

Letter Health Consultation

CADLEROCK PROPERTIES

ASHFORD AND WILLINGTON, CONNECTICUT

EPA FACILITY ID: CTN000105494

**Prepared by the
Connecticut Department of Public Health**

September 3, 2010

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners 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 or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

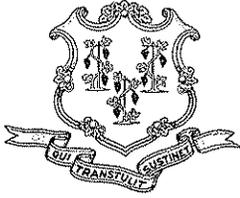
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Prepared By:

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



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DEPARTMENT OF PUBLIC HEALTH

August 12, 2010

Janis Tsang
On-Scene Coordinator
EPA, New England Region
1 Congress St., Suite 1100 (HBR)
Boston, MA 02114

Dear Ms. Tsang,

This Letter Health Consultation (LHC) has been completed for a 1-acre area known as the Northwest Disposal Area (NWDA), which is a portion of the Cadlerock Properties Joint Venture, L.P. Site (Site). Background information in this LHC was obtained through documents from the United States Environmental Protection Agency (US EPA).

Statement of Issues

This LHC is largely based on two letters, dated May and August 2009 (Attachments A and B). The first letter, referred to as the Time Critical Removal Action Value Letter, was prepared in response to a request by Kyle Brennan of the US EPA that we evaluate whether a time critical removal action value of 75 mg/kg for antimony in soil is protective of public health for purposes of alleviating immediate direct exposure risks in the Northwest Disposal Area (NWDA) of the Cadlerock Properties Joint Venture, L.P. Site, located in the towns of Willington and Ashford, CT as described below. The second letter, referred to as the Wooded Wetland Areas Letter, was in response to a request by the US EPA that we evaluate whether leaving an undeveloped wetland portion of the NWDA undisturbed (in the short term) is adequately protective of public health.

Background

The Cadlerock Properties Joint Venture L.P. Site consists of approximately 335 acres of land on 12 contiguous parcels located between 392 and 460 Squaw Hollow Road in the towns of Ashford and Willington, Tolland County, CT. From at least 1958 until the 1990's, the Site was used for agricultural purposes as well as other uses that included a restaurant, novelty store, residence, and J.I. Case Company tractor sales and maintenance business. The Site is currently undeveloped and consists primarily of open agricultural fields and undeveloped land, with many dirt roads, and all-terrain vehicle (ATV) tracks.

The 1-acre portion of the Site, the area know as the NWDA, is located in Willington, CT on an undeveloped, more remote parcel, is referred to as Lot 11. Most of the NWDA area

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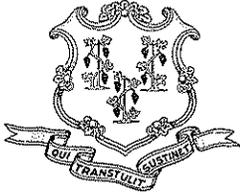


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is devoid of vegetation and contains charred wire, wood, tires, vehicle parts, and household appliances. A small portion of the NWDA is heavily wooded wetland. It is believed that for a period of one year between 1969-1972, plastic, insulated wire was burned once a week, on the bare ground, to reclaim the copper. Accelerants, such as kerosene and, possibly gasoline, and paper were used to start the wire burning.

Surface and subsurface soil samples taken from the entire Cadlerock Site in the summer of 2006 indicated the presence of a number of heavy metals (antimony, copper, lead), semivolatile organic compounds (hexachlorobenzene), and polychlorinated biphenyls (aroclor 1254), at levels above state cleanup standards. The US EPA began remediating the site in September 2007 and completed the remedial activities by the end of September 2009. The US EPA also plans on performing limited post remedial sampling on the site sometime after all of the remedial activities are complete.

A site visit conducted in June 2009 by the US EPA and CT DPH indicated that the NWDA is fairly remote and access to the entire property is restricted by a gate. However, as stated earlier, there were ATV tracks observed onsite, including parts of the NWDA, indicating some trespasser activity. There was no indication of any trespasser activity in the wooded wetland area of the NWDA.

In May 2009, the Time Critical Removal Action Value Letter was prepared in response to a request from the US EPA that we evaluate whether a time critical removal action value of 75 mg/kg for antimony is adequately protective of public health. Connecticut's current cleanup standard for antimony in soil is 27 mg/kg.

In August 2009, the Wooded Wetland Areas Letter was prepared in response to a request from the US EPA that we evaluate whether the EPA's proposal of not excavating the contaminated soil in the wooded area would be protective of public health in the short term.

Environmental Contamination and Health Comparison Values

Time Critical Removal Action Value Letter

One hundred and twenty-three surface and subsurface samples were taken in the NWDA property by a US EPA contractor in the summer of 2006. CT DPH was also notified by the US EPA that a large section of the NWDA was already remediated by May 2009 and that only 25 samples from 25 areas remained contaminated with soil with antimony levels above the state cleanup standard for soil which is 27 ppm. Of these 25 samples, 4 samples had antimony at levels that exceeded the proposed time critical removal action value of 75 ppm, with the maximum concentration at 186 ppm. It is our understanding that most of these 25 samples were taken in the wooded wetland area.

