HEALTH CONSULTATION

AGRICO CHEMICAL COMPANY/AIR MONITORING DATA

PENSACOLA, ESCAMBIA COUNTY, FLORIDA

CERCLIS NO. FLD010596013

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Prepared by

Florida Department of Health and Rehabilitative Services
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

Background and Statement of Issues

The Florida Department of Health and Rehabilitative Services (Florida HRS), through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) in Atlanta, Georgia, evaluates the public health significance of Superfund hazardous waste sites in Florida. The U.S. Environmental Protection Agency (EPA) has petitioned Florida HRS to evaluate the health effects of exposure to contaminants detected in air samples collected during remediation activities at the Agrico Chemical Company site. EPA has provided Florida HRS with the analysis results of air monitoring conducted between April 14 and July 19, 1995 (1). We have determined that a health consultation to evaluate the air monitoring data is an appropriate response to the request. The interpretation, advice, and recommendations presented in this report are situation-specific and should not be considered applicable to any other situations.

The Agrico Chemical Co. (Agrico) site occupies about 35 acres at the intersection of Fairfield Dr. and Interstate 110, in Pensacola, Escambia County, Florida (Figures 1-3). The site is bounded by Interstate 110 to the east, Fairfield Dr. to the south, the CSX railroad yard to the west, and CSX property containing two baseball fields to the north.

Production of sulfuric acid from pyrite (iron sulfide) began in 1889 by an unidentified company. From 1920-1963, sulfuric acid and superphosphate fertilizer were produced at the site by the American Agricultural Chemical Company. Continental Oil Company purchased the property and operated the facility from 1963 to 1972. Agrico purchased the facility and operated it until 1975, producing superphosphate and monoammonium phosphate. Fertilizer production ceased in mid-1975 and the facility was purchased by a Florida partnership and a private individual in 1977. In 1979, all buildings and process equipment were removed from the site (2).

In 1983, the EPA conducted a hazardous waste site investigation at the site (3). They found fluoride, lead, sulfate, and chromium in soil and wastewater pond samples. In 1988 and 1989, the Florida Department of Environmental Regulation (FDER) (now the Florida Department of Environmental Protection (FDEP)) investigated groundwater contamination at the site (4, 5). They found elevated fluoride and sulfate levels in both shallow and deep groundwater on and downgradient from the site. In 1989, EPA added this site to the National Priorities List (NPL) of Superfund sites. In 1991 and 1992, contractors for the Agrico Potentially Responsible Parties (PRPs) conducted remedial investigations which indicated that the site was contaminated with arsenic, chromium, fluoride, lead, manganese, sulfate, and vanadium (6, 2). Surface and subsurface soils both on and off of the site were also contaminated with polycyclic aromatic hydrocarbons (PAHs).

According to 1990 census data (7), about 150 people live within a one-quarter mile radius of the site and about 6,400 people live within one mile. The population within one-quarter mile is about 96% African-American. The neighborhood west of the site is low to lower-middle income. There are eight daycare centers, six public schools, two hospitals, one private

school, and a children's home within one mile of the site.

The area within one mile of the site is mixed residential/light industrial/commercial. There are commercial businesses and a school complex south of the site across Fairfield Dr., and the CSX railroad yard and a residential neighborhood west of the site. North of the site is a borrow pit operation and a sand-and-gravel supply business. Interstate 110 borders the site on the east. The Escambia Treating Company hazardous waste site is about two-thirds of a mile northwest of the Agrico site.

Between April 14 and July 19, 1995, contractors for EPA collected and analyzed a total of 215 air samples from four air monitoring stations at the perimeter of the Agrico site (Fig 4). Sampler # 2 was co-located with sampler # 1 and served as a duplicate for quality control purposes. Air samples were collected whenever remedial activity occurred on the site. Samples were analyzed for arsenic, lead, and fluoride. Table 1, below, presents the highest level of each contaminant found in the air samples. Two of the contaminants, arsenic and lead, are known or potential human carcinogens. They were evaluated for both carcinogenic and non-carcinogenic adverse health effects.

