

# Health Consultation

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PETROLEUM PRODUCTS CORPORATION  
PEMBROKE PARK, BROWARD COUNTY, FLORIDA  
EPA FACILITY ID: FLD980798698

OCTOBER 25, 2001

**U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES**  
**Public Health Service**  
Agency for Toxic Substances and Disease Registry  
Division of Health Assessment and Consultation  
Atlanta, Georgia 30333

## **Health Consultation: A Note of Explanation**

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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**HEALTH CONSULTATION**

**PETROLEUM PRODUCTS CORPORATION**

**PEMBROKE PARK, BROWARD COUNTY, FLORIDA**

**EPA FACILITY ID: FLD980798698**

**Prepared by:**

**Florida Department of Health  
Bureau of Environmental Epidemiology  
Under a Cooperative Agreement with the  
Agency for Toxic Substances and Disease Registry**

## **Summary and Statement of Issue**

Upon request from the U.S. Environmental Protection Agency (EPA), the Florida Department of Health (FDOH) evaluated the public health threat from eating fish from a pond near the Petroleum Products Corporation (PPC) hazardous waste site. FDOH's Mercury Program will evaluate the public health threat from eating the fish from the control pond identified in this health consultation.

In 1999, EPA sampled the nearby pond sediments and found total petroleum hydrocarbons (TPHs), polychlorinated biphenyls (PCBs) and heavy metals. In 2000, EPA collected fish for evaluation because nearby residents reportedly eat fish from this pond.

Financial support for this consultation is provided entirely by the U.S. Agency for Toxic Substances and Disease Registry (ATSDR). The conclusions and recommendations of this consultation are only applicable to people who eat fish from this pond.

### **Background**

The seven-acre PPC site is at 3130 S.W. 17<sup>th</sup> Street in Pembroke Park, Broward County, Florida. The site is south of Pembroke Road about 0.2 miles west of Interstate 95 and 1.5 miles north of the Broward County-Dade County line (Figure 1).

PPC recycled waste oil from 1958 to 1971. PPC disposed of waste oil in pits on site. In 1970, community concerns increased after the waste oil disposal pit overflowed during a heavy rain causing an oil slick on the lakes south of the site. After PPC ceased operations in 1971, the waste oil was spread across the site, the waste oil pits were filled in, the site was paved and warehouses were built on the site.

Since 1985, EPA had concerns about migration of contaminants from the site to the nearby trailer park. EPA found potential contaminant migration through ground water and also historically through surface water. During prior investigations at the site, EPA detected TPHs, PCBs, heavy metals and some volatile organic compounds (VOCs) in soils and source areas.

In 1987, EPA listed PPC on the Superfund National Priorities List (NPL). In April 1989, the Florida Department of Health and Rehabilitative Service (FHRS, now FDOH) in cooperation with ATSDR assessed this site. FHRS concluded site conditions posed a potential health concern. FHRS noted human exposure to waste oil, lead, chromium, aluminum, iron, manganese and benzene may occur through contact with contaminated groundwater. FHRS also concluded human exposure may also occur through contact with contaminated surface water run off and surface soils. FHRS recommended testing for lead in surface water runoff. FHRS did not

recommend a health study, however, due to insufficient information about the population at risk (Florida HRS, 1989).

In 1990, EPA determined that there was a potential threat of contaminant migration from the site into the ground water.

In 1995, HRS visited the site and observed a six foot fence topped with razor wire surrounding the air stripping towers. The fence was intact with no signs of trespassing. However the entrance gate was loosely chained leaving a gap for a child to enter. HRS noted warning signs posted at intervals along the fence. FHRS staff observed viscous waste oil seeping up through the asphalt in the industrial park. They also detected a slight mist and petroleum odor from the air stripper (photos 1-5).

In a 1996 health consultation, FHRS evaluated the potential for health effects from dermal and oral exposure to contaminated waste oil seeping through asphalt outside a mini warehouse unit on the southeastern part of the site. FHRS concluded contact with contaminated waste oil was a public health hazard. Since 1996, the site owners have covered the waste oil seeps and eliminated the possible exposure.

