

Health Consultation

POINTE COUPEE WOOD TREATING
(a/k/a POINT COUPPE WOOD TREATING)

NEW ROADS, POINT COUPPE PARISH, LOUISIANA

EPA FACILITY ID: LA0000605214

MAY 27, 2004

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 document has previously been released for a 30 day public comment period. Subsequent to the public comment period, ATSDR addressed all public comments and revised or appended the document as appropriate. The health consultation has now been reissued. 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

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Prepared by:

Exposure Investigation and Consultation Branch
Division of Health Assessment and Consultation
Agency for Toxic Substances and Disease Registry

Statement of Issues and Findings

EPA region VI asked ATSDR to comment on proposed cleanup levels for the Pointe Coupee wood treating site. On-site soil sampling found levels of pentachlorophenol and dioxin contamination. ATSDR does not set cleanup levels for a contaminated site; however, given site-specific information, we will comment if we believe a proposed site-specific cleanup level would be protective of public health. This decision is specific for the Pointe Coupee site and is not applicable to other sites. EPA Region VI specifically requested:

- Would an on-site soil clean up level of 20 mg/kg pentachlorophenol be protective of public health?
- Would an on-site soil clean up level of 1 µg/kg of 2,3,7,8-tetrachlorodibenzodioxin equivalents be protective of public health?

ATSDR believes that both levels would adequately protect public health from on-site soils contaminated with PCP and dioxins.

Background

The Pointe Coupee Wood Treating (Pointe Coupee) site is an inactive wood treating facility situated on approximately ½ acre of land at 413 Parent Street, New Roads, Pointe Coupee Parish, Louisiana [1]. Available records indicate that the site operated as a wood treatment facility from 1950 until 1988 [1]. In 1999, EPA contractors assessed on-site contamination [1].

Pentachlorophenol (PCP) is the primary contaminant of concern identified at the site [1]. PCP is attributable to the wood preserving solutions reported to have been used to treat wood at the site. The soil contamination is probably due to dripping or spillage of wood treatment solution, or due to contaminant migration from the former process area via overland flow [1]. Dioxins and furans—potential by-products associated with sites where PCP was used—were also identified as contaminants of concern [1].

Analytical results in a biased grab sample collected from a stained area under the track shed indicated the presence of PCP in the soil, with concentrations as high as 12,300 mg/kg (sample WC1) [1]. The highest PCP concentration from a composite soil sample was 528 mg/kg, under the same track shed in the 6- to 12-inch BGS depth interval (sample G1 1-2). Dioxins and furans were detected in the soil, in biased grab sample WC1, with concentrations as high as 17.61 µg/kg TCDD equivalent. The highest TCDD equivalent concentration among the composite soil samples analyzed for dioxins and furans is 0.78 µg/kg in sample G8-1. All TCDD equivalent concentrations were calculated using the EPA toxicity equivalent factors (TEF) established by EPA in 1987 and 1989 [1].

Site features in 1999 included

- two office buildings,
- two lumber sheds,
- two above ground storage tanks,
- several concrete pads,
- four 55-gallon drums,

- a house on blocks used as a thrift store, and
- a retort vessel building, with an attached open-walled track shed.

The retort vessel building contains a 4-foot by 50-foot pressure cylinder and associated piping, two storage tanks, two steam pressure cylinders, and nine pails ranging in size from 1 to 5 gallons.

Site access is unrestricted, and nearby residents were observed walking through the site (Althea Foster, USEPA Region 6, personal communication, May 4, 2004). One person works on site in a thrift store [1].

The site is located in a mixed commercial/industrial area. Two grocery stores border the site property to the east and west [1]. To the south is an open field, and to the north is Parent Street, also known as Louisiana Highway (LA) 10. South of the open field is a residential neighborhood. Directly across Parent Street is an empty lot, although most of the property along that road is developed [1].

Through the years the drainage path from the site has been modified. Historical records indicate that ditches were located along the southern and eastern borders of the site, collecting site runoff. Runoff would then flow to the north, through a culvert running under the Mougeot's grocery store and under Parent Street, and then into a drainage ditch leading north to Portage Canal [1].

Discussion

Is a soil clean-up level of 20 mg/kg of pentachlorophenol in on-site soils protective of public health?

Yes. Assuming a 10-kg child is chronically exposed to on-site soils at the 20 mg/kg level, that child would be expected to absorb no more than (exposure factors from ATSDR Public Health Guidance Manual) [2]:

$$\frac{20 \text{ mg PCP}}{\text{kg soil}} \times \frac{200 \text{ mg soil}}{\text{day}} \times \frac{1 \text{ kg soil}}{1,000,000 \text{ mg soil}} \times \frac{1 \text{ child}}{10 \text{ kg}} = 0.0004 \text{ mg PCP/kg/day.}$$

ATSDR's chronic Minimum Risk Level for pentachlorophenol is 0.001 mg PCP/kg/day [3]. A minimum risk level (MRL) is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse noncancerous health effects over a specified exposure period.

ATSDR uses the no-observed-adverse-effect-level/uncertainty factor (NOAEL/UF) approach to derive MRLs for hazardous substances. MRLs are set below levels that, based on current information, might cause health effects in persons most sensitive to such substance-induced effects. In addition, ATSDR derives MRLs for three levels of exposure duration—acute (1–14 days), intermediate (>14–364 days), and chronic (365 days and longer) exposure—and for the oral and inhalation exposure routes. MRLs are generally based on the most sensitive substance-induced end point considered relevant to humans. ATSDR does not use serious health effects (such as birth defects or irreparable damage to the liver or kidneys) as a basis for establishing MRLs. Therefore, exposure to a level above the MRL does not mean that adverse health effects will necessarily occur.