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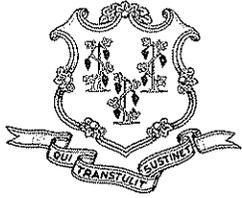


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Discussion

Exposure Pathway Analysis

To evaluate potential exposures to contaminants in the NWDA of the Cadlerock site, CT DPH evaluated the environmental data and considered how people might come into contact with contaminants in surface soil. It is important to note, however, that since the entrance to the property is gated and the NWDA is located in a remote area of the property, the only conceivable exposure scenario is one of a trespasser entering the property who could come into contact with the contaminated soil.

Time Critical Removal Action Value Letter

In this exposure scenario, the possible pathways of exposure are dermal and incidental ingestion. In other words, in order to be exposed to contaminants in surface soil at the NWDA of the Cadlerock site, one must come into contact with the surface soil by touching the soil, or eating soil adhered to fingers or food items. Completed past and current dermal and ingestion exposures to onsite surface soil are evaluated in detail in this letter health consultation.

In the first technical letter, the CT DPH has reviewed toxicology data regarding antimony and performed risk assessment calculations based on an exposure scenario of a trespasser (aged 6-18 years old), frequenting the site 3 times per week, 9 months/year, and ingesting (eating) 100 mg/day of soil for 12 years. In addition, CT DPH also assumed that a trespasser would be exposed to 75 mg/kg of antimony in the soil. The CT DPH based its evaluation on its understanding that no other contaminants besides antimony are present in the soil above state cleanup standards in the NWDA.

Wooded Wetland Area Letter

Because the wooded wetland area is located in a very remote section of the NWDA and vegetation is very thick, we do not believe that there is a possible pathway of exposure to the contaminated soil in this area. There is no evidence of trespasser activity in this area of the NWDA. Because there is no completed pathway, the wooded wetland area is not evaluated further.

Public Health Implications

Time Critical Removal Action Value Letter

Dermal and ingestion exposure to surface soil is evaluated quantitatively in this portion of the letter health consultation. CTDPH evaluated risks to trespassers from ingestion and

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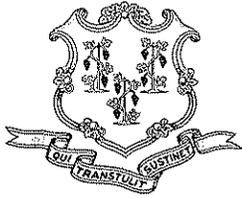


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dermal exposure to antimony in soil using the time critical removal action value of 75 ppm. The estimated daily dose represents a conservative estimate of what a teenager is exposed to who trespasses on the site. This dose from antimony exposure from the site is lower than the United States Environmental Protection Agency's (US EPA's) reference dose (IRIS 1991). All dose and risk calculations are provided in Attachment B. When an exposure dose is below a reference dose, health effects from exposure to antimony in soil are unlikely.

Based on our communication with the US EPA, this time critical removal action value will be applied as a "do not exceed" value only for the purpose of EPA's concern that the immediate direct exposure risk to human health has been alleviated. The value will not be applied as an overall average value for remediating the remainder of the NWDA or remediating the Cadlerock Properties Joint Venture, L.P. site.

It is important to note that this time critical removal action value of 75 ppm is solely applicable to the actions performed by the EPA Emergency Planning and Response Branch (EPRB) within the NWDA at the Cadlerock Properties Joint Venture, L.P. site. The value is not intended to be used for future actions performed by other parties and does not supersede compliance with the Connecticut Department of Environmental Protection (CT DEP) Remediation Standard Regulations, RCSA Sec. 22a-133k-1 through 22a-133k-3. This value is intended to mitigate the direct and immediate threat and is specific to this site and its current usage only.

CT DPH did not evaluate lifetime cancer risk calculations from exposure to antimony in soil in the NWDA because there is no significant evidence to show that exposure to antimony will increase the risk for cancer.

Conclusion

The CT DPH's evaluation is a conservative but realistic exposure scenario based on the current land-use status of the site, which is fairly remote from population centers and currently undeveloped. The CT DPH has concluded that use of the time critical removal action value of 75 mg/kg for antimony in soil is adequately protective of public health in the instance of a trespasser scenario on this site. Antimony in soil at levels not exceeding 75 mg/kg are not expected to harm the health of trespassers who might come into contact with soil.

Regarding the wooded wetland area, the CT DPH concludes that the concerns regarding potential environmental damages to the wooded wetland areas, and the inability of restoring wetland successfully without long-term monitoring, outweighed any benefit of removing the contamination from such areas on a short-term basis. CT DPH concludes that for the sole purpose of the US EPA's time critical removal action, leaving the

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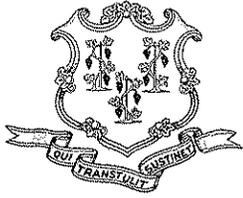


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wooded wetland areas undisturbed is adequately protective of human health in the short term, given the understory cover and damp conditions characteristic of the wetlands, which restricts human access.

