

## HEALTH CONSULTATION

Assessment of Cancer Incidence from the Louisiana Tumor Registry  
From 1988 - 1997

AMERICAN CREOSOTE WORKS, INCORPORATED

WINNFIELD, WINN PARISH, LOUISIANA

CERCLIS No. LAD000239814

Prepared by:

Louisiana Department of Health and Hospitals, Office of Public Health  
Section of Environmental Epidemiology and Toxicology  
Under a Cooperative Agreement with the  
Agency for Toxic Substances and Disease Registry

## **I. EXECUTIVE SUMMARY**

In 1995, the Louisiana Department of Health and Hospitals, Office of Public Health, Section of Environmental Epidemiology (LDHH/OPH/SEET) prepared a public health assessment for the American Creosote Works, Inc. At that time, it was determined that the American Creosote Works, Inc. site posed a public health hazard because of past, and possibly present and future exposure to on-site soil, sediment, and surface water contaminated with polycyclic aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), and dioxin. The exposures were estimated to be at levels that could exceed, individually or as a mixture, long-term health guidelines (OPH, 1995). A health statistics review was conducted to evaluate whether the population residing closest to the American Creosote National Priorities List (NPL) site in Winn Parish, Louisiana, had elevated cancer incidence rates. The review consisted of two census tracts (the 1-mile proximity zone). The size of the population in the 1-mile proximity zone was approximately 6,800 persons. Cancer data (1988-1997) from the Louisiana Tumor Registry (LTR), a population based cancer incidence registry covering the entire state, was evaluated for this review.

A cancer review for the census tracts within 1-mile of the site compared to state rates could not be completed due to the very low geocoding rate for cancer cases occurring near the American Creosote Works, Inc. site. Many residents of Winn Parish have P.O. Box or Rural Route addresses; therefore, georeferenced coordinates could only be obtained for 257 of 582 cancer cases (44.2%) within the zip code enclosing the census tracts of interest (71483).

Currently, the long-term phase of the Remedial Action for in-situ biological treatment of contaminated soil and the pumping and treatment of liquid contaminants is ongoing. Currently, on average, over 400,000 gallons of liquids (contaminated ground water and non-aqueous phase liquids or NAPLs) are collected and treated per month, including over 1,000 gallons of NAPL. The collected NAPL are transported off site to a permitted facility for incineration. Treated ground water is either reinjected into the ground as part of the in-situ biological treatment process or discharged to Creosote Branch Creek via permitted outfall. The Environmental Protection Agency (EPA) continues to monitor the performance of the remedy to assess its effectiveness in achieving the established remedial activities. EPA is addressing deficiencies identified during the Five-Year Review of the Remedial Action, including the presence of NAPL outside of influence of remedial systems and the clogging of extraction trench sumps. EPA is also evaluating options for improving the performance efficiency of the operating remedial systems. This work should be completed in the next 1-2 years. (1)

## **II. BACKGROUND AND STATEMENT OF ISSUES**

During the EPA Removal Action in 1989, the American Creosote Works, Inc. site consisted of 15 large storage tanks, three large and six small pressure treating units, three office maintenance sheds, a tool and dye shop, a gasoline pump with underground storage tanks, five monitoring wells, a small chemical laboratory west of the plant area near Front

Street and the site access road, a sludge pit, a lagoon that has been backfilled with wood chips, and a pond on the northern portion of the site. Historically, according to Louisiana Department of Environment Quality (LDEQ) reports, the swampy area at the site had been covered by a few inches to about 1 foot of tar-like material.

The 34.21-acre American Creosote Works, Inc. site is a former wood treatment facility located less than 0.5 mile from the city of Winnfield, a rural, primarily low-income town with a 1990 U.S. Census population of 6,138, in Louisiana (See Figure 1). The site is bordered by Creosote Branch (a small creek with banks 10 to 12 feet high) on the north and east, Front Street on the west, and a residential access road on the south and east. Since 1901, the site was utilized for various operations, and was finally obtained by the Stallworth Timber Company in 1979. In 1985, the timber company abandoned the facility.

The facility pressure treated telephone poles, railroad crossties, and lumber with creosote and PCP. Untreated timber was debarked and staged on the south side of the site. The timber was then railed into pressure vessels for treatment, and to layout yards on the north side of the site for drying and shipment.

