

Health Consultation

Sediment, Soil, and Surface Water Data Review

RHOADES SALVAGE

MILTON, CHITTENDEN COUNTY, VERMONT

EPA FACILITY ID: VTR000006007

JANUARY 28, 2009

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:

U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

Statement of Issues

The Environmental Protection Agency (EPA) requested the Agency for Toxic Substances and Disease Registry (ATSDR) evaluate environmental data for the Rhoades Salvage Yard (Rhoades) site located at 15 Shirley Ave, Milton, VT [ATSDR 2008]. Specifically, EPA requested ATSDR review soil, sediment, and surface water samples to address the following questions:

1. Do the surface soil samples within the junkyard property pose a health hazard to trespassers?
2. Do the surface and subsurface soil samples on any individual neighboring property pose a health hazard to residents?
3. Do the surface water and near shore sediment samples pose a health hazard to recreational users of Hobbs Pond?

This EPA request is being managed by ATSDR under the “Strike” process, which is a rapid-response, focused effort that does not include comprehensive review of the technical memorandum, site contaminants, and exposure pathways.

Site History

In the past, Rhoades was called ABC metals. The site has been in operation since the 1950's. In the past, Rhoades occupied a larger land parcel but currently occupies approximately five acres. Historically, Rhoades has brought cars, trucks, scrap metal, tires, etc. into the yard for recycling/scrap purposes. EPA reported that anecdotal evidence exists regarding the dumping petroleum products onsite [EPA 2009].

There are many former underground storage tanks (USTs) that are currently sitting in the yard. The interior ones are used to store petroleum products. The USTs along the perimeter are empty and are being used to restrict entry to the site (i.e., in lieu of a fence in those areas) [EPA 2009]. In recent years, neighborhoods have encroached up to Rhoades perimeter. In addition to residential homes, Hobbs Pond borders the site.

Data Quality and Limitations

ATSDR's analyses, conclusions, and recommendations are valid only if the available data are complete and reliable. EPA provided sediment, soil, and surface water data to ATSDR in electronic form [ATSDR 2008]. Although ATSDR staff did not receive or review quality assurance/quality control (QA/QC) information, EPA indicated that the sampling data did receive a QA/QC review.

Overall, the sampling data are limited in scope. For example, the neighboring properties' samples were collected only a few feet from Rhoades' perimeter [EPA 2009]; these data might not truly represent average chemical levels in surface and subsurface soil found in residential yards in this area. Also, the sediment and surface water samples were limited with respect to the location and quantity of samples collected and analyzed.

Discussion

Although access to the site is partially restricted by a fence and the USTs, trespassing has been reported. Exposure to onsite soil would occur primarily through dermal contact. In addition, people could accidentally ingest small quantities of soil as well as dust that is generated from disturbing the soil. Also, residents living near the site are exposed to soil in their yards via dermal contact and incidental ingestion.

Residents are exposed to Hobbs' Pond surface water and sediment. Current recreational use of the pond includes wading, playing, fishing and boating. In the past, bull pout fish were very plentiful in the pond and people would eat the fish. It is not known whether fish continue to be eaten from the pond [EPA 2009].

Soil samples were collected both on the site and near the perimeter of the site. Surface soil samples were collected within the top 3 inches of soil and subsurface soil samples were collected from about 10–12 inches below grade. Near shore sediment samples from Hobbs Pond were collected from approximately 3-9 inches below the water's surface. Surface water samples were collected from the same locations as the sediment samples.

Samples were analyzed for metals, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and mercury. EPA reported that because the laboratory is a performance based methods and standards (PBMS) laboratory, the analysis of the samples included a slight variation of the methods: BNAs-8270, VOA-8260, PCB-8082, Metals-6010, Mercury liquid-7470, and Mercury solid – 7471 [EPA 2009].