Currently, EPA is remediating the contaminated ground water. They are using "bioslurping" to remove waste oil from the water table. They are also monitoring off-site contamination.

In 1999 and 2000, EPA collected surface water and sediment samples from a pond about 250 feet south southwest of the site (Pond A). They found pesticides, PCBs, TPHs and metals in the sediment of this pond.

For comparison, EPA chose a control pond 0.5 mile south-southwest of the site (Figure 2). EPA chose this 7.4 acre pond (North Desoto Lake) based on its accessibility, similar structure and depth, and its proximity (photos #6-9)(EPA 2001).

### **Demographics**

In 1995, the area surrounding the site was classified as residential, recreational and industrial. Bamboo Paradise and Bamboo lake, directly south of the site had about 150 residents. Waste oil and storm water run-off from the site overflowed into these trailer parks in 1970. As of 1995, the Pembroke area's population was approximately 20,000. Newer census and demographic information will be available in 2002.

### **Fish Collection**

On November 7, 2000, EPA collected five largemouth bass from Pond A. They also collected five largemouth bass from the control pond (Figure 2). EPA used a combination of electro shocking and seine netting. Since both ponds were not stocked for at least two years prior to

collection, the collected fish were able to bioaccumulate pesticides, PCBs and metals from the pond sediments for at least two years.

Although their sampling plan called for collection of bottom feeder fish species, EPA did not find any bottom feeder fish species on the day of collection. Therefore, they only collected largemouth bass (a predator species).

Fish collected from Pond A ranged from 330 to 390 millimeters long. Fish from the control pond were 286 to 335 millimeters long.

Immediately after collection, EPA cooled the fish on ice. They then identified, weighed, measured, fileted and froze the fish with ice within 8 hours.

### **Laboratory Methods and Analysis**

The EPA laboratory in Athens, Georgia processed and preserved the fish in accordance with EPA guidelines. The EPA lab analyzed the fish samples for metals, extractable organics, pesticides and PCBs in accordance with EPA guidelines.

### **Discussion**

#### ***Evaluation of Biological Data:***

The EPA recommended mean and 95<sup>th</sup> percentile fish consumption values for recreational freshwater anglers are 8 grams/day and 25 grams/day, respectively (EPA 1997b). We used a daily fish consumption rate of 30 grams per day for an adult and 15 g/day for a child. We derived the consumption rates using slightly less than half the fish consumption value of 63 g/day currently recommended for the general population. To err on the side of protecting public health, we used a consumption rate of 15 grams/day for a child even though an average child may only eat fish a few times per month.

We assumed a child weighs 14.5 kilograms (kg) and an adult weighs 70 kg. We calculated doses in milligrams per kilogram per day (mg/kg/day). We then compared these doses to ATSDR's Minimal Risk Levels (MRLs) and EPA's Reference Doses (RfDs). We used the average concentration of the chemical detected in the fish as shown in Table I. For closer evaluation we selected the following chemicals found in the fish:

#### **Arsenic:**

Our estimate of a child's and an adult's maximum exposure to inorganic arsenic from eating fish from Pond A for long-term ( $\geq 365$  days) oral exposure is five times less than the chronic MRL. We estimated exposure to inorganic arsenic because it is more toxic than organic arsenic. Therefore, we do not expect any illness from eating the largemouth bass in Pond A with levels of arsenic as shown in Table I.

### Chlordane:

Our estimate of a child's and an adult's maximum long-term ( $\geq 365$  days) exposure to chlordane from eating fish from Pond A is at least 100 times less than the ATSDR MRL. Therefore, we do not expect any illness from eating the largemouth bass in Pond A with levels of chlordane as shown in Table I.

### Dichlorodiphenyldichloroethane (DDE):

Our estimate of a child's and an adult's maximum intermediate (15-364 days) exposure to DDE from eating fish from Pond A is at least 150 times less than the ATSDR MRL. Our estimate of a child's and an adult's maximum long-term ( $\geq 365$  days) exposure to DDE from eating fish is at least 1000 times less than the No Observable Adverse Effect Level (NOAEL). Therefore, we do not expect any illness from eating the largemouth bass in Pond A with levels of DDE as shown in Table I.

