

Site Review And Update

ALPHA CHEMICAL CORPORATION

LAKELAND, POLK COUNTY, FLORIDA

CERCLIS NO. FLD041495441

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

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Agency for Toxic Substances and Disease Registry

Division of Health Assessment and Consultation

Atlanta, Georgia 30333

Site Review and Update: A Note of Explanation

The purpose of the Site Review and Update is to discuss the current status of a hazardous waste site and to identify future ATSDR activities planned for the site. The SRU is generally reserved to update activities for those sites for which public health assessments have been previously prepared (it is not intended to be an addendum to a public health assessment). The SRU, in conjunction with the ATSDR Site Ranking Scheme, will be used to determine relative priorities for future ATSDR public health actions.

SITE REVIEW AND UPDATE

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Prepared by

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

SUMMARY OF BACKGROUND AND HISTORY

The Alpha Resins Corporation (ARC), formerly known as Alpha Chemical Corporation, is in Kathleen, 3 miles north of Lakeland, Florida at 4620 N. Galloway Road. ARC has produced unsaturated polyester resins for the manufacturers of fiberglass products at this 32-acre site since 1967. The process yields wastewater containing small amounts of volatile organic compounds (VOCs). Under a Florida Department of Environmental Regulation (FDER, now known as Florida Department of Environmental Protection or FDEP) permit, ARC disposed of this wastewater in two unlined percolation ponds (Ponds #4 and #3-2; see Figure 1), relying on natural biological processes to break down the VOCs. To minimize odors, ARC began incinerating the wastewater in 1976. Pond #4 dried up, and workers used the area as a solid waste landfill for a year, covering it with soil in 1977. Landfill wastes reportedly included: 55-gallon drums with solidified resin residues, boxes, pallets, empty bags, tires, old furniture, grass clippings, and shrubbery. In 1977, the company also divided pond #3-2 into two ponds, pumping sludge waters from pond #2 into pond #3. ARC lined pond #2 with concrete to use as an evaporation pond for caustic floor wash waste, and closed this pond in 1988 by covering it with soil. In 1982, when ARC sought to line pond #3 with concrete for caustic wash water evaporation, FDER requested ground water monitoring information. New monitoring wells revealed contamination in the surficial aquifer, which flows southeast from the site. After discovery of the contamination, ARC discontinued all uses of pond #3. Pond #1 holds noncontact cooling water, which does not contain hazardous substances, and discharges into a swamp south of the pond area (EPA 1986c, 1990a, 1992).

The surrounding area is residential and commercial. In 1992, approximately 650 people lived within ½ mile of the site, and area residents use private wells for potable water (EPA 1992). FDER's 1983 groundwater assessment report indicates most residents draw their water from the uncontaminated, deep Floridan aquifer rather than the contaminated surficial aquifer. A confining layer of clay separates these two aquifers, but FDER and EPA differ in their assessments of the degree to which this clay protects the Floridan aquifer from contamination by the surficial aquifer. FDER concludes the hydrogeologic setting could allow leakage between the two aquifers, posing a substantial threat to the water quality of the Floridan aquifer, while EPA states there is no threat of inter-aquifer contamination (EPA 1986a, 1986c; FDER 1983).

Even though most people obtain their drinking water from the Floridan aquifer, FDER identified three residences with drinking water wells in the surficial aquifer. Contamination had been found in one of these wells in 1974. At the time of the FDER investigation, residents were not using these wells for water supply (FDER 1983). It is not known when use of these wells stopped. The U.S. Environmental Protection Agency's (EPA) Endangerment Assessment indicated small numbers of area residents may obtain their drinking water from the surficial aquifer, and the report identified the presence of an active drinking water well, located 390 feet south of the site, in the surficial aquifer (EPA 1986a).

The 1986 draft Remedial Investigation (RI) report positively identified 23 organic compounds present on site in the surficial aquifer, soils, and sediments in or south of the old ponds. Approximately 50 other organic compounds were tentatively identified; however, investigators eliminated these compounds from evaluation in the RI. No metals were detected. Of the positively identified compounds, ethylbenzene occurred the most often and in the highest concentrations. Site investigators also sampled seven private wells near the site, and none of the private wells sampled was contaminated with organic compounds. The RI report did not present private well depth information, preventing any determination of which aquifer the private wells drew water from. In addition, it is unclear if investigators sampled the deep Floridan aquifer on site during the RI. The contaminated surficial aquifer discharges into the swamp, and both ethylbenzene and xylene were found in dry swamp sediments. Site investigators did not collect surface water or air samples during the RI (EPA 1986c).