Overall, most chemical analytes were not detected. To focus ATSDR's Strike Team response, the agency only evaluated data for chemicals that were detected. For those chemicals that were detected, ATSDR compared their concentrations to relevant health-based comparison values (CVs). Exposures to chemicals detected at levels below CVs are not expected to result in harmful health effects; concentrations above CVs require further evaluation.

Chemicals that were detected in at least one environmental medium above CVs were 3,3'-dichlorobenzidine, aluminum, benzo(a)anthracene, benzo(a)pyrene, total chromium, copper, dibenz(ah)anthracene, iron, lead, and manganese.

Nine soil samples (SS-11 through SS-19) were collected from inside the perimeter fence on Rhoades' yard. Of the nine samples, iron was detected in five samples above CVs (SS-11, SS-12, SS-15, SS-16, and SS-17) ranging from 29,000–110,000 milligrams per kilogram (mg/kg). Of note, iron is an important nutrient for human health. Although estimated daily exposure doses would be twice the National Academy of Sciences' (NAS) Recommended Dietary Allowance (RDA), the body normally reduces absorption of iron from the gastrointestinal tract in response to higher concentrations and iron in soil is not expected to be 100% bioavailable.

Total chromium, copper, and lead also exceeded CVs in onsite soil. Total chromium was detected in only 1 of 9 samples (SS-11) at a level above CVs. Although this one sample is slightly above ATSDR's CV for hexavalent chromium (CrVI), daily exposure is not occurring. Also, in environmental soil samples, CrVI generally constitutes only about

15% of total chromium, rather than 100% as was assumed in this analysis. Copper was detected in two samples at levels of 900 mg/kg and 580 mg/kg (SS-11 and SS-12, respectively), which exceed ATSDR's CVs. However, like iron, copper is an essential nutrient and the estimated daily exposure doses to soil are below the RDA. Lead was detected in 2 of 9 samples above CVs; results from samples SS-11 (3,300 mg/kg) and SS-12 (570 mg/kg) were above EPA's residential soil screening level. Although the potential exists for children to have blood lead levels of health concern following daily exposure to these maximum soil lead levels, the bioavailability of lead in soil is greatly reduced relative to that in water and daily exposure is not occurring onsite. The average soil lead level for the salvage yard is not of public health concern. Overall, available data for onsite soil indicates chemical levels that are not of public health concern for intermittent exposure by trespassers. Of note, this conclusion assumes that the chemical levels from the nine onsite soil samples are representative of the entire yard.

Surface soil and subsurface soil samples were collected two to three feet from the Rhoades property boundary [EPA 2009]. Iron was detected in one sample above CVs; no other chemicals were detected above CVs in the 12 samples collected and analyzed. The estimated daily exposure dose to the detected iron concentration is equivalent to the RDA and therefore not at a level of health concern. Although the 12 soil samples collected along the Rhoades' property line do not indicate chemical levels of health concern, this conclusion cannot be associated with neighboring properties. As indicated previously, the Rhoades Salvage Yard was, in the past, larger and covered more area. Potentially, the neighboring yards were a part of the site in the past. ATSDR could provide a more definitive conclusion regarding the health risks associated with soil in neighboring properties upon further sampling and characterization of those yards.

Four surface water samples from Hobbs pond were collected and analyzed. Aluminum, copper, iron, lead, and manganese were the only chemicals detected above CVs in samples SW-03 and SW-04. Also of note, according to the map provided with the Strike Request documentation, SW-03 and SW-04 were collected from the same location in the pond [ATSDR 2008]. These two samples showed very high levels of manganese and iron, enough to make the water unpalatable (e.g., distasteful and/or with a foul odor sufficient to deter anyone, including children, from drinking the water). The lead levels at 53 micrograms per liter ($\mu\text{g/L}$) and 180 ($\mu\text{g/L}$) in SW-03 and SW-04, respectively, were also elevated. Of note, however, is that the aluminum, copper, iron, lead, and manganese results from SW-01 and SW-02 are well below the levels found in SW-03 and SW-04. Overall, ATSDR cannot provide conclusive statements regarding the potential health hazard associated with the pond because of the large variation in the detected levels. ATSDR recommends additional characterization of the pond.