Table 1. Maximum Concentrations in Air Monitoring Samples

Contaminants of Concern	Maximum Concentration ($\mu g/m^3$)
Arsenic	0.081
Fluoride	0.7131
Lead	0.1277

$\mu g/m^3$ - micrograms per cubic meter of air
Source: (1)

Discussion

To evaluate health effects, 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 developed MRLs 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 364 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.

ATSDR has developed inhalation MRLs for arsenic and fluoride (8, 9). There is no inhalation MRL for lead (10). We have found a Lowest Observed Adverse Effect Level (LOAEL) for inhalation exposure to lead which we have used to evaluate the likely health effects from exposure to this chemical (10).

Using a standard inhalation volume of 23 m^3/day for adults and 15 m^3/day for children, and a standard body weight of 70 kg for adults and 15 kg for children, we estimate that the likely maximum daily dose of arsenic and fluoride does not exceed the respective MRL. Therefore, exposure to these chemicals at the concentrations found in the air samples collected is unlikely to cause any adverse non-carcinogenic health effects.

The likely maximum daily dose of lead is 100 times less than the LOAEL. Although adverse health effects from exposure to lead at this level are unlikely, we do not have enough toxicological information about lead to determine what level is safe for humans.

Arsenic is a known human carcinogen. Lifetime exposure to arsenic at the maximum air concentration measured may slightly increase the risk of skin or lung cancer. However, because remediation of the site is scheduled to be completed within two years (11), lifetime exposure is unlikely. Therefore, there would be no apparent increase in the risk of cancer from inhalation of arsenic.

Although exposure to lead has been shown to cause cancer in animals, there is inadequate evidence to determine the ability of lead to cause cancer in humans (10). Therefore, we do not have enough toxicological information to estimate what, if any, cancer risk may exist from exposure to air-borne lead from the Agrico site.

Conclusions

Based upon the information reviewed, Florida HRS concludes that adverse health effects from exposure to arsenic and fluoride in the air samples collected near the Agrico Chemical Company site are unlikely. Neither of these chemicals have been detected at levels that could result in either carcinogenic or non-carcinogenic adverse health effects in children or adults. Although the maximum level of lead in the air is much lower than the level at which adverse health effects have been observed in humans, we do not have enough toxicological information about lead to determine what level is safe for humans. If additional information becomes available indicating exposure at levels of concern, Florida HRS will evaluate that information to determine what actions, if any, are necessary.

Recommendations

Florida HRS recommends EPA continue air monitoring at the Agrico site while remediation activity continues. This is necessary to ensure timely discovery of any unusually high releases of contaminants from the site so that immediate corrective action can be taken. We

also recommend that ATSDR develop guidance for assessing the risk to humans from inhalation of lead.

References

1. U.S. Environmental Protection Agency. Letter to Patricia Goldberg from Lawrence E. McGill concerning results of air monitoring at the Agrico Chemical site. October 25, 1995.

2. Geraghty & Miller. Final Phase II Remedial Investigation, Agrico Chemical Site, Pensacola, Florida. Sep 18, 1992.

3. U.S. Environmental Protection Agency. Hazardous Waste Site Investigation, Agrico Chemical Company Site, Pensacola, Florida. October 18, 1983.

4. Watts GB, KL Busen, JM Wilson, and WH Colona, III. Groundwater Investigation Report No. 88-08, Agrico Chemical Company, Escambia County. July 1988.

5. Watts GB and G Wiegand. Supplementary Contamination Report, Agrico Chemical Company, Escambia County. August 1989.

6. Geraghty & Miller. Final Phase I Remedial Investigation, Agrico Chemical Site, Pensacola, Florida. March 12, 1992.

7. Bureau of the Census, U.S. Department of Commerce, Washington, DC, 1990 Census Data Files.

8. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Arsenic. ATSDR: Atlanta. April 1993.

9. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Fluorides, Hydrogen Fluoride, and Fluorine (F). ATSDR: Atlanta. May 1994.

10. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Lead (Update). ATSDR: Atlanta. April 1993.