Recommendations

The CT DPH recommends that this area should be re-evaluated if site conditions change (i.e., if the parcel is developed in the future and the potential for exposure changes).

Please contact me at (860) 509-7583, sharee.rusnak@ct.gov to discuss the findings of this letter.

Sincerely,

A handwritten signature in cursive script that reads "Sharee M. Rusnak".

Sharee M. Rusnak
Site Assessment and Chemical
Risk Unit
Occupational and Environmental
Health Assessment Program

cc. Gregory Ulirsch, Technical Project Officer
Gary Perlman, Region I Representative, ASTDR
Patricia Horgan, Connecticut District Attorney
William Warzecha, CT DEP
Robert Miller, Eastern Highlands Health District

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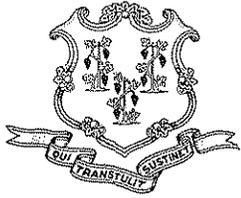


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References

EPA 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa, August 1997.

EPA 2001. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. Review Draft for Public Comment, September 2001.

IRIS 1991. EPA Integrated Risk Information System. <http://www.epa.gov/iris>

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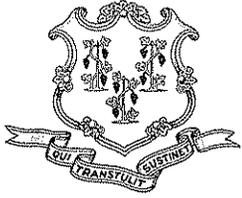


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Attachment A
Time Critical Removal Action Value Letter

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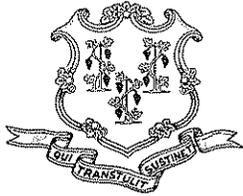


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May 15, 2009

Kyle L. Brennan
On-Scene Coordinator (OSC)
EPA, New England, Region 1
1 Congress St., Suite 1100 (HBR)
Boston, MA. 02114

Dear Mr. Brennan,

This letter is in response to your request that the Connecticut Department of Public Health (CT DPH) evaluate environmental data collected from an approximately 1-acre area known as the Northwest Disposal Area (NWDA), which is a portion of the 335-acre Cadlerock Properties Joint Venture, L.P. (the Site) located in the towns of Ashford and Willington, CT. Specifically, you have asked us to evaluate whether a time critical action removal value of 75 mg/kg for antimony in soil is protective of public health for purposes of alleviating immediate direct exposure risks as described below.

It is our understanding that this time critical action removal value will be applied as a "do not exceed" value only for the purpose of EPA's concern that the immediate direct exposure risk to human health has been alleviated and not as an overall average value for remediating the remainder of the NWDA or remediating the Cadlerock Properties Joint Venture, L.P. site.

In view of the preceding discussion, the CT DPH has reviewed toxicology data regarding antimony and performed risk assessment calculations based on an exposure scenario of a trespasser (aged 6-18 years old), frequenting the site 3 times per week, 9 months/year for 12 years, and ingesting (eating) 100 mg/day of soil. The CT DPH based its evaluation on its understanding that no other contaminants besides antimony are present in the soil above state cleanup standards in the NWDA.

The CT DPH's evaluation is a conservative but realistic exposure scenario based on the current land-use status of the site, which is fairly remote from population centers and currently undeveloped. The CT DPH has concluded that use of the time critical action removal value of 75 mg/kg for antimony in soil is adequately protective of public health in the instance of a trespasser scenario on this site.

It is important to note that this recommended time critical action removal value is solely applicable to the actions performed by the EPA Emergency Planning and Response Branch (EPRB) within the NWDA at the Cadlerock Properties Joint Venture, L.P. site. The value is not intended to be used for future actions performed by other parties and does not supersede compliance with the Connecticut Department of Environmental Protection (CT DEP) Remediation Standard Regulations, RCSA Sec. 22a-133k-1 through

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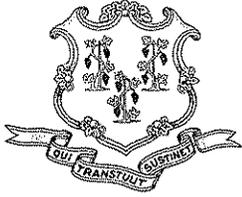


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22a-133k-3. This value is intended to mitigate the direct and immediate threat and is specific to this site and its current usage only. Lastly, the CT DPH recommends that this area will need to be re-evaluated if site conditions change (i.e., if the parcel is developed in the future and the potential for exposure changes).

If you have any questions or need additional information, please contact me at (860) 509-7583.

