

Health Consultation

**Federal Creosote Site (2#NJ)
Manville, New Jersey**

May 15, 1997

**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, GA 30333.**

BACKGROUND AND STATEMENT OF ISSUES:

The Region II U.S Environmental Protection Agency (EPA) has requested that the Agency for Toxic Substances and Disease Registry (ATSDR) provide the basis for air action levels recommended at the Federal Creosote Site in Manville, New Jersey.

Residential dwellings have been constructed over the site of a former creosote wood treating facility. Creosote contamination was discovered at depth on site. In addition, a creosote-like material was noted coming through the sump pump of a home in the neighborhood. Benzene was also detected in the soil at elevated levels below the surface. Additional background information on the site can be found in the ATSDR Health Consultation dated April 22, 1997.

Since creosote contains several volatile compounds that have the potential to migrate into enclosed spaces, EPA requested that ATSDR assist in developing an indoor air sampling plan. EPA also requested that ATSDR provide guidance on establishing health based air action levels for volatile compounds.

Benzene and naphthalene were identified as contaminants of concern due to their volatility and toxicity. Although polycyclic aromatic hydrocarbons (PAHs) such as benzo(a)pyrene are common constituents of creosote solutions, no action levels were established for these compounds due to their low volatility.

The following air action levels were recommended for this site:

	<u>Evacuation</u>	<u>*Short-term</u>	<u>**Long-term</u>
Benzene	1 ppm	50 ppb	-----
Naphthalene	10 ppm	20 ppb	2 ppb

*<14 days

**>1 year

ppm-parts per million

ppb-parts per billion

DISCUSSION:

The above air levels are not meant to be strict action levels, but are designed to serve as health based guidelines for making evacuation and remediation decisions. Professional judgement should be used when applying these values. For example, a 1 ppm benzene reading at the face of a sump may not require evacuation of the residence. However, a breathing zone reading of the same

concentration may warrant action.

Naphthalene:

The evacuation action level for naphthalene is based on the Federal Occupational Safety and Health Administration (OSHA) Permissible Exposure Level (PEL) of 10 ppm. OSHA PELs were developed for exposures of 8-hours a day for healthy adults. In a residence, exposures could occur for as long as 24-hours a day and could include susceptible individuals. Also, genetic factors, age, medication, or preexisting conditions may affect individual susceptibility to chemicals. Therefore, the use of the OSHA value as a evacuation level is appropriate given the possibility of sensitive populations and exposures of more than 8-hours a day in this setting.

The long-term (>365 days) indoor air action level of 2 ppb for naphthalene is based on ATSDR's chronic inhalation Minimal Risk Level (MRL). The MRL is defined as an estimate of daily human exposure to a dose of a chemical that is likely to be without an appreciable risk of adverse noncancerous effects over a specified duration of exposure. The short-term action level of 20 ppb is 10 times higher than the chronic action level, and is designed to be protective for exposures less than 14 days.

Benzene:

An indoor air action level of 1 ppm benzene was recommended for evacuation of the home. This value corresponds to the OSHA PEL of 1 ppm. The rationale for this value is the same as stated above for naphthalene. A short-term air exposure level of 50 ppb was recommended for the site, and is based on the ATSDR acute MRL for benzene. A long-term indoor action level for benzene was not provided since background levels for benzene in urban settings often exceed an acceptable long-term cancer risk level. Indoor air levels of benzene should be compared to outdoor levels, and the added risk posed by exposure to indoor levels should be assessed on a case-by-case basis. Furthermore, cancer risk levels are typically calculated for an assumed 24-hour a day exposure for a lifetime (70 years). such assumptions are unrealistically conservative, hence the need for case-by-case evaluation.

RECOMMENDATIONS:

1. ATSDR is available to assess air sampling data when it becomes available.