

# Chem-Form, Inc.

## Pompano Beach, Florida

### Region 4

FLD080174402

#### Site Exposure Potential

The 1.6-hectare Chem-Form site is located in a heavily industrialized area of Pompano Beach, Florida (Figure 1). Chem-Form, Inc. began operations in 1967 manufacturing precision metal parts for electro-chemical milling machinery and for the aerospace industry. Wastes generated at the site from manufacturing processes included spent oils, lubricants, organic solvents and acids. Oil and solvent wastes were stored in stainless steel tanks for off-site disposal. Process wastewater was discharged into a septic tank and associated drain field, or into an open trench in a field west of the main shop (NUS 1986; Westinghouse 1990).

The Chem-Form site is in an area that was once a low-lying wetland that is now filled with sand and crushed limestone to an elevation of 3 m above mean sea level. Groundwater occurs near the natural surface and exists in a highly permeable, sandy limestone aquifer that extends to a depth of 60 m. Natural groundwater flows from west to east. However, extensive groundwater withdrawal associated with development in the area has resulted in a reversal of the natural gradients. Though no surface waters traverse the site, Cypress Creek Canal flows within 0.8 km of the southern site bound-

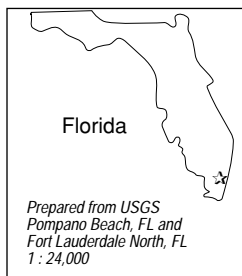
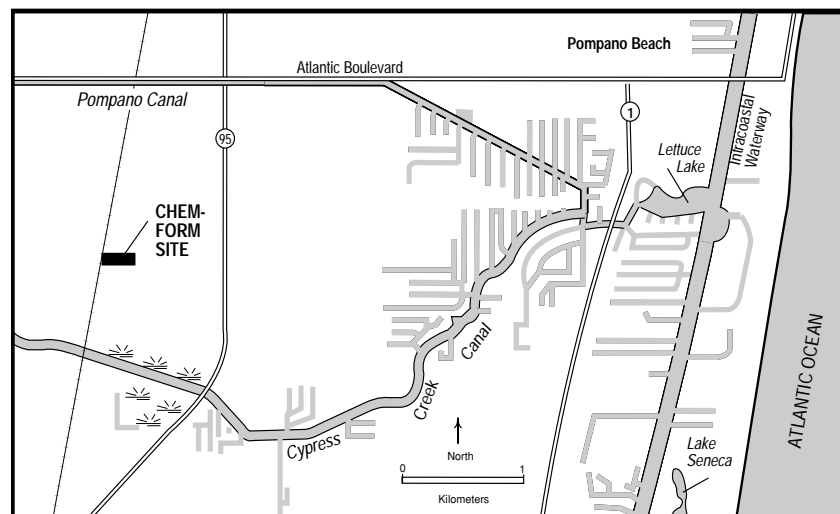


Figure 1.  
The Chem-  
Form site,  
Pompano  
Beach,  
Florida.



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### Site Exposure Potential, *cont.*

ary. Cypress Creek Canal flows into the Intracoastal Waterway approximately 7 km from the site. Groundwater discharge to nearby canals and waterways is the primary pathway of contaminant migration to NOAA resources.

### Site-Related Contamination

Results from preliminary surveys of contamination in soil and groundwater indicate the presence of trace elements in these media (NUS 1986). Low levels of organic compounds, including PCBs, were found in soils in one area of the site in the 1986 survey. Maximum concentrations of contaminants in the matrices sampled are presented in Table 1 along with applicable screening levels (NUS 1986; Westinghouse 1990).

