

HEALTH CONSULTATION

AGRICO CHEMICAL COMPANY/NEIGHBORHOOD SOIL SAMPLES

PENSACOLA, ESCAMBIA COUNTY, FLORIDA

CERCLIS NO. FLD010596013

February 15, 1996

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. In December, 1995, the U.S. Environmental Protection Agency (EPA) 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 superfund site in Pensacola. Some of these samples were collected on the Brown-Barge Middle School property near the site. There is community concern that exposure to contaminants in the soil may have adversely affected the health of children and adults at this school. Florida HRS evaluated the soil data and issued a health consultation on December 21, 1995 (1). Since then, EPA and the Escambia County School District have provided Florida HRS with additional soil sampling information (2, 3). This health consultation evaluates the additional information. 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. superfund site (Agrico) 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. Additional details about the site may be found in the December 1995 health consultation (1).

In July, 1995, EPA contractors collected and analyzed eight surface soil (0 - 1 foot) and two subsurface soil (2 - 3 feet) samples from locations in the neighborhood near the site. Two of the surface soil samples and one of the subsurface soil samples were taken from the Brown-Barge Middle School south of the site across Fairfield Drive (Fig. 3). Samples were analyzed for polycyclic aromatic hydrocarbons (PAHs), pesticides, cyanide, and fluoride. We concluded that adverse health effects from exposure to contaminants in the soil at the school and in the neighborhood near the Agrico site were unlikely.

In January, 1996, EPA and the Escambia County School District provided us with additional soil sampling information (2, 3). In addition to the ten soil samples indicated above, EPA also collected and analyzed nine surface and nine subsurface soil samples from the neighborhood near the Agrico site. These samples were analyzed for PAHs, pesticides, cyanide, and fluoride. EPA indicated that these samples and the ten samples we had previously evaluated had also been analyzed for metals. A contractor for the school district also collected six surface and six subsurface soil samples from the school yard and analyzed them for PAHs. For this health consultation, we evaluated the levels of metals in all EPA surface soil samples; PAHs, pesticides, cyanide, and fluoride in the nine surface soil samples not previously evaluated; and PAHs in the six surface soil samples collected by the school district.

We found levels of arsenic and lead high enough to be of potential health concern and selected them for further evaluation. These levels were found at a drum manufacturing plant in an industrial area near the Agrico neighborhood. Levels in other surface soil samples were lower. Table 1, below, presents the highest levels of arsenic and lead found in the drum plant and neighborhood surface soil samples. Since these contaminants 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)/ Drum Plant	Maximum Concentration (mg/kg)/ Neighborhood
Arsenic	79.0	9.2
Lead	510.0	490.0

mg/kg - milligrams per kilogram
Source: (2)

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.

We used 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. For the soil sample taken near the drum manufacturing plant, we estimate that the likely maximum daily dose of arsenic exceeds the MRL for children, but not for adults (4). Incidental ingestion of arsenic in this soil may cause changes in the skin. Arsenic is a known human carcinogen. Lifetime incidental ingestion of arsenic in this soil may slightly increase the risk of skin cancer.

We estimate that the likely maximum daily dose of arsenic in surface soil samples other than

at the drum manufacturing plant does not exceed the MRL for adults or children. Therefore, non-carcinogenic adverse health effects are unlikely from exposure to arsenic in these soils. Lifetime incidental ingestion of arsenic in these soils would result in no apparent increase in the risk of cancer.

There is no ATSDR MRL or EPA oral Reference Dose (RfD) for lead (5). The estimated likely maximum daily dose of lead is in the same range as the daily dose at which no adverse health effects have been observed in animals. Soil lead levels similar to those around the Agrico site have been found in a number of residential light-industrial urban settings (5) indicating that the soil lead levels found near the Agrico site are not unusual. However, there is insufficient toxicological information about lead for us to determine if this level is safe for humans.

Conclusions

Based upon the information reviewed, Florida HRS concludes that incidental ingestion of arsenic in the surface soil at the drum manufacturing plant may cause skin changes in children and slightly increase the risk of skin cancer in adults. Adverse health effects from exposure to arsenic in all other soils sampled are unlikely. There is insufficient toxicological information for us to determine what, if any, adverse health effects may occur from exposure to lead in surface soil. Because there is special concern for children at the Brown-Barge Middle School, we note here that no metals or PAHs were found in the surface soil samples at the school at a level of health concern. 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 arsenic in surface soil at the drum manufacturing plant near the Agrico site. In the interest of protecting public health, we also recommend that EPA limit exposure to lead in surface soil near the Agrico site, even though there is insufficient toxicological information about lead for us to estimate the health risk. Finally, we recommend that ATSDR develop guidance for assessing the risk to humans from exposure to lead.