The 1986 Endangerment Assessment selected benzoic acid, 1,2-dichloropropane, ethylbenzene, styrene, and xylene as indicator chemicals; it did not include other suspected or known carcinogens found at the site as indicators. The Endangerment Assessment concluded the potential for adverse health effects was remote for several reasons: there are no identifiable contaminant plumes or "hot spots" in the ground water; the surficial and Floridan aquifers are not hydraulically connected at or near the site; nearby residents use the Floridan rather than the surficial aquifer for potable water, making the number of potentially exposed people very low; contaminant concentrations are expected to decrease over time in the ground water; the site has a storm water control system to contain flood waters on site; and any contaminants discharged from ground water into the swamp are expected to be diluted and degraded (EPA 1986a). In a letter commenting on the draft Endangerment Assessment, the Florida Department of Health and Rehabilitative Services (FHRS) pointed out the significance of finding the known or suspected carcinogens benzene, methylene chloride, and bis(2-ethylhexyl)-phthalate in the surficial aquifer, as well as finding many other contaminant concentrations exceeding drinking water health guidelines. The letter also stated the department could not determine which aquifer the private wells in the study drew water from. Based on their review, FHRS recommended adding the identified carcinogens to the indicator list, and monitoring downgradient private wells near the site in the future (FHRS 1986).

To clean up the site, the U.S. Environmental Protection Agency (EPA) filled the unlined pond with clean clay soil and placed a synthetic, low-permeability cap on top of the old landfill and unlined pond. This remedy was operational by October 1989 (EPA 1994b). Initially, eight on-site wells in the surficial aquifer were sampled quarterly for a year (EPA 1988); thereafter, only two on-site wells were sampled quarterly since ethylbenzene, styrene, and xylene had not been detected in any of the other wells, including a well in the Floridan aquifer (EPA 1994b). Contaminant concentrations for the indicator chemicals have been decreasing over time (EPA 1990b, 1994b). All indicator contaminants have been below the applicable maximum contaminant levels (MCLs) since December 1991 (EPA 1994b). EPA's amended close out report for the site concludes the site no longer poses a threat to human health or the environment, and only minor operation and maintenance activities remain to be

performed by ARC (EPA 1994a). EPA plans to begin the delisting process in the near future (Dick, pers. comm.)

In 1989, the Agency for Toxic Substances and Disease Registry (ATSDR) wrote a Preliminary Public Health Assessment for the site. This health assessment concluded the site was of no public health concern because of the absence of human exposure to significant levels of hazardous substances. The assessment recommended re-evaluation of ground water exposure if wells were installed in the surficial aquifer in the future. The health assessment did not identify any health concerns of nearby residents (ATSDR 1989).

PUBLIC HEALTH IMPLICATIONS

Our findings differ from those of the 1989 ATSDR Preliminary Public Health Assessment for the site. In 1974, one private drinking water well drawing water from the surficial aquifer had acetone, n-propanol, 1,4-dioxane, 2-propanol, and 2-ethyl-4-methyl-1,3-dioxolane in it. These compounds were known to occur in the ARC waste ponds. The FDER memo reporting these results did not specify the chemical concentrations found, but suggested none of the contaminants were in significant quantities, with the possible exception of 2-ethyl-4-methyl-1,3-dioxolane (FDER 1981b). ARC subsequently bought the property where the contaminated well was located (Stottler Stagg and Associates 1986).

The 1989 public health assessment did not identify or address public health concerns related to this site. In the early 1980's, some nearby residents reported eye irritation, sinus trouble, bronchitis, other breathing difficulties, and blood disorders as health effects they believed may have been caused by site-related water and air contamination (FDER 1981b, 1982a). In addition, a local physician asked the Polk County Public Health Unit (CPHU) to investigate waste emissions at ARC because of bone-marrow or liver problems in a patient that were possibly caused by site-related contamination of a nearby private well (FDER 1981a, FHRS 1981). Samples subsequently collected in April 1982 from nearby private wells did not contain detectable levels of VOCs or butanone. We could not find a copy of the results from EPA air samples collected during this month. However, EPA's preliminary air survey of the area around ARC did not detect VOC air pollutants (FDER 1982b). At EPA's 1988 public meeting about the Feasibility Study, residents asked about the possible health effects from exposure to the three indicator chemicals and expressed concerns that health effects from past and present exposures might not appear until many years in the future (FDER 1988).

These findings indicate it is likely some residents were exposed in the past to site-related contaminants via the shallow aquifer or ambient air. It is not known how long exposure might have occurred or what the contaminant concentrations at the exposure points were. Consequently, we do not have the information needed to estimate past exposure doses or assess possible health effects from past exposures.