A daily dose of 0.0004 mg/kg/day of PCP is 2 ½ times below the ATSDR Chronic Minimum Risk Level. A child would have to ingest 500 milligrams of contaminated soil per day to receive

a dose equal to the ATSDR MRL. The lowest dose of pentachlorophenol known to cause non-serious health effects in either animals or humans is a further 1000 times greater than ATSDR's MRL [3]. This MRL was based on a LOAEL of 1 mg/kg/day (only dose tested) for significantly decreased serum thyroxine concentrations. It is based on a multigeneration reproduction study in first generation male minks, both males and females of the second generation, and decreased relative thyroid weight second-generation females. The mink were continuously administered pentachlorophenol of unspecified purity in their diet. Several studies support the identification of the thyroid gland as a sensitive target of pentachlorophenol toxicity [3].

Is a soil clean-up level of 1 µg/kg of 2,3,7,8-tetrachlorodibenzodioxin (TCDD) equivalents protective of public health?

Yes. Assuming a similar exposure scenario as above (a 10-kg child ingesting 200 mg of soil per day), soil contaminated with 1 µg/kg of TCDD equivalents would ingest no more than (in picograms per kilogram per day):

$$\frac{1 \mu\text{g TCDD-teq}}{\text{kg soil}} \times \frac{200 \text{ mg soil}}{\text{day}} \times \frac{1 \text{ kg soil}}{1,000,000 \text{ mg soil}} \times \frac{1 \text{ child}}{10 \text{ kg}} \times \frac{1,000,000 \text{ pg}}{1 \mu\text{g}} = 20 \text{ pg/kg/day.}$$

Nevertheless, available data indicate that dioxins will bind strongly with soils. Experimental studies have shown that only about 50% of tetrachloro-dibenzo-dioxin in soil is absorbed, as compared with dioxin in corn oil—a frequently used media for experimental gavage studies in animals [4]. Therefore, we believe that no more than 10 pg/kg/day of dioxin could be ingested from soils contaminated with 1 µg/kg TCDD-teq. While the 10-pg/kg/day level is higher than ATSDR's minimal risk level, it is 12 times lower than the lowest documented non-serious health effect in either humans or animals. The Lowest Observed Adverse Effect Level (LOAEL) for increased dominant play behavior exhibited by some of the male offspring of female Rhesus monkeys that consumed 120 pg TCDD/kg daily for 16 months (roughly 5% of the animals' lifespan, or the equivalent of about 3–4 “human” years). No overt signs of toxicity were observed in either the offspring or their mothers [4]. In another study, 120 pg/kg/day was noted to cause moderate endometriosis in monkeys exposed dioxin in their feed [4].

In general, however, the more important route of exposure for dioxin-like compounds for humans is from accumulation in the food chain [5]. According to the EPA report, Portage Canal, located to the north of the site and connected via drainage ditches, is used for recreational and commercial fishing. Because the drainage ditch course has changed over time, other nearby water bodies, such as the False River to the south of the site, may have been impacted as well. According to the ERA report, however, no information is available on the annual production of human food chain organisms.

Assumptions and Limitations

The assumptions and limitations of this health consultation include

- Other potential exposure pathways, such as biologic accumulation of TCDD, have not been considered;

- This health consultation is based on-site specific information conveyed to ATSDR by EPA officials. Therefore, our conclusions regarding the site-specific cleanup levels are limited to this site only;
- Given the age of this facility, other wood preservatives (e.g. chromated copper arsenate) may have been used on site, and residual contamination from such chemical may require assessment.

Child Health Considerations

ATSDR recognizes that the unique vulnerabilities of infants and children demand special emphasis in communities concerned about contamination. Children are at greater risk than are adults from certain kinds of exposures to hazardous substances released into their environment. Children may be more likely to be exposed to outdoor air contaminants when playing outdoors. Because children are smaller than adults are, exposure may result in higher dose per body weight. In addition, children's developing body systems can sustain damage if toxic exposures occur during critical growth stages.

Consequently, ATSDR evaluated the data to assess the potential health effects of PCP and dioxins on children in the community. ATSDR found that the proposed cleanup levels would be protective to children.

Because site conditions have not changed since 1999, children are exposed to physical hazards (confined spaces and storage containers of chemicals) if they play on the site.

Conclusions

- Given current conditions and the non-residential use of the site, a cleanup level of 20 mg/kg pentachlorophenol in on-site soils is protective of public health.
- A cleanup level of 1 µg/kg of 2,3,7,8-tetrachlorodibenzodioxin equivalents in soil is protective of public health. However, human exposure to dioxins through biological accumulation in nearby water bodies should be assessed.
- On-site drums, retorts, and confined spaces represent a physical hazard to community members, and especially to children.

Recommendations

- ATSDR recommends that further testing to assess the potential impacts of dioxins to locally caught fish.
- On-site physical hazards should be expeditiously controlled.
- Given the age of this facility, other wood preservatives (e.g. chromated copper arsenate) may have been used on site, and residual contamination from such chemical may require assessment.

Public Health Action Plan

The Public Health Action Plan for the site contains a description of actions that have been or will be taken by ATSDR or other government agencies at the site, individually or in combination. The purpose of the Public Health Action Plan is to ensure that this public health consultation not only identifies public health hazards, but also provides a plan of action designed to mitigate and

prevent adverse human health effects resulting from exposure to hazardous substances in the environment. Included is a commitment on the part of ATSDR to follow up on this plan to ensure its implementation.

Actions Planned:

ATSDR and the Louisiana Department of Health and Hospitals, Office of Public Health, Section of Environmental Epidemiology and Toxicology, has agreed to assist EPA in evaluating any additional data for potential public health implications for this site. The Louisiana Department of Health and Hospitals, Office of Public Health has also agreed to evaluate the need for additional public health activities for this site, such as health education.

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