

# PRELIMINARY Health Assessment for

AGRICO CHEMICAL COMPANY

CERCLIS NO. FLD980221857

PENSACOLA, FLORIDA

MAY 31 1990

Agency for Toxic Substances and Disease Registry  
U.S. Public Health Service

PRELIMINARY HEALTH ASSESSMENT

Agrico Chemical Company

Proposed National Priorities List Update #7 Site

Pensacola, Florida

Prepared by:

Florida Department of Health and Rehabilitative Services

Under Cooperative Agreement with the

Agency for Toxic Substances and Disease Registry

### Background

The site of the former Agrico Chemical Company covers an area of approximately 30 acres (Appendix, Figure 1). The site was first occupied in 1889 by a company that produced sulfuric acid from pyrite. In late 1920, production of fertilizer from phosphatic rock began. Waste materials from chemical processing were discharged to the same impoundments used to hold waste from the sulfuric acid production. The earliest file references (Escambia County Utilities Authority, 1988) indicate the site was occupied for a number of years prior to 1950 by American Agricultural Chemical Company (AACC). These references imply that AACC may have been the manufacturer that actually initiated sulfuric acid production at the site in 1889. AACC operated the plant until 1963 when it was sold to Continental Chemical Company, a division of Continental Oil Company (Conoco). Agrico was a subdivision of Conoco. In February 1972, Conoco sold the Agrico Chemical business to The Williams Companies who in turn sold Agrico to Freeport-McMoran in 1987. According to Agrico, the Pensacola plant was closed in 1975, although a DER Report (Reference 3 below, 1988) states production at the plant did not cease until 1976.

By 1981, all process buildings and equipment had been removed from the site, leaving only concrete foundations and waste disposal ponds (Appendix, Figure 2). Physical structures on site include remnant foundations of three buildings which included a fertilizer factory, a storage and shipping house, and a fluorine plant. Four unlined ponds located north and east of the foundations were used to store waste liquid from the manufacture of fertilizer. The maximum combined capacity of these four ponds exceeds 36,030 cubic yards. The largest pond is located less than 100 feet north of the fertilizer factory foundation.

A preliminary site reconnaissance in January 1987, prior to the start of this investigation, determined the impoundments no longer retained any liquids apart from rainwater accumulated in low lying areas. These observations were verified during a site visit by Florida HRS staff on March 22, 1989. One impoundment contained several feet of a spongy, gray, crystalline solid that essentially defines the areal extent of the former waste pond. It was also observed that a warehouse storage facility has been constructed on the southern part of the property.

At the present time, a work plan for a Remedial Investigation (RI) is in progress and work on the RI should begin in the summer of 1989.

The following documents were reviewed by Florida HRS:

1. Hazardous Waste Site Investigation, Agrico Chemical Company Site Pensacola, Florida, U.S. Environmental Protection Agency (EPA) Project No. 84-002. US-EPA, Region IV - 10/18/83.
2. Document of Hazard Ranking System of Agrico Chemical Company, Pensacola, Florida. EPA-Region IV, K. Hankinson - 6/1/87.
3. Groundwater Investigation Report No. 88-08, Agrico Chemical Company, Escambia County, G. B. Watts, K. L. Busen, J. W. Wilson, W. H. Colona III, Florida Department of Environmental Regulation - 6/88

### Environmental Contamination and Physical Hazards

#### On-Site Contamination

According to the ground water investigation report of 1988, waste pond sediments at the site are contaminated with fluoride, nitrite, and nitrate; and surface water in waste ponds contained high fluoride levels. Shallow ground water is contaminated with arsenic, and deep ground water contains benzene at a level likely to be of human health concern.

<u>MEDIA</u>	<u>Contaminant</u>	<u>RANGE (UNIT)</u>
Waste Pond Sediment	Fluoride	17,940 mg/kg
	Nitrite	642 mg/kg
	Nitrate	370 mg/kg
Shallow Ground Water	Arsenic	BDL - 300 ug/L
Deep Ground Water	Benzene	9 ug/L
Surface Water	Fluoride	1.3 - 135 mg/L

BDL - Below Detection Limit

#### Off-Site Contamination

Off-site ground water downgradient from the site (southeast area), is contaminated with chromium, nitrate and benzene, at levels likely to be of human health concern.