Hazardous substances, including various PAHs, dioxins, benzene, and PCP were found in site soils, liquids, and sludges in the plant area, the sludge lagoon, the site drainage courses, and Creosote Branch. The shallow aquifer (5 - 30 feet deep) underlying the site was found to be contaminated with PAHs, benzene and phenols. Monitoring wells screened at 5 to 20 feet were reported to contain 1-foot of floating creosote and several inches of floating oils.

In addition, two drainage ditches originated on the site near the plant area, and a third crossed the site from south to north. From west to east, depths of the ditches were 1-2 feet, 3-5 feet, and 8-12 feet. Pools of black, tar-like material could be observed in the banks of the drainage ditches. It appears that rainfall runoff washed this material from the ditches into Creosote Branch. Creosote Branch continues for about 2 miles to the confluence with Port de Luce Creek, which flows for another 3 miles to the southeast, then joins Cedar Creek before emptying into the Dugemona River. This river is one of the larger waterways in the Winnfield area and ultimately drains into the Little River in the southeastern section of Winn Parish. The State of Louisiana Stream Control Commission began investigations at the American Creosote Works, Inc. facility in 1966, citing high levels of phenols and a high biological oxygen demand (BOD) in plant discharges, and phenol and creosote releases into Creosote Branch. (2)

On May 16, 1996, during remediation, SEET staff visited the American Creosote facility. At the front gate of the site on Front Street, the incinerator was being assembled. Across the street from the site, the embankments of Creosote Branch were free of creosote material, debris, and other garbage. At that time, the water levels were a few inches high, however, it appeared at times that the Branch appeared to reach high levels (4 - 6 feet) with fast moving water because the vegetation around the embankments was pushed back. The site appeared to be clean and had been bulldozed and all trash and physical

structures had been removed. Two large pits with linings on the bottom were visible from the fence line. The pits were empty at that time, but would hold the residual water remaining after bioremediation and carbon filtration. Other site features were drainage ditches on site and an air sampling station on the fence line parallel to Watts Street.

In February 1998, the incineration phase was completed. Approximately 7000 cubic yards of soil were excavated and due to low levels of contamination, were consolidated into the process area where it underwent in-situ biodegradation. The water treatment plant for the in-situ bio-treatment system was completed in February 1997 and over 8 million gallons of contaminated groundwater including 140 barrels of pure creosote were initially treated. The plant will continue to operate for the implementation of the long-term in-situ bioremediation. The incinerator has been decommissioned and transported off-site. The completion of the in-situ bioremediation system has effectively eliminated discharges to Creosote Branch, allowing the stream to recover to natural conditions (1).

Currently, over 540,000 gallons of fluid are recovered and treated on site per month, with nearly half of that volume re-injected into the ground as part of the in-situ bioremediation system. The remaining treated water is discharged to Creosote Branch. Over 1,500 gallons of creosote and oil are currently recovered from this treatment process per month. The creosote and oil are sent off site for incineration. A total of 101,540 gallons of creosote and oil have been collected from the site to date.

Completed exposures to these chemicals on site and at the Creosote branch probably have occurred via incidental ingestion and dermal contact with soil, sediment, surface water and inhalation of air. Potential exposure may occur via ingestion and dermal contact with soil, sediment at Port du Luce, ingestion of biota at Creosote Branch and Port du Luce, and inhalation of fugitive dust, however, sampling data on biota, residential yards, and fugitive dust have not been collected. The populations at highest risk of exposure are residents, particularly children, who live adjacent (1-mile proximity zone) to American Creosote Works, Inc. and play at the banks of Creosote Branch, residents trespassing the site or living at the site border, and residents involved in recreational activities at the Creosote branch at Port du Luce.

### **III. CANCER CASE ASCERTAINMENT AND TIME PERIOD**

The LTR was used to ascertain cancer cases. The LTR, operated by the Louisiana State University Health Sciences Center, is a population-based cancer registry covering the entire state of Louisiana. The registry has been in operation in the New Orleans metropolitan area since 1974, in South Louisiana since 1983 and in the rest of the state since 1988. By law, every health care provider is required to report newly diagnosed cancers.