CURRENT CONDITIONS OF SITE

On May 26, 1994, FHRS staff performed a windshield survey at the site. From the road, staff could see the grass-covered surface of the cap, as well as several monitoring wells. Water from pond #1, containing noncontact cooling water, drained into the wetland south of the old pond area. The fence around the site was well maintained, and all gates were closed and locked except for the access to the parking lot on the northern portion of the site.

During their 1993 field investigation for the five-year site review, EPA sampled nine on-site wells, including one well in the Floridan aquifer. The sample results showed the concentrations of indicator chemicals were below established MCLs. However, the human carcinogen benzene was detected in one on-site well in the surficial aquifer at an estimated concentration of 3.2 µg/l (micrograms per liter) which exceeded Florida's drinking water MCL of 1 µg/l. Although bis(2-ethylhexyl)phthalate was not detected, the detection limit used (20 µg/l) was greater than Florida's drinking water standard (6 µg/l). Some wells also had aluminum and iron in concentrations exceeding secondary drinking water standards. These metal concentrations may represent local background conditions (EPA 1994b) and do not indicate the presence of a public health threat. Finally, the EPA site visit also identified one place where the cap's drainage discharge pipe showed signs of erosion. This latter problem has been corrected (EPA 1994b).

In the quarterly samples collected for 1994, ARC has continued to find benzene in concentrations ranging between 2-3 µg/l. Methylene chloride and styrene have not been found in concentrations that exceed the MCL. The company has not been testing for bis(2-ethylhexyl)phthalate; however, EPA's project manager for the site has agreed to ask ARC to analyze for this compound, employing appropriate detection limits, in the next quarter's sampling (Dick, pers. comm.). Polk CPHU reports they are not currently monitoring private wells in the area around the site (Pipkin, pers. comm.).

Old FDER records state ARC has had a history of odor complaints (FDER 1981b). Nevertheless, Polk CPHU has not recently received any odor complaints involving the facility (Pipkin, pers. comm.). Similarly, a search of FDEP's computer records indicate the site is in compliance with its air emissions permit, and no air standard violations have been recorded over the past several years (Butcher, pers. comm.)

CURRENT ISSUES

FDER's 1983 ground water assessment report indicates that private wells in the surficial aquifer draw their water from a sandy unit of substantial permeability but limited (3-5 feet) thickness. A well producing water for a household from such a thin unit could be expected to create a large cone of depression and draw water to it for some distance (FDER 1983). Benzene concentrations exceeding the MCL in the surficial aquifer has the potential to affect drinking water wells in this aquifer. Because inappropriate detection limits were used for

bis(2-ethylhexyl)phthalate, it is not known if this substance was present in the shallow aquifer at concentrations exceeding the MCL. Furthermore, in 1986, EPA's toxicologist recommended that if the selected remedy for the ARC site did not include ground water clean up, then the well 390 feet south of the site should be monitored regularly to ensure it did not become contaminated (EPA 1986b). This monitoring is not taking place. FHRS would like to review the next set of ARC's sample results, and the analytical results from downgradient private wells before the delisting process proceeds.

CONCLUSIONS

Based on our findings, we classify this site as an indeterminate public health hazard.

EPA's monitoring program for the ARC site currently includes analyses for the known or suspected carcinogens originally identified during the remedial investigation, with the exception of bis(2-ethylhexyl)phthalate. Two of the suspected carcinogens, styrene and methylene chloride, have consistently been below established MCLs. The known human carcinogen, benzene, has consistently been detected at values above Florida's MCL for this compound. Given the large cones of influence expected for wells drawing water from the surficial aquifer, this concentration of benzene has the potential to contaminate downgradient private wells near the site using this aquifer for drinking water. Routine private well monitoring is not taking place in the area around the site.

It is not known if bis(2-ethylhexyl)phthalate is in the shallow aquifer at concentrations exceeding the MCL.

EPA plans to begin the delisting process for the site in the near future.

Exposures to toxic substances may have taken place in the past. It is not known if past exposures were significant or related to reported health concerns of nearby residents. Because of the long length of time since the original data were collected, it is doubtful we can obtain old environmental data for further analysis.

RECOMMENDATIONS

Polk CPHU should sample the water of nearby private well users, downgradient from the site, to ensure residents are currently consuming water of acceptable quality. In addition, Polk CPHU should periodically monitor the private well of the residence 390 feet south of the swamp to ensure acceptable water quality for this resident. All water samples should be analyzed for purgeables and possibly base neutrals.