### Lead:

Our estimate of a child's and an adult's maximum long-term ( $\geq 365$  days) exposure to lead from eating fish from Pond A is at least 1000 times less than the Lowest Observed Adverse Effect Level (LOAEL). Therefore, we do not expect any illness from eating the largemouth bass in Pond A with levels of lead as shown in Table I.

### Mercury:

Our estimate of a child's and an adult's maximum chronic ( $\geq 365$  days) exposure to mercury from eating fish from Pond A is at least three times less than the ATSDR MRL. Therefore, we do not expect any illness from eating the largemouth bass in Pond A with levels of mercury as shown in Table I.

Mercury was the only contaminant detected above guidance concentrations in fish collected from the **control** pond. This consultation focuses on evaluating health effects from Pond A near PPC. FDOH's Mercury Surveillance Program will evaluate mercury levels in fish from the control pond.

FDOH's Mercury Program uses a range of 0.5-1.5 milligrams per kilogram (mg/kg) (average concentration of mercury in fish) for issuing fish advisories for pregnant women and children. If the average mercury concentration is less than 0.5 mg/kg, they do not issue a fish advisory. The average mercury concentration for fish in the control pond is 0.534 mg/kg and therefore warrants further consideration.

### Other Health-Based Standards:

The levels of chlorinated pesticides in fish from the lake at Ingram Park were less than the Food and Drug Administration (FDA) Action Levels for Poisonous or Deleterious Substances in

Human Food and Animal Feed (Department of Health and Human Services, 1998)(Table II). FDA Action Levels apply to commercially sold fish and include economic considerations.

### **Children's Health**

FDOH assessed the health threat to children from eating fish from pond A near the PPC site. FDOH found that children are not at risk.

### **Conclusions**

FDOH concludes there is currently no public health hazard from eating largemouth bass from Pond A near the PPC hazardous waste site. However, we do not know what exposures occurred in the past.

- (1) The total arsenic concentration (organic and inorganic) in the fish was not a public health threat. If however, the concentration was high, we would need to know how much of the total arsenic was in the toxic inorganic form.
- (2) When EPA sampled the ponds, bottom feeder fish were unavailable. The fewer the fish collected from a pond, the more difficult it is to determine if they are representative of all the fish in the pond. Although the five fish collected from each pond were adequate, more samples would have been more representative.

### **Recommendations/Public Health Action Plan**

- (1) FDOH's Mercury Program will evaluate the mercury levels in the fish from the control pond (North Desoto Lake). If additional data are needed before the health risk can be evaluated, the Florida Department of Environmental Protection and the Florida Fish and Wildlife Conservation Commission will be asked to include this site in their sampling program, as resources permits.

For future fish analyses, EPA should determine both organic and inorganic arsenic concentrations.

In the future, EPA should collect bottom feeder fish species. Also, in the future, they should collect 7-10 fish of each species for analysis.