References

1. Florida Department of Health and Rehabilitative Services. Health Consultation: Agrico Chemical Company/Neighborhood Soil Samples, Pensacola, Escambia County, Florida. December 21, 1995.
2. Black & Veatch Waste Science, Inc. Draft Field Sampling Investigation, Agrico Facility Neighborhood, Goulding Community, Escambia County, Florida. November 20, 1995.

3. The School District of Escambia County. Letter to Mark Fite from G. Larry Law concerning lab results of the soil samples taken for the School District. January 5, 1996.
4. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Arsenic. ATSDR: Atlanta. April 1993.
5. Agency for Toxic Substances and Disease Registry. Toxicological Profile for Lead. ATSDR: Atlanta. April 1993.

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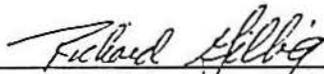
CERTIFICATION

This Agrico Chemical Company/Community Samples Health Consultation Addendum 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 addendum was begun.



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



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Figure 1. State Map Showing Location of Escambia County

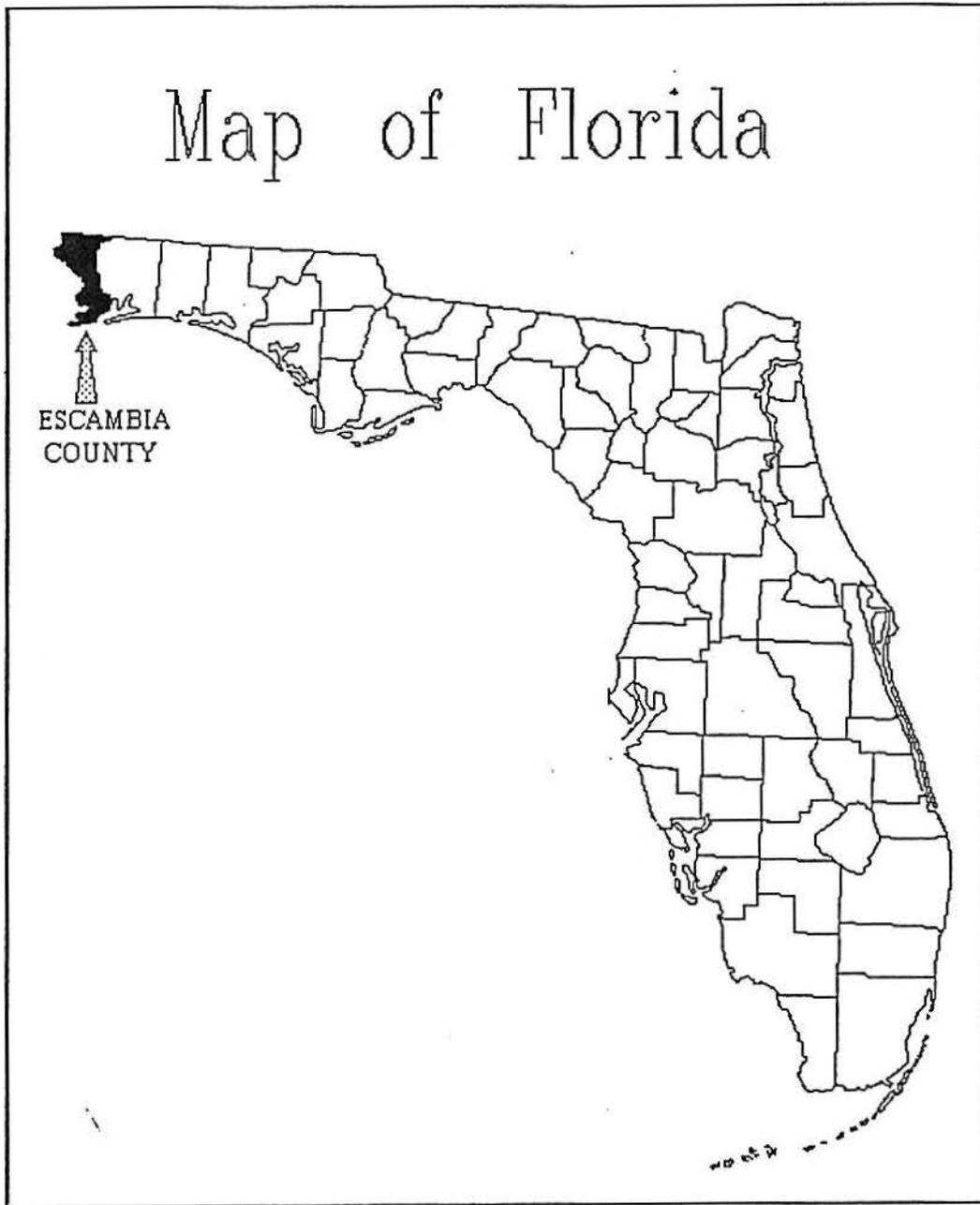


Figure 2. Location of Pensacola in Escambia County

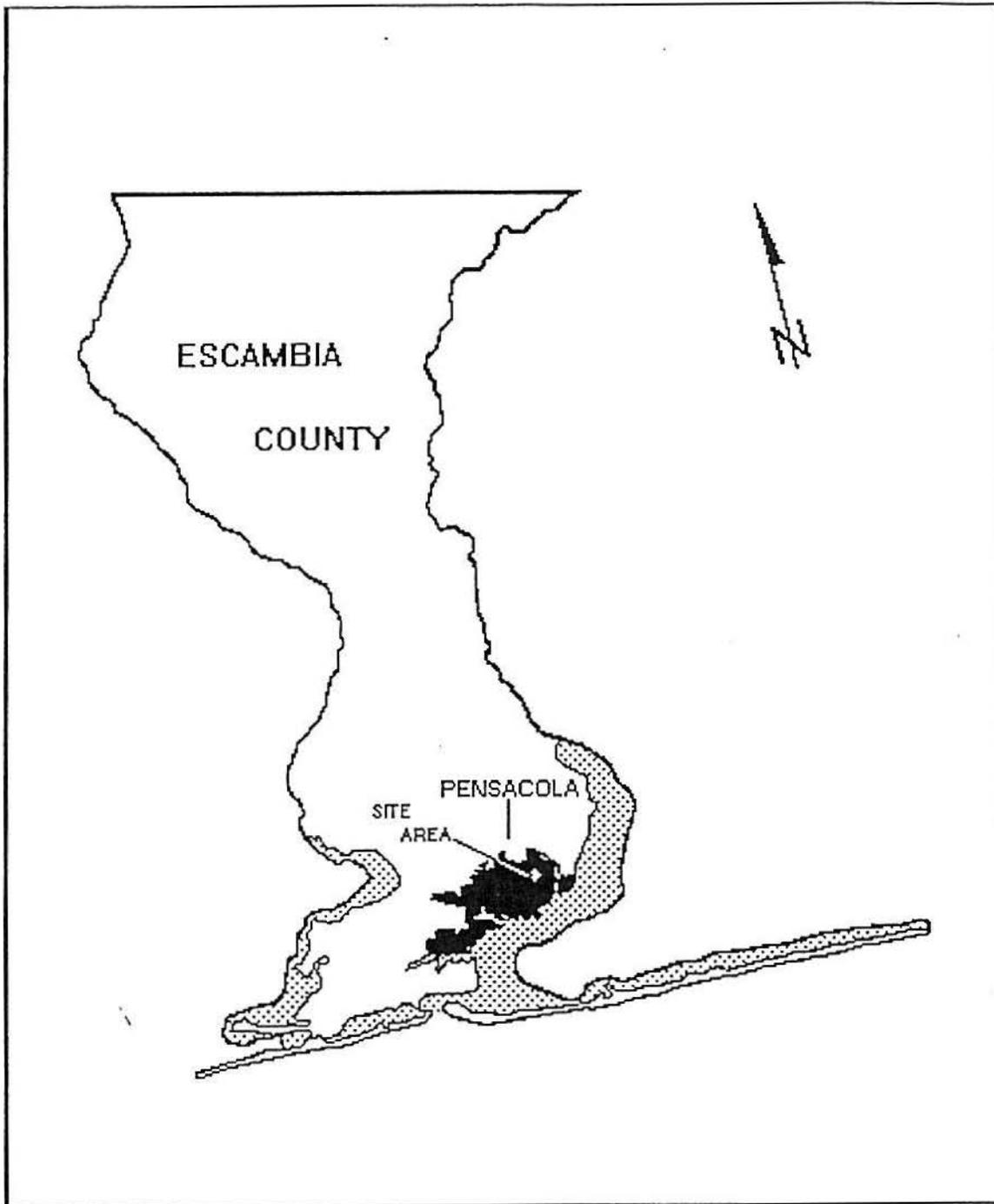


Figure 3. Location of Neighborhood Soil Samples.

