of some water softeners remove certain metals from water but increase the sodium concentration in the process. The elevated levels of sodium found in two of the private wells can be attributed to the use of an in-line water softener (8). The levels of manganese and iron are most likely naturally occurring. The levels of sodium, iron, and manganese found, though above the Maximum Contaminant Level (MCL), are not excessive.

The following sections discuss each chemical.

Sodium

Sodium, a mineral found naturally in most drinking water, is added to water when it is softened (6). Although sodium is important for maintaining some bodily functions, it has been linked to hypertension. The level of sodium in water is particularly important to people who have to watch their sodium intake for health reasons (6). We found that the daily intake of sodium from drinking water using the highest concentrations found in the wells is much lower than the daily sodium intake from a balanced diet (9). Therefore, sodium is not a health threat. However, people on low sodium diets should restrict sodium intake (9).

Manganese

Manganese is a ubiquitous constituent in the environment, occurring in soil, air, water, and food. Thus, all humans are exposed to manganese, and manganese is a normal component of the human body. Food is usually the most important route of exposure for most people, with typical daily intakes of 2.5-5 mg/day (7). The calculated daily intake of manganese from the drinking water from the wells tested is 100 times less than the normal daily intake from food sources. Therefore, manganese is not a health consideration.

Iron

Iron occurs naturally in many ground water supplies. It is essential in the human diet. It is a mineral in hemoglobin of red blood cells that carries oxygen to all parts of the body (10). Iron deficiency can be a health concern in certain populations. The recommended Daily Allowance (RDA) of iron is 10 milligrams for toddlers and up to 18 milligrams for woman of childbearing ages (11). The calculated daily dose of iron from the highest concentration measured in the wells tested is much less than the daily dose required for good health. Therefore, iron in the drinking water is not a health concern.

Conclusions

Based on the information reviewed for this health consultation, The Florida Department of Health concludes the following:

1. The Cross City municipal wells number 1, 2, and 3 are in compliance with state water drinking quality regulations and pose no health threat.
2. The concentration of sodium, iron, and manganese in the community and private wells tested is not a health concern. Drinking water from these wells is not a health threat.

Recommendations

1. Owners of private wells should have their water tested periodically to monitor the quality of the drinking water.

References

1. FDEP. 1993. Phase II Site Inspection Report, Continental Turpentine and Rosin Corporation, Dixie County, Florida (February). Florida Department of Environmental Regulation, Tallahassee, Florida.
2. FDOH. 1999. Site Visit Notes (March 3). Florida Department of Health, Bureau of Environmental Toxicology, Tallahassee, FL.
3. Dixie County Health Department. 1999. Memo (March 4) from Wesley Asbell to Andy Brastad (FDOH) with attached water well results collected in 1992 and 1999.
4. State of Florida, Department of Environmental Protection, 1996. Drinking Water Standards, Monitoring and Reporting. Chapter 62-550.
5. ATSDR. 1992 Public Health Assessment Guidance Manual (March). Atlanta, GA: U.S. Public Health Service, Agency for Toxic Substances and Disease Registry. D-4.
6. Understanding Your Water Test Report: Microbiological, Chemical and Nuisance Contaminants, [Online]. Available: <http://ingis.acn.purdue.edu:9999/WETnet/government/DIAGNOSE/standards.html>. [1999, March 26].
7. ATSDR. 1992. Toxicological Profile for Manganese (July). Atlanta, GA: U.S. Public Health Service, Agency for Toxic Substances and Disease Registry. ATSDR/TP-91-19.
8. Dixie County Health Department. 1999. Memo (March 30) from Wesley Asbell to Andy Brastad (FDOH) with information on private wells.

9. Heart and Stroke A-Z guide, fact sheet on sodium, American Heart Association, [Online]. Available: http://www.americanheart.org/Heart_and_Stroke_A_Z_Guide/sodium.html. [1999, March 26].
10. Clayton George D. and Clayton Florence E., eds. 1981. Patty's Industrial Hygiene and Toxicology. Volume 2A. 3rd revised edition. USA. John Wiley & Sons. (1661-1672).
11. Iron Deficiency, Toddlers, Teenagers and Women at Risk, Mayo Clinic, Health Oasis, [Online]. (April 4, 1997). Available: http://www.mayohealth.org/mayo/9704/htm/iron_def.htm. [1999, March 26]

Preparer of Report

Andy Brastad, R.S.

Environmental Specialist

Bureau of Environmental Toxicology

Florida Department of Health

Table 1. Well Sampling Results

Well Number	Date Sampled	Sodium (mg/L)	Iron (mg/L)	Manganese (mg/L)
Well #1	6/24/92	3.4	2.7	0.064
Well #2	6/9/92	6.3	1.4	0.042
Well #3	2/9/99	6.7	1.3	0.038
Well #4	2/9/92	8.5	2.3	0.047
Well #5	2/24/99	220	0.038	0.000090
Well #6	2/9/92	3.3	1.9	0.059
Well #7	2/9/99	210	0.020	0.000090
Well #8	6/9/92	4.2	2.4	0.067
Well #9	2/3/99	5.4	.79	0.072
Well #10	6/9/92	7.9	3.9	0.034
Well #11	2/9/99	6.7	1.3	0.040
Well #12	6/24/92	4.9	0.76	0.072
Well #13	6/9/92	4.3	1.5	0.073
Well #14	6/24/92	3.3	0.27	0.024
Well #15	2/3/99	3.9	0.57	0.06
Well #16	2/9/99	4.5	0.9	0.058

Maximum Contaminant Level (MCL)

mg/L - milligrams per liter

Sodium - 160 mg/L (Primary Standard)

Iron - .3 mg/L (Secondary Standard)

Manganese - .05 mg/L (Secondary Standard)

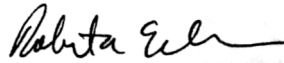
Table 2. Parameters Used for Ingestion Dose Calculations For Hypothetical Individuals

Parameter	Adult	Child
Age	Adult	0 to 6 years
Body Weight	70 kg	10 kg
Drinking Water Ingestion Rate	2 liters	1 liter
Exposure Factor	1	1

Source: Public Health Guidance Manual

CERTIFICATION

The Florida Department of Health prepared this Health Consultation under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It used approved methodologies and procedures existing at the time the department began this health consultation.



Roberta Erlwein

Technical Project Officer

Superfund Site Assessment Branch (SSAB)

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

Section Chief, SPS, SSAB, DHAC, ATSDR

Selected Well Locations Cross City, Dixie County



Continental Turpentine
Site Location

Site Location

J. Gardner

B. O'Steen

Sanders

M. Johnson

T. Johnson

Dickett

C. Johnson, J. Public Well #3

Public Well #1

Public Well #2

0.5 0 0.5 1 Miles