MEDIA	CONTAMINANT	RANGE (UNIT)
Shallow Ground Water	Chromium	BDL - 84 ug/L
Deep Ground Water	Benzene	24 ug/L
Supply Wells	Nitrate	3.7 - 11 mg/L
	Chromium	<10 - 0.12 mg/L

BDL - Below Detection Limit

#### Physical Hazards

Broken furniture, debris, and trash that has been dumped on site could represent physical hazards for children or others who use the site for recreation purposes.

#### Potential Environmental and Human Exposure Pathways

Based on information in the ground water investigation report of 1988, sources of environmental contaminants are sediments and sludges of on-site impoundments, and area ground water. The primary contaminants of concern are fluoride, nitrite, nitrate, arsenic, chromium and benzene.

Ground Water: The major aquifer system in the Pensacola area occurs within sediments that are Eocene to Pleistocene in age, predominantly sands and clayey sands of remnant marine terraces or the Citronelle Formation. This aquifer is the Sand and Gravel Aquifer, a 280-foot layer of poorly sorted, coarse-grained quartz sand. Horizontal and vertical permeability in this formation are generally very high, facilitating the movement of contaminants into ground water flowing toward the east-southeast. In 1958, a municipal potable well located 1.25 miles east-southeast of the site was closed down due to low pH and high fluoride concentration. This plume of contaminated ground water could migrate into Bayou Texar or Pensacola Bay.

Surface Water: There are four impoundments located north and east of the foundations on the site. Testing results from 1985 indicate that surface water from the impoundments contained high concentrations of zinc and fluoride. The site reconnaissance undertaken in January 1987 showed that the impoundments no longer retained liquids apart from rainwater accumulated in low lying areas. One impoundment contained several feet of a spongy, gray crystalline solid that essentially defines the areal extent of the former water pond. These solids were also observed during the site visit.

Sediments and Surface soil: High levels of fluoride, nitrate, and nitrite were found in sediments of the waste ponds. Currently, the impoundments are dry; therefore, human exposure to sediment is a potential health concern at the Agrico site. The site has no fence or signs, and access is not restricted.

Contamination of environmental media identified above result in the following potential human exposure pathways.

1. Ingestion, dermal absorption, and inhalation of contaminated ground water. Analytical results of on-site and off-site ground water at the Agrico Chemical Company site showed that the on-site surficial aquifer and off-site surficial and intermediate aquifers located southeast of the site were contaminated. One water supply well on 12th Avenue was removed from service at the beginning of 1959 because of contamination. The ground water quality in the area has continued to deteriorate in the thirty years since this public well was abandoned. Municipal wells F & Scott, East Plant, #6, #8, #9, three industrial supply wells and at least four domestic supply wells are located downgradient from the site. Exposures by dermal absorption and inhalation may occur to residents in the area who have irrigation wells or who may use benzene-contaminated water for non-drinking household purposes on a daily long-term basis.
2. Ingestion, inhalation, and dermal exposure to contaminated soil. Soils were not considered for testing during the site investigation. Therefore, human exposure from this pathway will be of potential concern until it has been ruled out. At this time, a dirt road through the site provides the only access to two city-owned softball fields.
3. Ingestion and dermal absorption of contaminated surface waters and sediments. Impoundment water and sediments were found to contain high concentrations of fluoride. Since the site is unfenced, incidental ingestion and dermal absorption may occur for children who use the site as a recreational area. In addition, unprotected remedial workers on site also risk exposure.
4. Pathways of exposure related to air and edible plants and animals have not been sufficiently investigated to rule them out.