**PREPARER OF REPORT**

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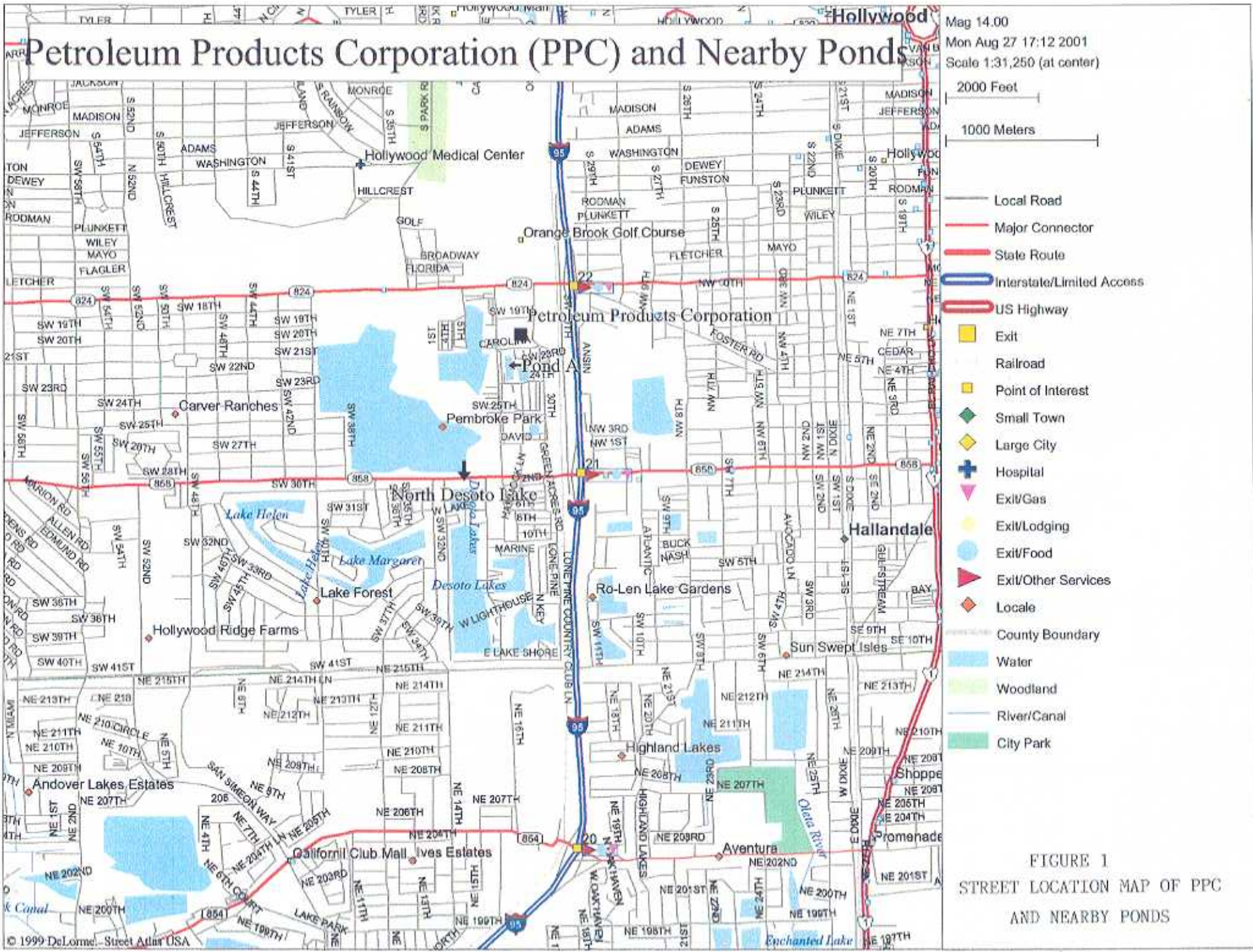
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## **FIGURES**