Six near shore sediment samples were collected and analyzed. Only 1 of 6 samples detected copper and iron above CVs. As stated previously, these chemicals are essential nutrients; therefore, their detected levels are not of public health concern for intermittent exposure, such as one or two days per week. The chemical 3,3'-dichlorobenzidine was detected in only one sample and its level was orders of magnitude below known animal effect levels. The other detected chemicals (benzo(a)anthracene, benzo(a)pyrene, and

dibenz(a,h)anthracene), are not of health concern because at the detected levels they would be rapidly metabolized within a few hours or days and eliminated by excretion of urine or feces. Overall, available data for sediment indicates chemical levels that are not of public health concern for intermittent exposure; however, as stated previously, sediment data for the pond are limited.

Other Hazards

Although an evaluation of other hazards is outside the purview of this Strike Team response, ATSDR notes the following items from our review of site information.

EPA reported that residents fish in the pond. However, it is not known whether the fish are eaten. ATSDR would recommend sampling fish, particularly bottom feeders, if it is determined that fish consumption is occurring.

From a Google Earth map, ATSDR notes that in the northeast corner of Rhoades Salvage Yard, there appears to be a large pile of tires. If there is currently a pile of tires in Rhoades' yard, ATSDR would recommend the tires be properly removed and disposed of to reduce potential rodent harborage and mosquito breeding areas. An abundance of rodents and mosquitoes can spread disease, particularly in a residential setting. Furthermore, if the tires caught fire, the nearby residential homes would be adversely affected.

As stated previously, USTs are being used as a fence for some areas of the site [EPA 2009]. Because there are physical and chemical hazards for adults and children in a salvage and scrap metal yard, ATSDR would recommend a permanent barrier, instead of former USTs, be erected surrounding the Rhoades property. A properly maintained fence would reduce the risk of trespassers gaining access to the salvage yard and becoming exposed to the hazards that are inherent to its operations.

Conclusions and Recommendations

Based on a review of available environmental data for the Rhoades Salvage Yard site, ATSDR's conclusions and recommendations follow.

- Overall, available data for onsite soil indicates chemical levels that are not of public health concern for intermittent exposure by trespassers. Of note, this conclusion assumes that the chemical levels from the nine onsite soil samples are representative of the entire yard.
- Soil samples collected along the Rhoades' property line do not indicate chemical levels of health concern.
- ATSDR could not provide a definitive conclusion regarding the health risks associated with exposure to soil in neighboring properties because representative data for these yards were not available. ATSDR recommends further sampling and characterization of those yards that may have been a part of the site in the past, such as collection of composite surface soil samples.
- Although the limited data available suggest Hobbs Pond surface water is unpalatable, ATSDR cannot provide conclusive statements regarding the potential

- health hazard associated with the pond because of a large variation in the detected levels. ATSDR recommends additional characterization of the pond, including the collection of additional surface water samples.
- Overall, available data for Hobbs Pond sediment indicates chemical levels that are not of public health concern for intermittent exposure. Of note, sediment data for the pond are limited. ATSDR recommends additional characterization of the pond, including the collection of additional sediment samples.
 - ATSDR would recommend sampling fish in Hobbs Pond, particularly bottom feeders, if it is determined that regular fish consumption is occurring as a part of local residents' diets.

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References

[ATSDR] Agency for Toxic Substances and Disease Registry. 2008. December 24th electronic mail from Gary Perlman, ATSDR, to Danielle Langmann, ATSDR, regarding a Strike Team Request submitted by the US Environmental Protection Agency for Rhoades Salvage Yard that includes attachments containing tables and maps. ATSDR Region 1, Boston, MA.

[EPA] US Environmental Protection Agency. 2009. January 8th electronic mail from Gary Lipson, EPA, to Gary Perlman, ATSDR, concerning Strike Team questions about the Rhoades Salvage Yard site. EPA Region 1, Boston MA.