#### Demographics

The 30-acre Agrico Chemical site is located within the Pensacola city limits and is bounded to the south by Fairfield Drive, to the east by Interstate 110, to the west by CSX Transportation (formerly the Louisville and Nashville Railroad) tracks and to the north by relatively undisturbed land which is now used for recreational purposes (see Figure 1). Residential homes are located within a one-half mile radius from the site. The total population served by ground water within a three-mile radius is approximately 114,000.

### Evaluation and Discussion

The investigation at the former Agrico Chemical site did not fully characterize the extent of ground water contamination.

A supply well on 12th Avenue showed contamination from the Agrico Chemical site; therefore, further testing to define the off-site extent of contamination should be conducted. On-site soil sampling was not included in the ground water investigation report, but testing of sediments and sludges at impoundments located north and east of the foundations indicated high fluoride levels.

### Conclusions and Recommendations

Based on the available information, it has been concluded this site is of potential public health concern because of the risk to human health from exposure to hazardous substances at concentrations that may result in adverse health effects. As noted in the Environmental Contamination and Physical Hazards sections above, human exposure to arsenic, chromium, fluoride, nitrate, and benzene may occur through contact with contaminated ground water; human exposure to fluoride may occur through contact with sediments and surface water in on-site impoundments. Air and edible plant and animal exposure pathways were not addressed in the information reviewed for this Preliminary Health Assessment.

Further testing to define the plume of contamination in ground water should be conducted. Ground water testing should include testing of the municipal supply wells located downgradient from the site. There is some indication that concentrations of sulfate, nitrate, fluoride, and aluminum were slightly above historical concentrations in a recent sampling. A private well survey and sampling for metals and volatile organic compounds should be considered for residences within a one mile radius of the site because off-site ground water showed benzene, nitrate and chromium contamination.

A dirt road on site is used as the only access to two city-owned baseball fields located north of the site (Figure 2). Evidence of children using the site for bike racing and use of the site as a trash dump were observed during the site visit. Therefore, the site should be fenced and access restricted to prevent exposures from dermal contact or incidental ingestion of sediments by on-site trespassers.

In accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended, the Agrico Chemical Company, Pensacola, Florida site has been evaluated for appropriate follow-up with respect to health effects studies. Although there are indications that human exposure to on-site and off-site contaminants may be currently occurring and may have occurred in the past, this site is not being considered for follow-up health studies at this time because documentation of current exposure is not available, and testing to accurately determine previous exposure is likewise unavailable. However, if data become available suggesting that human exposure to significant levels of

hazardous substances is currently occurring or has occurred in the past, ATSDR and the Florida Department of Health and Rehabilitative Services will reevaluate this site for any indicated follow-up.

This Health Assessment was prepared by the Florida Department of Health and Rehabilitative Services Office of Toxicology and Hazard Assessment under a cooperative agreement with ATSDR. The Division of Health Assessment and Consultation and the Division of Health Studies of ATSDR have reviewed this Health Assessment and concur with it's findings.

This is a Preliminary Health Assessment. It may be altered or augmented as more information becomes available on the site.

#### PREPARERS OF REPORT

Environment and Health  
Effects Reviewer: Connie Garrett, M.S.  
Environmental Specialist III  
Toxicology and Hazard Assessment

Anh L. Hoang, M.S., ChE.  
Engineer III  
Toxicology and Hazard Assessment

Health Implications  
Reviewer: Andrew Reich, M.S., M.S.P.H.  
Biological Administrator III  
Toxicology and Hazard Assessment

#### ATSDR REGIONAL REPRESENTATIVE

Regional Representative: Chuck V. Pietrosewicz  
Senior Public Health Advisor  
Field Operations Branch  
Region IV

#### ATSDR TECHNICAL PROJECT OFFICER

Project Officer: Max M. Howie, Jr.  
Environmental Health Scientist  
Division of Health Assessment and Consultation

## Appendices

1. Figure #1 - Location of Agrico Chemical and the 12th Avenue Supply Well
2. Figure #2 - Agrico Chemical Site - September 1983