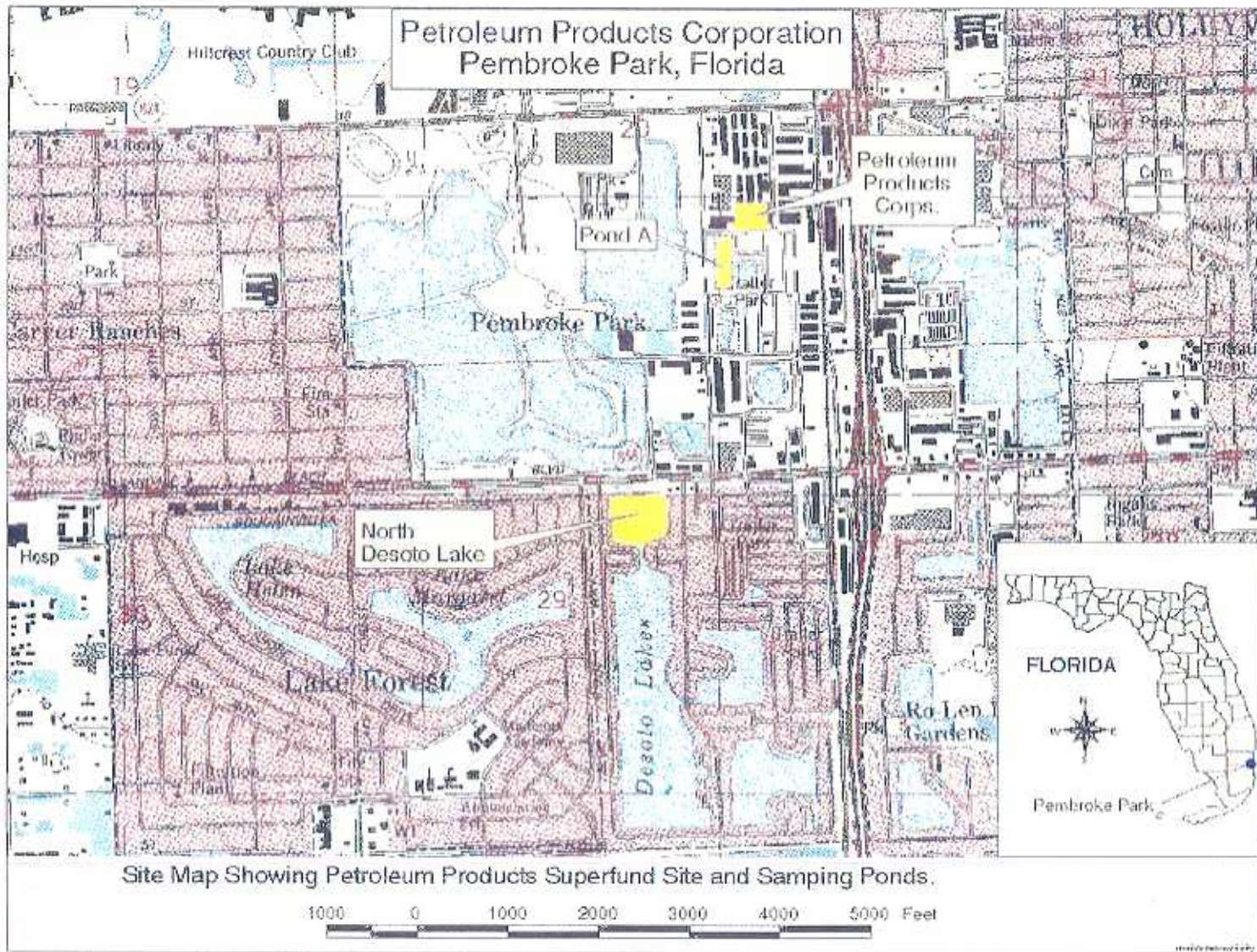
- Figure 1:** Street Location Map of Petroleum Products and Nearby Ponds  
**Figure 2:** Site Map Showing Petroleum Products Superfund Site and Sampling Ponds



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 Scale 1:31,250 (at center)

- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- US Highway
- Exit
- Railroad
- Point of Interest
- ◆ Small Town
- ◆ Large City
- ⊕ Hospital
- ⬠ Exit/Gas
- ⬠ Exit/Lodging
- ⬠ Exit/Food
- ⬠ Exit/Other Services
- ◆ Locale
- County Boundary
- Water
- Woodland
- River/Canal
- City Park

FIGURE 1  
 STREET LOCATION MAP OF PPC  
 AND NEARBY PONDS



Site Map Showing Petroleum Products Superfund Site and Sampling Ponds.

FIGURE 2  
SITE MAP SHOWING PPC SITE AND SAMPLING PONDS

## **TABLES**

- Table I:** Summary of Average Chemical Concentrations Detected in Largemouth Bass  
**Table II:** FDA Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed

**Table I**  
**SUMMARY OF AVERAGE CONCENTRATIONS DETECTED IN LARGEMOUTH**  
**BASS FROM POND A AND CONTROL POND**

<b>Chemical of Concern</b>	<b>Pond A</b>	<b>Control Pond</b>
arsenic	0.078	0.048
chlordanne	0.002 J	0.002
4,4- DDE	0.014	0.004
lead	0.012	0.007
mercury (total)	0.212	0.534

