

Health Consultation

LIGHT SOURCES INCORPORATED
(a/k/a RYDER WOODS TRAILER PARK)
EVALUATION OF MERCURY DATA

MILFORD, NEW HAVEN COUNTY, CONNECTICUT

EPA FACILITY ID: CTD983873100

MARCH 9, 2005

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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Prepared by:

Connecticut Department of Public Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

The conclusions and recommendations in this health consultation are based on the data and information made available to the Connecticut Department of Public Health and the Agency for Toxic Substances and Disease Registry. The Connecticut Department of Public Health and the Agency for Toxic Substances and Disease Registry will review additional information when received. The review of additional data could change the conclusions and recommendations listed in this document.

Background and Statement of Issue

The Milford Health Department asked the Connecticut Department of Public Health (CT DPH) to evaluate mercury data from a pond and wetland area adjacent to the proposed future location of the Ryder Woods Trailer Park in Milford, Connecticut. The pond and wetland area is about 9 acres in size. The Milford Health Department specifically asked whether the presence of mercury in a pond and wetlands is likely to pose adverse health effects to future Trailer Park residents.

The City of Milford has approved the relocation of 175 trailer homes to an area next to a pond and wetland located south of 70 Cascade Boulevard. The property at 70 Cascade Boulevard was formerly occupied by Light Sources, Inc., a manufacturer of fluorescent light bulbs and specialty bulbs, both of which contain mercury. In the late 1990s, an investigation by the Connecticut Department of Environmental Protection (CT DEP) discovered mercury contamination in wetlands and stream sediments immediately south of the 70 Cascade Boulevard property. CT DEP has alleged that Light Sources, Inc. improperly disposed of fluorescent light bulbs and other mercury-contaminated wastes from their facility.

In 2001, a court order was issued, requiring Light Sources, Inc. to perform an interim cleanup in which sediments near a storm drain outfall at the 70 Cascade Boulevard property were removed because of high levels of mercury. A complete environmental investigation of the pond and wetlands around the former Light Sources facility has not yet been done.

At the request of the Milford Health Department, CT DPH reviewed sediment data from 16 locations around the perimeter of an unnamed pond bordering the northeast portion of the future trailer park. These data were provided to CT DPH by the Milford Health Department. CT DPH also obtained data from CT DEP on mercury levels in fish collected from the unnamed pond in 1998. CT DPH evaluated both the sediment and fish data in its evaluation of risks to future trailer park residents.

CT DEP is currently in the process of reviewing a scope of study (prepared by Light Sources, Inc.) that investigates the nature and extent of contamination resulting from their operations at 70 Cascade Boulevard. When the scope of the study is approved by CT DEP, Light Sources, Inc. will collect more data, including sediment and fish tissue sampling, that will address many of the environmental data gaps that exist for this site.

Environmental Contaminant Levels

Mercury levels in the 16 sediment samples collected in 2002 from the unnamed pond ranged from 0.09 milligrams per kilograms (mg/kg or parts per million (ppm) to 21.1 mg/kg. In two

locations, mercury levels slightly exceed the CT DEP cleanup standard for mercury in soil of 20 mg/kg. This standard (CT Residential Direct Exposure Criteria, Remediation Standard Regulations) was developed to be protective of frequent, long-term contact with soil by children and adults. In this dataset of sediment samples, 13 of 16 samples were higher than the level of concern in sediment for bioaccumulation of mercury into fish tissue. Two of the samples were as much as 100 times higher than the bioaccumulation level.¹

CT DPH also reviewed data on mercury levels in fish collected from the unnamed pond in 1998 and sediment data collected at the same time and location as the fish samples. Fish tissue concentrations ranged from 0.03 ppm wet weight to 0.15 ppm wet weight. All fish were within the expected background range for mercury in fish tissue. However, average mercury concentrations in sediments were 0.26 ppm, which is at the level of concern for bioaccumulation in fish.

Discussion

Exposure Pathway Analysis

To evaluate potential exposures to mercury in the pond and wetlands adjacent to the future trailer park, CT DPH evaluated the sediment and fish data and considered how people might come into contact with mercury. Future residents (adults and children) of the trailer park could come into contact with mercury contaminated sediments in the pond and wetland areas through various activities such as walking, playing, and fishing. Future residents could also be exposed to mercury if they eat mercury contaminated fish from the pond.

Public Health Implications for Adults and Children

To evaluate public health implications to adults and children from mercury contamination in the pond and wetlands adjacent to the future Ryder Woods Trailer Park, CT DPH compared the average concentration of mercury in pond sediments with the CT DEP cleanup standard for mercury of 20 mg/kg. An average concentration (rather than the maximum) better represents the typical concentration people could come into contact with over time. CT DPH calculated the 95% Upper Confidence Limit (95% UCL) on the arithmetic mean for the 16 sediment samples. A 95% UCL provides a conservative (health protective) estimate of the average concentration and ensures that the true average concentration is not underestimated. The 95% UCL for mercury in the 16 sediment samples collected from the pond is 5 mg/kg. This level is lower than the CT DEP cleanup standard of 20 mg/kg, but it is higher than the level of concern for bioaccumulation in fish. This means that based on the data evaluated by CT DPH, *direct contact* with mercury contaminated sediments does not appear to pose a health threat. However, this conclusion should be interpreted in light of the uncertainties in the data and the data gaps described in the Uncertainties section of this health consultation.

