

HEALTH CONSULTATION
AGRICO CHEMICAL COMPANY/EPA GRID SAMPLES
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 soil samples collected in the neighborhood near the Agrico Chemical Company site. These samples were collected based on a grid pattern established in the neighborhood across the railroad tracks to the west of the Agrico site. EPA has provided Florida HRS with the analysis results of these soil samples (1). We have determined that a health consultation to evaluate the soil sampling data is an appropriate response to the request. The interpretation, advice, and recommendations 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.

In July, 1995, contractors for EPA collected and analyzed 37 surface soil (0 - 1 foot) and 5 subsurface soil (2 - 3 feet) samples. The samples were collected based on a grid established in the Hermann and Pearl Avenue neighborhood west of the Agrico Chemical Company site (Fig. 3). Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs), pesticides, metals, cyanide, and fluoride. We found that six of the contaminants were at levels high enough to be of potential health concern and selected them for further evaluation. Table 1, below, presents the highest level of each contaminant found in the surface soil samples. Since all the contaminants of concern are known or suspected human carcinogens, they were evaluated for both carcinogenic and non-carcinogenic adverse health effects.

Table 1. Maximum Concentrations in Surface Soil Samples

Contaminants of Concern	Maximum Concentration (mg/kg)
Arsenic	9.6
Benzo(a)pyrene	0.51
Dieldrin	0.12
Heptachlor epoxide	0.18
Lead	8700.0
Polychlorinated biphenyls (PCBs)	0.16

mg/kg - milligrams per kilogram

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 MRLs for arsenic (8), benzo(a)pyrene (9), dieldrin (10), and polychlorinated biphenyls (PCBs)(11). There are no ATSDR MRLs for heptachlor epoxide (12) or lead (13). However, EPA has developed an oral Reference Dose (RfD) for heptachlor epoxide which we have used to evaluate the likely health effects from exposure to this chemical.

Using a standard incidental soil ingestion rate of 200 mg/day for children and 100 mg/day for adults, and a standard body weight of 15 kg for children and 70 kg for adults, we estimate that the likely maximum daily dose of arsenic, benzo(a)pyrene, dieldrin, heptachlor epoxide, and PCB does not exceed the MRL or RfD for that chemical. Therefore, exposure to these chemicals at the concentrations found in the soil samples collected is unlikely to cause any adverse non-carcinogenic health effects. The estimated likely maximum daily dose of lead, however, is in the same range as the daily dose at which learning deficits and adverse reproductive effects have been observed in animals (13). Similar effects may occur in people exposed to lead at this level.

Each of the contaminants of concern is a known or potential human carcinogen. Lifetime incidental ingestion of arsenic, benzo(a)pyrene, dieldrin, heptachlor epoxide, and PCBs in the soil samples collected would result in an insignificant or no apparent increase in the risk of cancer.

Although exposure to lead has been shown to cause cancer in animals, there is inadequate evidence for the carcinogenicity of lead in humans (13). Therefore, we do not have enough toxicological information to estimate what, if any, cancer risk may exist from exposure to lead at the levels found in the soil samples collected.

Conclusions

Based upon the information reviewed, Florida HRS concludes that adverse, non-carcinogenic health effects may occur from exposure to lead in the surface soil in the neighborhood near the Agrico Chemical Company site. There is insufficient toxicological information for us to determine if there is any cancer risk from exposure to lead in the surface soil. Exposure to arsenic, benzo(a)pyrene, dieldrin, heptachlor epoxide, and PCBs in surface soil are not likely to result in either carcinogenic or non-carcinogenic adverse health effects in children or adults. 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 that EPA limit exposure to lead in surface soil in the neighborhood near the Agrico site. We also recommend that ATSDR develop guidance for assessing the cancer risk to humans from exposure to lead.

References

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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.
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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 Benzo(a)pyrene. ATSDR: Atlanta. May 1990.
10. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Aldrin/Dieldrin. ATSDR: Atlanta. April 1993.
11. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Polychlorinated Biphenyls (Update). ATSDR: Atlanta. August 1995.
12. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Heptachlor/Heptachlor Epoxide. ATSDR: Atlanta. April 1993.

13. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Lead.
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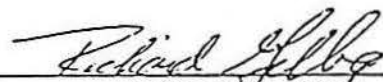
CERTIFICATION

This Agrico Chemical Company/EPA Grid Samples 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.



Richard E. Gilg
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Figure 1. State Map Showing Location of Escambia County

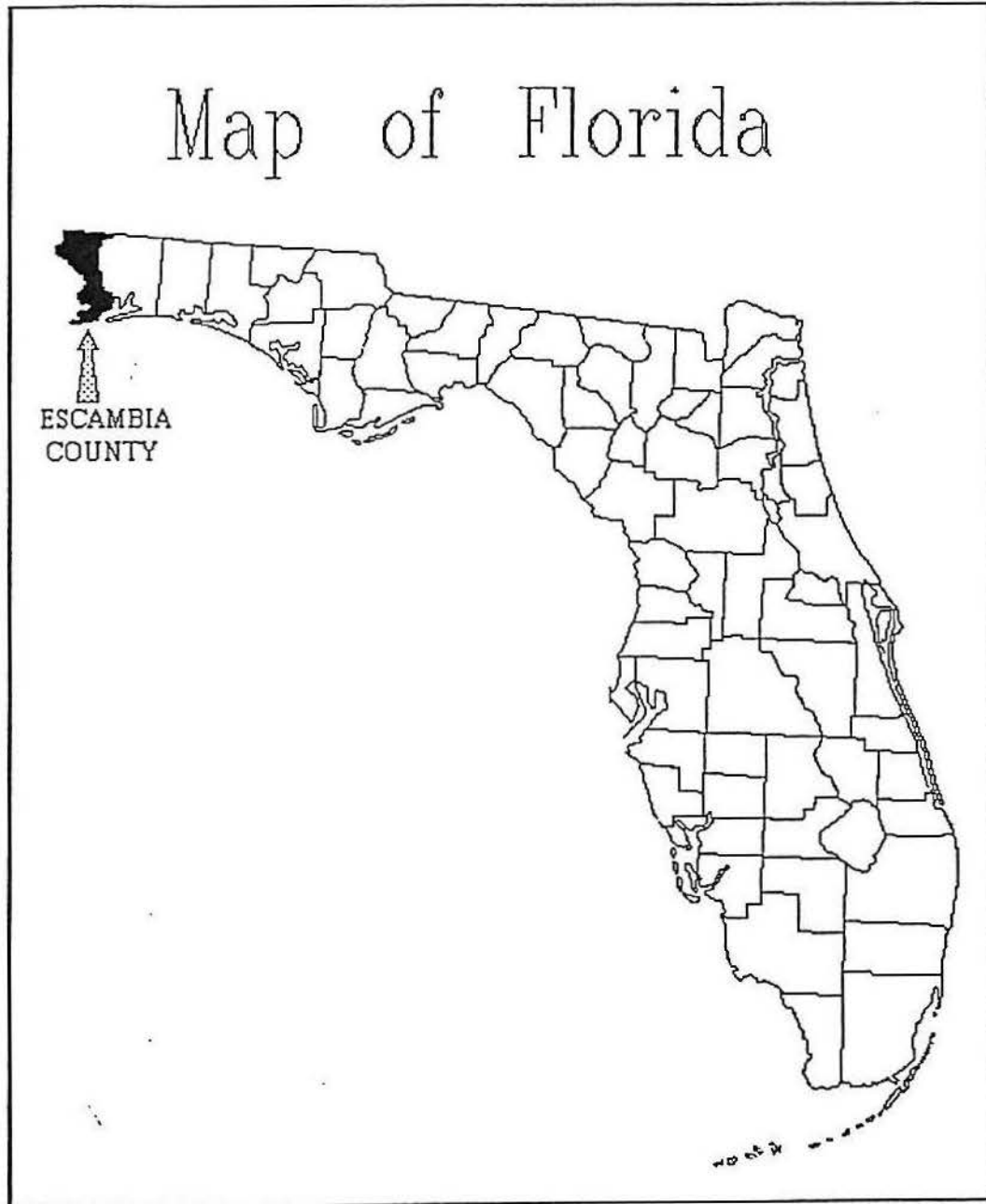


Figure 2. Location of Pensacola in Escambia County

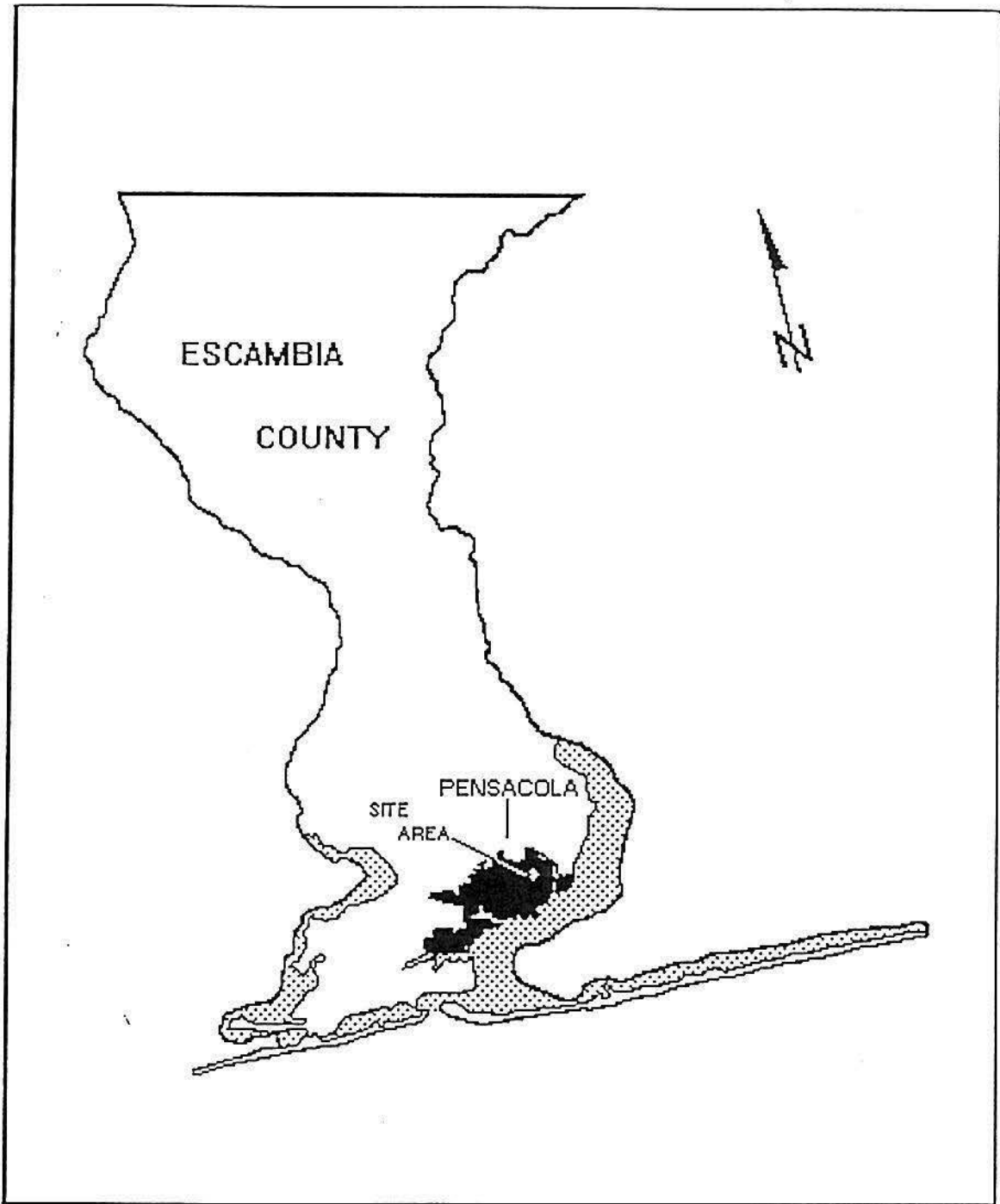


Figure 3. Location of Agrico Chemical Co. in Pensacola