\*All units in milligrams per kilogram (ppm)  
 J= estimated value

**TABLE II**  
**FOOD AND DRUG ADMINISTRATION (FDA) ACTION LEVELS FOR POISONOUS**  
**OR DELETERIOUS SUBSTANCES IN HUMAN FOOD AND ANIMAL FEED**

<b>Chemical of Concern</b>	<b>FDA Action Level (mg/kg)</b>	<b>Reference</b>
arsenic	none given	none given
Chlordane	0.30 (edible portion)	CPG 575.100
DDT/DDE/DDD	5.0 (edible portion)	CPG 575.100
lead	none given	none given
mercury	1.0	CPG 540.600

Source: Action Levels for Poisonous or Deleterious Substances in Human Food and Animal Feed DHHS 1998  
 CPG = Compliance Policy Guides  
 mg/kg = milligrams per kilogram

## ATSDR GLOSSARY OF TERMS

**Cancer Effect Level (CEL)** - The lowest dose of chemical in a study, or group of studies, that produces significant increases in the incidence of cancer (or tumors) between the exposed population and its appropriate control.

**Lowest Observed Adverse Effect Level (LOAEL)** - The lowest dose of a chemical in a study, or group of studies, that has caused harmful health effects in people or animals.

**Method Detection Limit (MDL)** - the minimum concentration of a substance that can be measured in reagent water and reported with a given confidence that the analyte concentration is greater than zero.

**Minimal Risk Level (MRL)** - an estimate of daily exposure of a human being to a chemical ( in mg/kg/day) that is likely to be without an appreciable risk of deleterious effects (noncarcinogenic) over a specified duration of exposure. MRLs are based on human and animal studies and are reported for acute ( $\leq 14$  days), intermediate (15-364 days), and chronic ( $\geq 365$  days). MRLs are published in ATSDR Toxicological Profiles for specific chemicals.<sup>10</sup>

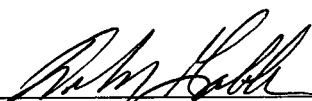
**No Observed Adverse Effect Level (NOAEL)** - the highest dose of a chemical in a study, or group of studies, that did not cause harmful health effects in people or animals

**Parts Per Million (ppm)** - a common basis of reporting water analysis. One part per million (ppm) equals 1 pound per million pounds of water; 14.3 equals one grain per Imperial gallon.



## CERTIFICATION

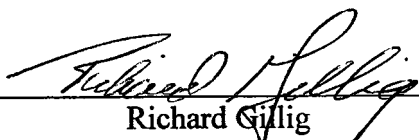
The Petroleum Products Corporation Health Consultation was prepared by the Florida Department of Health, Bureau of Environmental Epidemiology, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry. It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.



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SPS, SSAB, DHAC

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



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Richard Gillig  
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## **APPENDIX**

### **PHOTOS**

- Photo #1: Petroleum Products Corporation
- Photo #2: Petroleum Products Corporation
- Photo #3: Petroleum Products Corporation
- Photo #4: Petroleum Products Corporation
- Photo #5: Pond A
- Photo #6: Pond A
- Photo #7: North Desoto Lake
- Photo #8: North Desoto Lake

**Photo #1: Petroleum Products Corporation  
(Air Stripper & Carbon Activator Inside Entrance from Carolina Street)**



**Photo #2: Petroleum Products Corporation  
(View from parking lot)**



Photo #3: Petroleum Products Corporation  
(Taken from Carolina Street)



**Photo #4: Pond A located south-southwest of Petroleum Products  
(Photo taken facing northwest)**



**Photo #5: Pond A located south-southwest of Petroleum Products  
(Photo taken facing south)**



**Photo #6: Petroleum Products Corporation  
(Control Pond: Photo Taken Facing Southwest)**



**Photo #7: Petroleum Products Corporation  
(Control Pond: Photo Taken Facing NE )**



**Photo #8: Petroleum Products Corporation  
(Control Pond: Photo Taken Facing NW)**



**Photo #9: Petroleum Products Corporation  
(Control Pond: Photo Taken Facing North)**