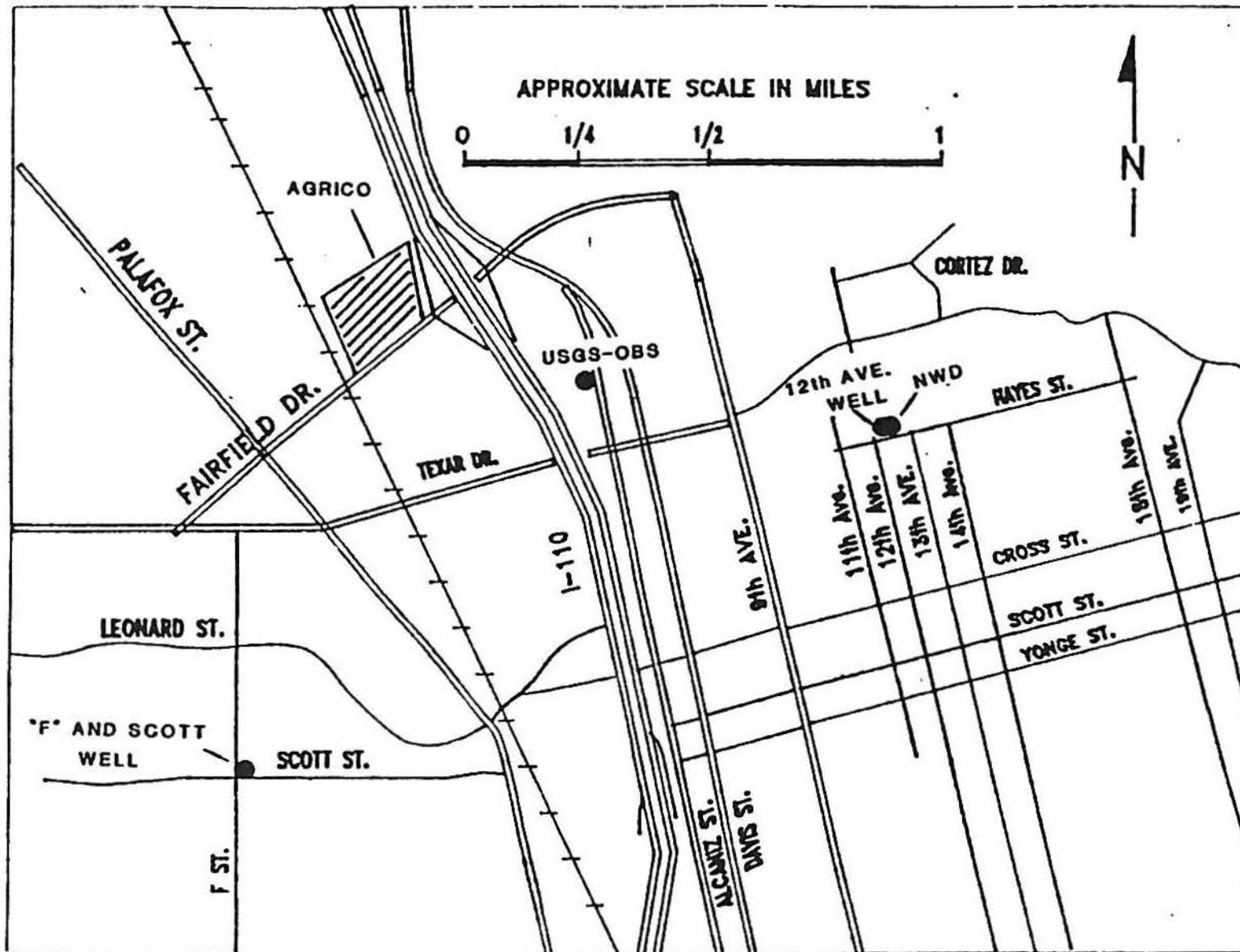


FIGURE 1. LOCATION OF AGRICO CHEMICAL AND THE 12TH AVENUE SUPPLY WELL