Table 1.  
Maximum concentrations of major contaminants detected in groundwater and soil collected at the Chem-Form site.

|   | Water                |                           | Soil          |  |
|---|----------------------|---------------------------|---------------|--|
|   | Ground-water<br>µg/l | AWQC <sup>1</sup><br>µg/l | Soil<br>mg/kg | Average <sup>2</sup><br>U.S. Soil<br>mg/kg |
| <b>INORGANIC SUBSTANCES</b>   |                      |                           |               |  |
| antimony  | ND                   | 1600*                     | 181           | 1  |
| cadmium   | 40                   | 1.1 <sup>+</sup>          | 71            | 0.06                                       |
| chromium  | 725                  | 11                        | 23400         | 100  |
| cobalt  | 280                  | NA                        | 36000         | 8  |
| copper  | 269                  | 12 <sup>+</sup>           | 955           | 30   |
| cyanide   | 15                   | 5.2                       | 1100          | NA   |
| lead  | ND                   | 3.2 <sup>+</sup>          | 782           | 10   |
| mercury   | 6.7                  | 0.012                     | 195           | 0.03                                       |
| nickel  | 550                  | 160 <sup>+</sup>          | 49500         | 40   |
| silver  | 7                    | 0.12                      | 12            | 0.05                                       |
| <b>ORGANIC COMPOUNDS</b>  |                      |                           |               |  |
| PCBs  | ND                   | 0.014                     | 4.6           | NA   |
| 2,4-dinitro phenol  | ND                   | NA                        | 100           | NA   |
| 2-methyl-4,6-dinitrophenol  | ND                   | NA                        | 100           | NA   |
| pentachlorophenol   | ND                   | NA                        | 100           | NA   |
| 4-nitrophenol   | ND                   | NA                        | 100           | NA   |
| 1: Ambient water quality criteria for the protection of aquatic organisms. Freshwater chronic criteria presented (EPA 1986).<br>2: Lindsay (1979).<br>ND: Not detected at method detection limit, detection limit not available<br>* Insufficient data to develop criteria. Value presented is the Lowest Observed Effect Level (LOEL).<br>+ Hardness-dependent criteria; 100 mg/l CaCO <sub>3</sub> used.<br>NA: Screening level not available |                      |                           |               |  |

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**Site-Related Contamination,**  
*cont.*

Mercury was present at very high concentrations in groundwater samples from the Chem-Form site. Elevated concentrations of cadmium, chromium, copper, nickel, silver, and cyanide were also measured in groundwater samples collected at the site. No organic compounds were found in groundwater.

Trace elements were also detected at elevated levels in soils collected from the Chem-Form site. Chromium and nickel were present in most samples at very high concentrations. Antimony, cadmium, cobalt, copper, lead, mercury, and cyanide were also measured at elevated levels. Several phenolic compounds and PCBs were also detected in soils at elevated levels.

**NOAA Trust Habitats and Species**

The habitats of potential interest to NOAA are the Cypress Creek Canal and the Intracoastal Waterway. The canal is essentially fresh water at its closest point to the site (less than one kilometer). Canals in this region have been heavily impacted by water management practices, and no commercial or recreational fisheries are present in the canal (Conklin personal communication 1990). No anadromous fish are known to occur in the canal. Some freshwater species have been observed, including catfish, mosquito fish, and freshwater bass (Conklin personal communication 1990; Ferril personal communication 1990). At this time, there are insufficient data on contamination to indicate a direct pathway to the Intracoastal Waterway.

**References**

Conklin, E., Director Office of Programs and Planning, Florida Department of Natural Resources, Tallahassee, personal communication, July 10, 1990.

Ferril, D., Biologist, U.S. Fish and Wildlife Service, Vero Beach, Florida, personal communication, August 6, 1990.

Lindsay, W.L. 1979. Chemical Equilibria in Soils. New York: John Wiley & Sons. 449pp.

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NUS Corporation. 1986. Site screening investigation report, Chem-Form, Inc./Wilson Concepts, Inc. site, Pompano Beach, Florida. Atlanta: U.S. Environmental Protection Agency, Region 4. Appendices.

U.S. Environmental Protection Agency. 1986. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-87-003.

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