11. DuPont Environmental Remediation Services. Ninety Percent (90%) Design Analysis Report for Operable Unit One at the Agrico Chemical Site, Pensacola, Florida. August 12, 1994.

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CERTIFICATION

This Agrico Chemical Company/Air Monitoring Data Health Consultation was prepared by the Florida Department of Health and Rehabilitative Services 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.

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

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Figure 1. State Map Showing Location of Escambia County

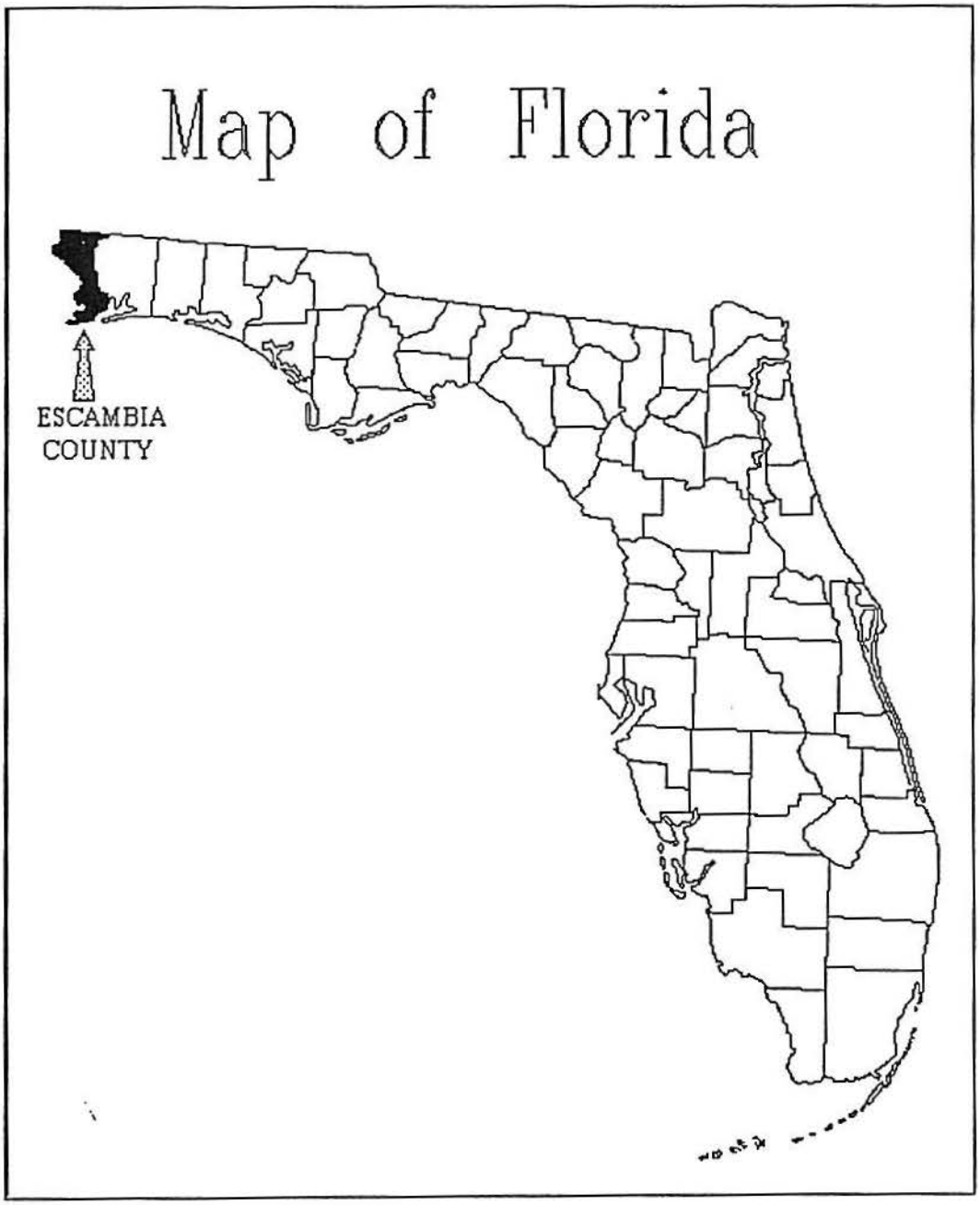

Figure 2. Location of Pensacola in Escambia County

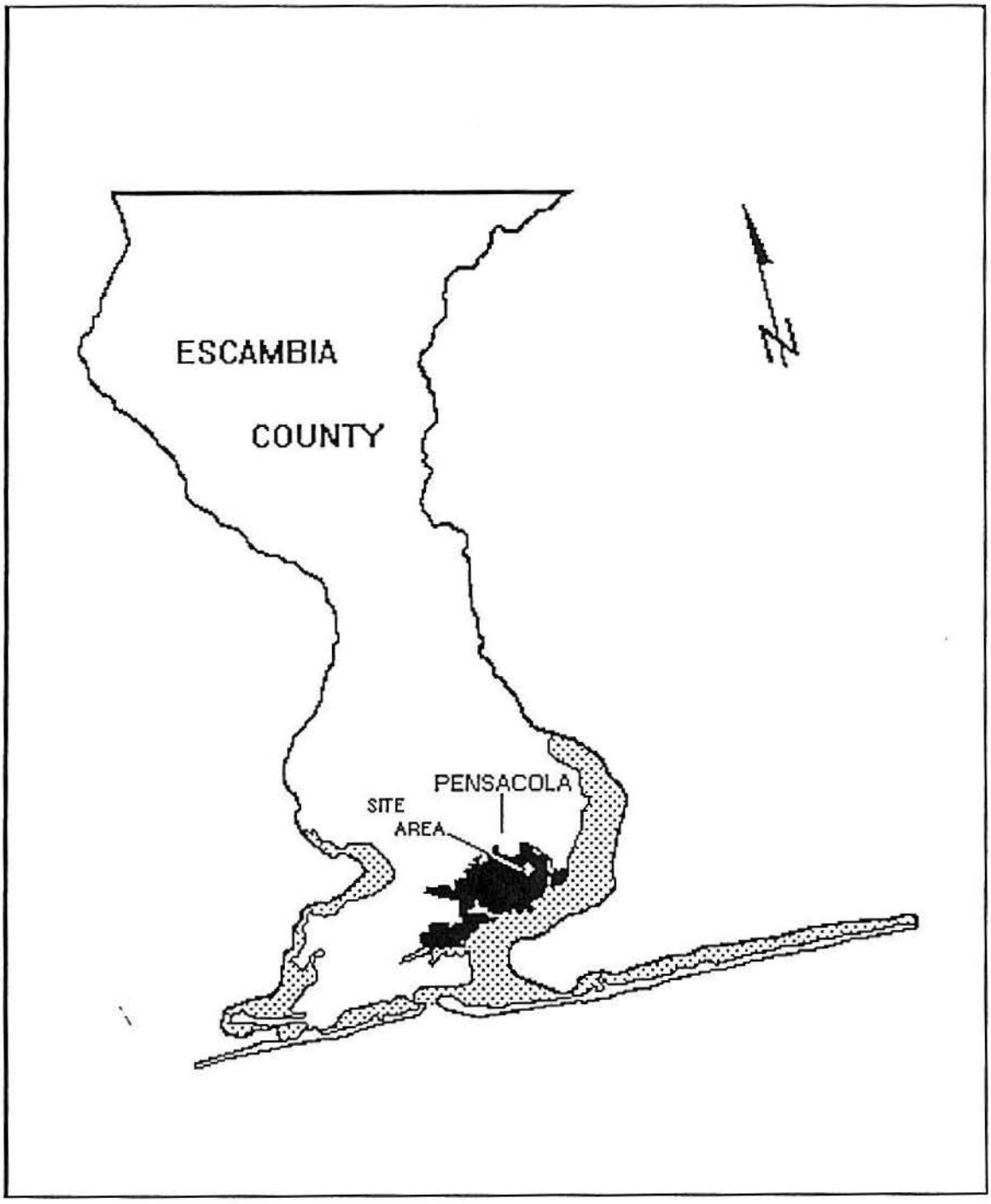

Figure 3. Location of Agrico Chemical Co. in Pensacola

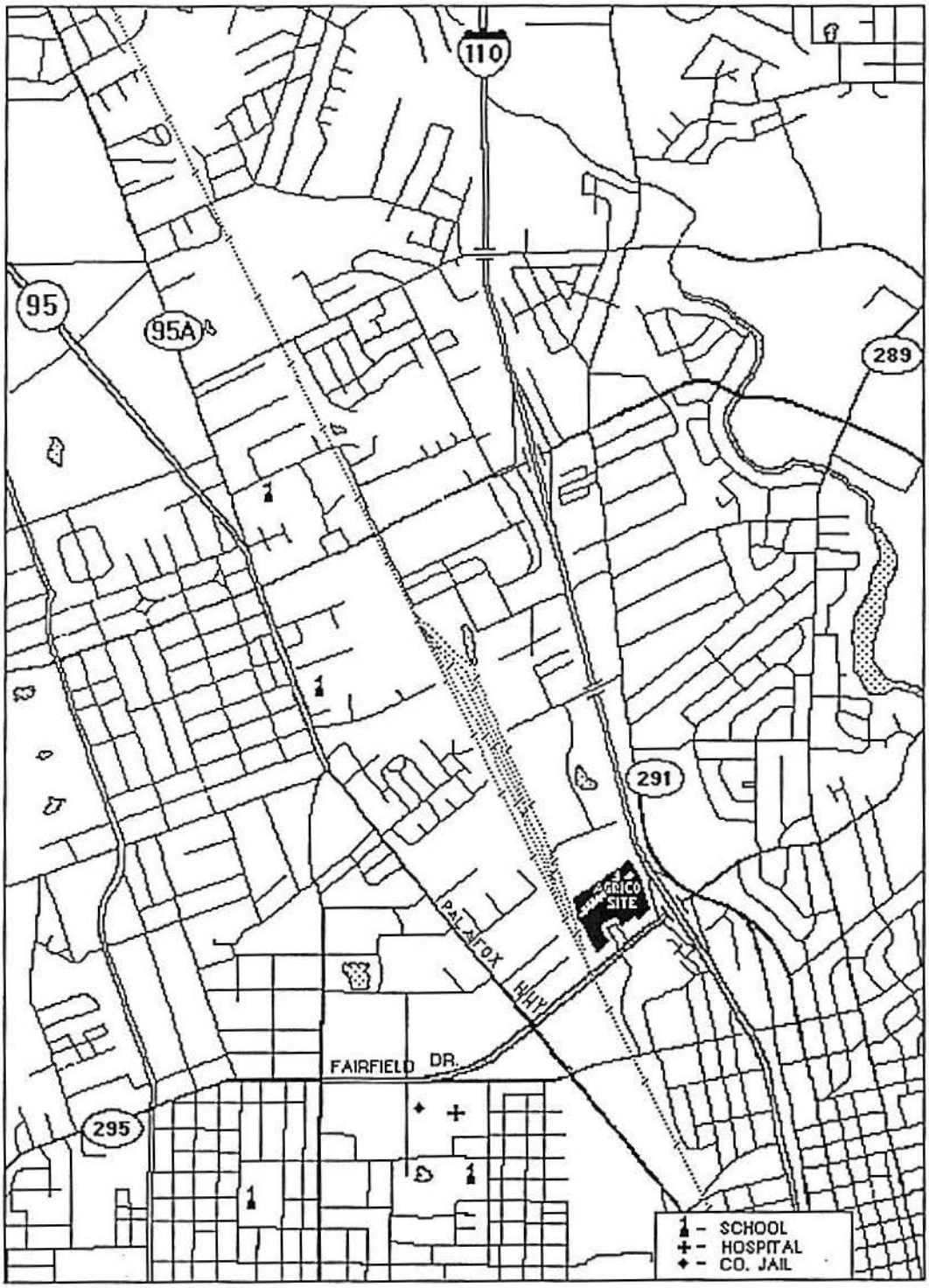

Figure 4. Location of Air Monitoring Stations