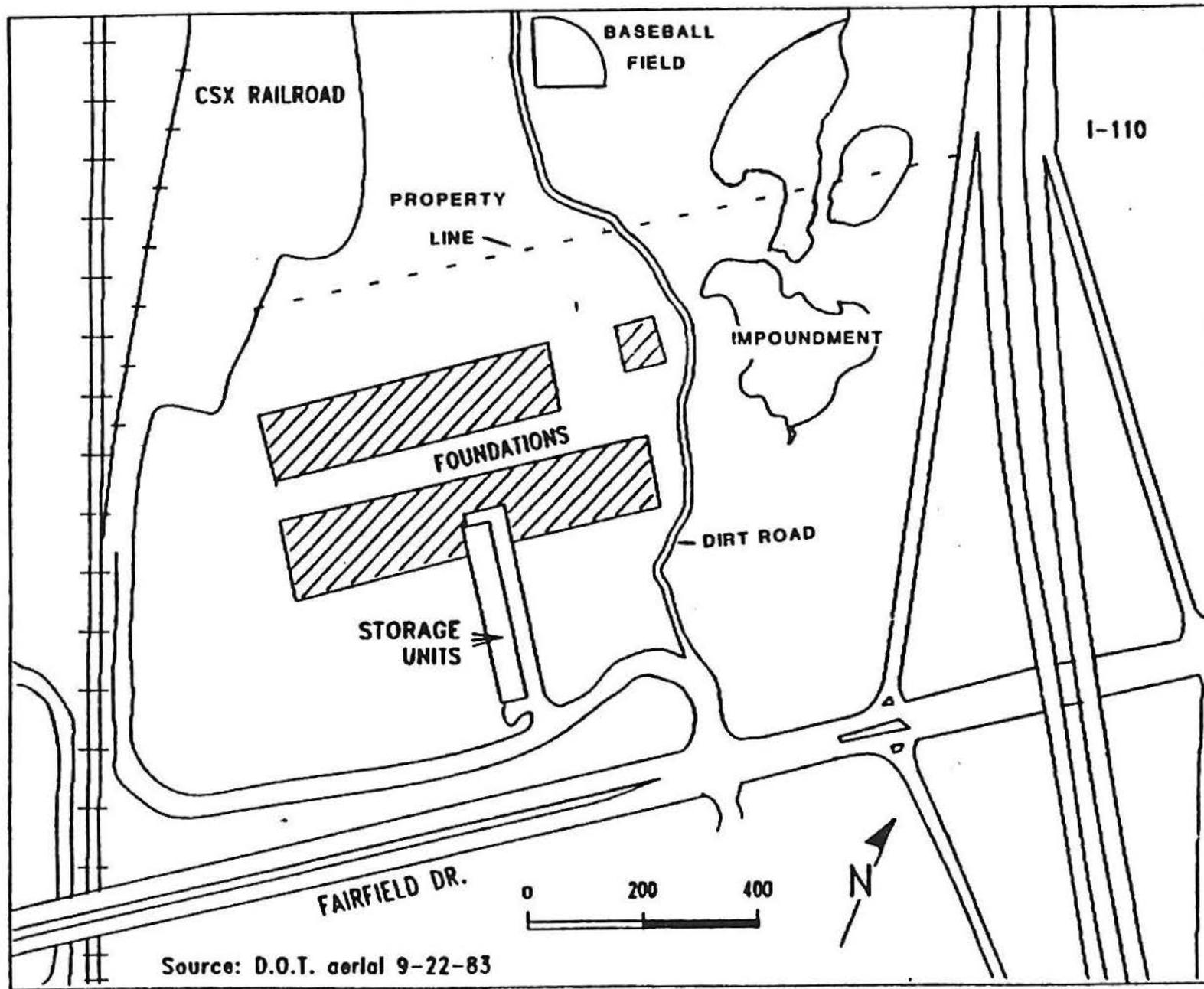


FIGURE 2. AGRICO CHEMICAL SITE - SEPTEMBER 1983