EPA should ask ARC to sample for bis(2-ethylhexyl)phthalate in the next round of samples to determine if ground water under the site contains this compound in concentrations exceeding the MCL.

FHRS' Environmental Toxicology Section should review any new monitoring data collected prior to delisting. If these new sampling data indicate the presence of a public health threat, FHRS should prepare a health consultation on the site.

Because of the difficulties in obtaining environmental data from the 1970's, FHRS does not plan further evaluation of past exposures at this site.

Health Activities Recommendation Panel Recommendations:

The data and information developed in the Site Review and Update have been evaluated to determine if follow-up actions may be indicated. Further site evaluation is needed to determine appropriate follow-up actions.

PREPARER OF REPORT

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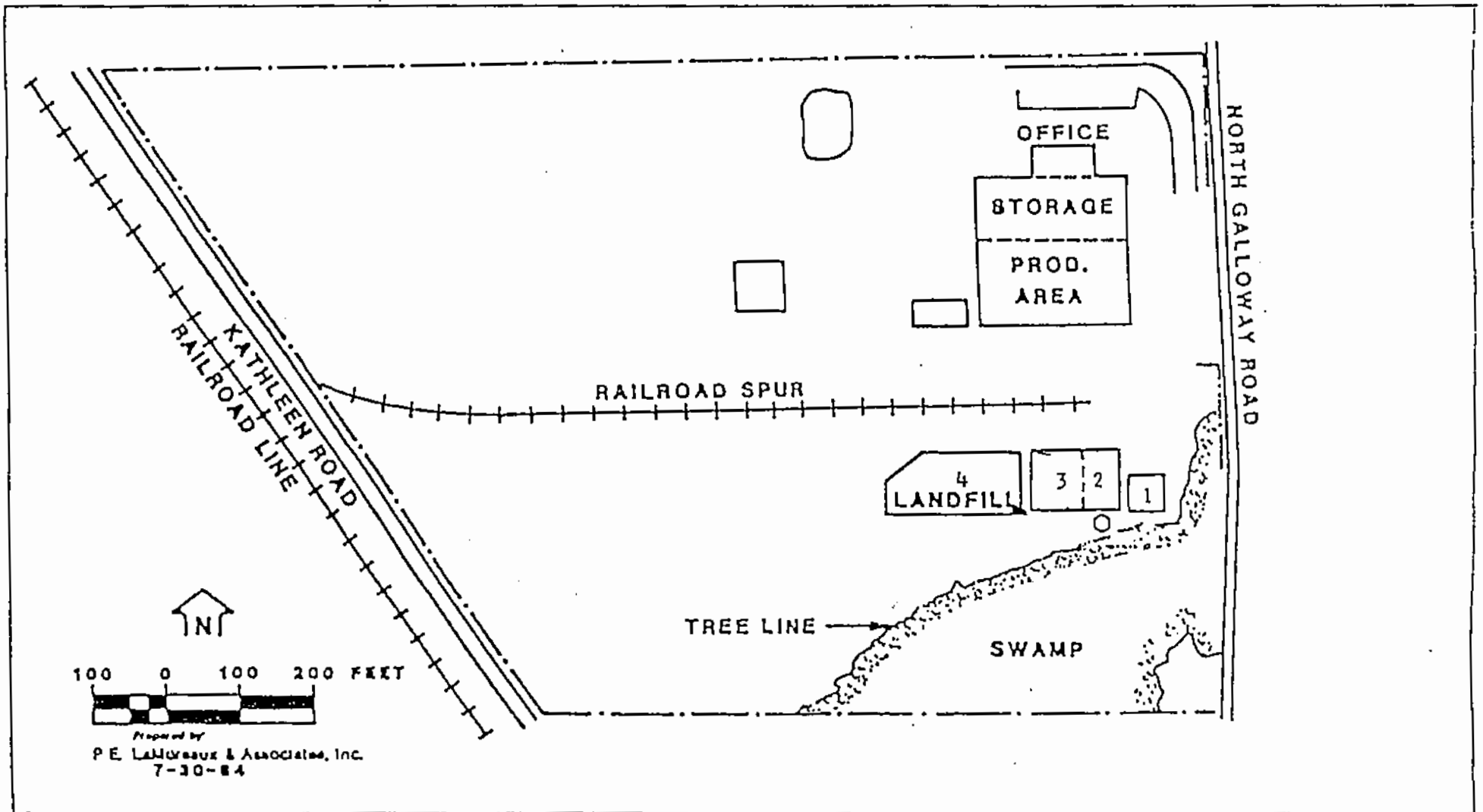


FIGURE 1. Site Map of the Alpha Facility showing location of the ponds.