As previously stated, mercury-contaminated fish provides another pathway of possible exposure to future trailer park residents. Sediment concentrations are higher than the level of concern for bioaccumulation in fish. Although fish collected in 1998 had mercury levels too low to pose a

¹ CT DEP uses 0.2 mg/kg as the mercury concentration **in sediment** above which, bioaccumulation in fish may be a concern for human exposure (CT DPH 2002).

health threat, the fish sampling may have occurred too soon after the contamination was released into the environment, and it is possible that mercury levels in fish are higher today than they were in 1998. Given the absence of current fish data, it is not possible to conclude at this time whether fish from the pond pose a health threat for human consumption.

Uncertainties

As mentioned above, several uncertainties exist in the sediment data, as well as data gaps, which should be mentioned. Even though uncertainties exist in the data, CT DPH still believes that the 16 sediments samples provide sufficient information at this time to support conclusions about the public health threat from direct contact with the sediments. The recommendations listed at the end of this health consultation will address some of the uncertainties in the data.

- Mercury contamination in pond sediments has not been completely characterized. Although the results of 16 sediment samples indicate that the 95% UCL is lower than the direct contact standard of 20 mg/kg, additional locations may have elevated mercury levels, which have not yet been discovered. In the future, when more sediment data are collected and a fate and transport model has been developed, there will be greater certainty about the nature and extent of mercury contamination in the pond. Until more information is available, we cannot rule out the possibility that additional locations of elevated mercury may exist in sediments in the unnamed pond.
- The cleanup standard of 20 mg/kg is based on the toxicity of inorganic mercury. However, an unknown portion of the mercury in sediments may have been converted (through chemical and/or biological processes) to methylmercury. Methylmercury is more toxic to humans than inorganic mercury. A direct contact cleanup standard based on methylmercury would be somewhat lower than 20 mg/kg and in the range of the 95% UCL calculated for the pond sediments. This uncertainty in the amount of methylmercury in the sediments emphasizes the importance of following CT DPH's health protective recommendations, which are listed at the end of this health consultation.
- A wetland area borders the southeast portion of the trailer park. This wetland area is farther from the former Light Sources facility, but it is still possible that some mercury contamination has reached the wetland. The wetland has not been sampled for mercury (other than one background sample in the northwest corner of the wetland, which showed no contamination).

Conclusions

Based on the data CT DPH reviewed, direct contact with mercury contaminated sediments in wetland areas adjacent to the proposed future location of the Ryder Woods Trailer Park is unlikely to pose adverse health risks to future Ryder Woods Trailer Park residents. ATSDR has a categorization scheme whereby the level of public health hazard at a site is assigned to one of five conclusion categories. CT DPH has concluded that mercury contaminated sediments present “no apparent public health hazard.”

The fish data are not sufficient to support a conclusion about health threat from consuming fish from the pond. Fish were last sampled in 1998 and although mercury in fish were not elevated at

that time, fish tissue levels may have increased since they were last measured in 1998. Therefore, CTDPH has concluded that mercury in fish presents an “indeterminate public health hazard.”

Recommendations

CT DPH has made the following recommendations to help ensure the safety of future trailer park residents who may want to use the pond and wetland areas that border the trailer park. CT DPH believes these are prudent recommendations given the uncertainty in the data and the fact that it may be some time before additional sediment data are available for this site.

1. The Milford Health Department should post all access points to the pond and wetland areas that border the future trailer park. These areas should be posted with the statewide fish consumption advisory signs.
2. CT DEP should ensure that a new round of fish sampling occurs in the unnamed pond adjacent to the future trailer park. Current data on mercury levels in fish tissue will allow CT DPH to determine whether the statewide advisory is sufficient to prevent risks to human health from consumption of mercury-contaminated fish.
3. If the access or attractiveness of the pond or wetlands are deliberately enhanced (for example, establishing a picnic, beach area, or fishing pier), the Milford Health Department should inform CT DPH or CT DEP. Additional soil/sediment sampling may be needed to confirm that mercury levels in those areas do not exceed the state cleanup standard of 20 mg/kg.

References

CT DPH 2002. Memorandum to Traci Iott, CT Department of Environmental Protection from Gary Ginsberg, CT Department of Public Health, May 14, 2002.

CERTIFICATION

The Health Consultation for Evaluation of Mercury Data - Ryder Woods Trailer Park was prepared by the Connecticut Department of Public Health 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 the health assessment was initiated.

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The Division of Health Assessment and Consultation (DHAC), ATSDR, has reviewed this Health Consultation and concurs with its findings.

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