The registry information available for each newly diagnosed cancer case is limited and it is documented from the patient's medical record. Information collected includes demographic and medical data on each individual cancer patient such as name, address at time of diagnosis, census tract code, primary cancer site, histology type, date of

diagnosis, age at diagnosis, birth date, race, sex, and registry identification number. To ensure that reported data are complete and accurate, Louisiana Tumor Registry staff members perform case-finding and other quality control checks at these institutions.

The period of time selected for evaluation of cancer incidence data was 1988-1997, which was the most recent data available for this part of the state at the time of this analysis. Cancer incidence was chosen for this review because cancer death rates are affected by multiple factors: how advanced the cancer was at the time of diagnosis, access to health care, and other factors not related to exposure. (3)

#### **IV. RESULTS**

A geographical information system (GIS) was utilized to define and estimate populations living near the American Creosote Works, Inc. site and to assist in the identification of cancer cases that occurred in residents near the site during the years 1988 to 1997. Although, the site was in operated from 1901 to 1985, the LTR data was not available at that time.

The use of GIS provides a method for analyzing cancer in geographic areas not defined by town boundaries and to look at smaller geographic areas. Specifically for this review, SEET focused on the census tract (approximately 1000 to 4000 persons) and census block groups (approximately 600 to 650 persons) as the geographic areas of interest. Census tracts and block groups were used instead of census blocks (approximately 80 to 100 persons) because blocks do not provide the age, race, and sex population data needed to analyze cancer incidence data. Street Atlas<sup>®</sup> software was used to obtain latitude and longitude coordinates for the cancer cases with valid street address information. These cases were plotted using MapInfo<sup>®</sup> software on a base map of Winn Parish census tracts to determine which geocoded cases occur within the census tracts within 1 mile of the American Creosote Works, Inc. site. Property maps of the American Creosote, Inc. site in Winn Parish were obtained from the LDEQ. The perimeter of the site was digitized in the Universal Transverse Mercator (UTM) coordinate system using Intergraph/MGE GIS software system. Topologically Integrated Geographic Encoding Referencing (TIGER) files containing boundaries for census tracts and blocks for the parish were obtained. The digital files were cleaned and their coordinate systems were standardized to the UTM system. The block files were further processed through overlaying with census tract files so that a unique identifier for each census block was included.

Next, in order to retrieve the census blocks that intersect with the 1-mile proximity zone of the site, the digitized NPL boundary file and census block file were overlaid using Intergraph/ MGA software and an overlay file (a topo file in Intergraph terminology) was created. The 1-mile proximity criterion was then imposed as a search criterion in the query set. Then, the query searched the overlay file using the criterion and returned with the census blocks that met the criterion. The census block groups identified in the American Creosote 1-mile proximity zone were in two census tracts, 9603 and 9604.

Winn Parish is a predominantly rural area with many residents listing address information as Post Office Boxes or Rural Routes. The LDHH/OPH/SEET currently does not have a means of obtaining accurate latitude-longitude coordinates for such addresses. Out of 582 cancer cases found within the zip code (71483) that encompasses the two census tracts in the 1-mile proximity zone (9603 & 9604), geocoding was successfully performed for 257 cases. Because of this very low geocoding rate (44.2%) SEET and the Agency for Toxic Substances and Disease Registry (ATSDR) agree that any standard incidence ratio (SIR) calculations performed on the subset with matching latitude and longitude coordinates will be unreliable and are likely to be an underestimation of actual cancer incidence in the 1-mile proximity zone. Therefore, the goal of this report could not be met and only demographic data are presented.

In order to characterize the population living within the census tracts within 1-mile of the site, 1990 census data were evaluated as shown in Table 1. The racial composition of residents living within the census tracts within 1-mile of the site differs from the state in that 45.7% of the residents are black compared to 30.8% in the state and 53.3% of the residents are white compared to 67.3% in the state. The proportion of persons living below poverty is higher within the census tracts within 1-mile of the site (36.4%) than the state (23.6%) and the proportion of families living below the poverty level is higher within the census tracts within 1-mile of the site (29.7%) than the state (19.4%). Income indicators for the population within the census tracts within 1 mile of the site are lower than the state. There are also older homes within the census tracts within 1-mile of the site.

**Table 1: Estimated 1990 Demographic Characteristics for Louisiana and American Creosote 1-Mile Radius**

<b>Demographic Characteristic</b>	<b>Louisiana (%)</b>	<b>American Creosote (%)*</b>
<b>Total Population</b>	4,219,973 (100)	6,767 (100)
White	2,839,138 (67.3)	3,605 (53.3)
Black	1,299,281 (30.8)	3,090 (45.7)
Other	81,554 (1.9)	72 (1.0)
<b>Gender</b>		
Female	2,188,587 (51.9)	3,652 (54.0)
Male	2,031,386 (48.1)	3,115 (48.0)
<b>No. of Families</b>	1,098,374	1,715
<b>No. of Households</b>	1,498,371	2,389
<b>Median Age (years)</b>	31.0	32.3
<b>Annual Income (dollars)</b>		
Family (median)	\$26,313.00	\$20,480.00
Household (median)	\$21,949.00	\$13,508.00
Per capita	\$10,635.00	\$8,379.00
<b>Poverty Level</b>		
Persons below	23.6%	36.4%
Families below	19.4%	29.7%
<b>Year residence constructed (median)</b>	1969	1962

\* The census tracts within 1 mile of the site (9603 and 9604).

## **V. DISCUSSION**

One of the primary concerns expressed by communities is living near a hazardous waste site and the effect it has on their health. Latitude and longitude coordinates confirming case location within the census tracts within 1-mile of the site were found for 257 of the 582 cancer cases (44.2%) within the zip code 71483. Due to the low geocoding rates a cancer review could not be completed. Residents of the 1-mile proximity zone were more likely to be black and had higher percentages of persons and families below the poverty line than the State.

Currently groundwater represents no public health threat because no public wells are installed in the contaminated shallow aquifer, i.e. 5 to 30 feet deep. Potential exposure to contaminated groundwater would be possible if contamination does migrate off the site

and residential wells were installed within the contaminated area or if the shallow aquifer is used as a source of potable water.

The site is open, flat, and sparsely vegetated, therefore during dry, windy periods, contaminated particulates must be considered a potential threat to the residents adjacent to the site. The limited air data is insufficient to draw health conclusions.

The investigators encountered difficulties in geocoding a large proportion of the cancer cases occurring within Winn Parish, 1988-1997, due to addresses listed as Post Office Boxes and Rural Routes. At the present time LDHH/OPH/SEET does not possess technology, which would enable a more accurate geocoding system for non-street number addresses. Analysis of the 1-mile proximity zone compared to Louisiana could not be completed due to the small proportion of cancer cases with geocodable address information (257 of 582, or 44.2%).

## **VI. CONCLUSIONS**

The objective of this investigation was to determine whether elevated cancer rates of cancer exist in the community living around the former American Creosote Works, Inc. wood-treating facility as compared to cancer incidence in Winn Parish and the state of Louisiana. The main findings from this investigation are as follows:

- Because of the very low geocoding rate (44.2%) a cancer review could not be completed.
- SEET and ATSDR agree that any SIR calculations performed on the subset with latitude and longitude coordinates will be unreliable and are likely to be an underestimate of actual cancer incidence in the 1-mile proximity zone.

Community Health Concerns have been addressed in the Preliminary Public Health Assessment for American Creosote Works, Inc. (OPH, 1995)



## REFERENCES

1. U.S. Environmental Protection Agency (EPA), American Creosote Works, Inc. @, Feb. 1, 1999.
2. Louisiana Office of Public Health (OPH), Preliminary Public Health Assessment for American Creosote Works, Incorporated, March 9, 1995.
3. National Institutes of Health, National Cancer Institute, Cancer Rates and Risks. 4<sup>th</sup> Edition, 1996.
4. Kahn HA and Sempos CT. Statistical Methods in Epidemiology. New York: Oxford University Press, 1989.

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## **CERTIFICATION**

This American Creosote, Inc. site, assessment of cancer incidence, health consultation was prepared by the Louisiana Department of Health and Hospitals 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 this health consultation began.

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

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**FIGURE 1 ATTACHMENT**