Sincerely,

Sharee M. Rusnak
Site Assessment and Chemical Risk Unit
Environmental and Occupational
Health Assessment Program

Phone:

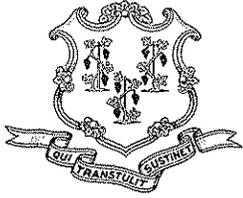


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Attachment B
Wooded Wetlands Area Letter

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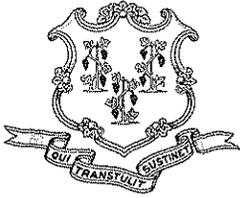


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August 26, 2009

Ms. Janis Tsang
On-Scene Coordinator (OSC)
EPA, New England Region
One Congress St.
Suite 1100, Mail Code HBR
Boston, MA 02114

Dear Ms. Tsang,

At the request of the United States Environmental Protection Agency (EPA) OSC Kyle Brennan, the Connecticut Department of Public Health (CTDPH) conducted an evaluation of whether a time critical removal action value of 75 mg/Kg for antimony in soil is protective of public health for purposes of alleviating immediate direct exposure risks at the Northwest Disposal Area (NWDA) at the CadleRock Properties Site located in the Towns of Ashford and Willington, Connecticut. The NWDA is located in an undeveloped parcel referred to as lot 11 of the Town of Willington Assessor's Map. Wire burning activities reportedly took place at NWDA releasing heavy metals including, but not limited to, antimony.

As part of its evaluation, the CT DPH reviewed the toxicology data for antimony and performed risk assessment calculations based on an exposure scenario of a trespasser using the following assumptions:

- **Age of the trespassers:** between 6 and 18 years old.
- **Frequency of site visit:** 3 times per week, 9 months per year for 12 years
- **Route of exposure:** ingestion (eating) 100 mg/day of soil
- **Contaminants of concern:** Only antimony is present above Connecticut cleanup levels

Based on this assessment, on May 15, 2009 CTDPH issued a letter to OSC Brennan concluding that the time critical removal action value of 75 mg/Kg for antimony in soil is protective for the NWDA.

On June 19, 2009, EPA provided a site tour for CTDPH and provided the following on-site briefing:

- The open area outlined in the attached Figure 3 has been excavated to the cleanup level less than or equal to the 27 part-per-million (ppm) of antimony, the

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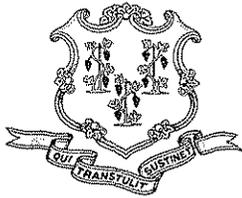


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- Connecticut Remediation Standard Regulations (CTRSR) residential direct exposure criteria (RDEC).
- Sampling in some of the heavily wooded wetland areas, showed the following distribution of antimony concentrations:

23 samples (> 27 ppm and <75 ppm)

6 samples (>75 ppm with 1 sample at 186 ppm)

At the Site visit, EPA proposed that the contaminated soil located in the wooded wetlands area would not be excavated because excavating the wooded wetlands areas would make these areas more accessible. In addition, it was determined that concerns regarding potential environmental damages to the wooded wetlands areas, and the inability of restoring the wetlands successfully without long-term monitoring, outweighed any benefit of removing the contamination from such areas on a short-term basis.

The CT DPH concludes that for the sole purpose of the EPA's time critical removal action, leaving the wooded wetland areas undisturbed is adequately protective of human health in the short term, given the understory cover and damp conditions characteristic of the wetlands, which restricts human access.

It is the understanding of CTDPH that CT DEP is seeking to enforce orders against the Estate of Benjamin Schilberg and the current property owner CadleRock Properties Joint Venture, L.P. for further work at the Site.

Lastly, the CT DPH notes that the entire NWDA will need to be re-evaluated if site conditions change (i.e., if the parcel is developed in the future and the potential for exposure changes).

If you have any questions or need additional information, please contact me at (860) 509-7583.

Sincerely,

A handwritten signature in black ink that reads "Sharee M. Rusnak".

Sharee M. Rusnak
Site Assessment and Chemical Risk Unit
Environmental and Occupational
Health Assessment Program

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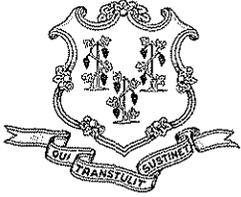


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cc: William Warzecha – CTDEP
Patricia Horgan – CTAG
Sarah Meeks – EPA
Tina Hennessy – EPA
Ralph Fletcher – Town of Ashford
Mike Eldredge – Town of Willington

Phone:

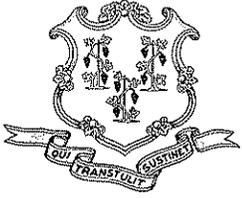


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Appendix C Risk Calculations

Cadlerock

A. Noncancer risks, trespasser, aged 6-18 years

1a. Ingestion Dose

In this calculation, we are estimating the average daily dose of antimony a trespasser, aged 6-18 years, would receive from via ingestion of soil.

$$ADD_i = IR_c [Soil] * EF * ED * C1 * C2 * 1/BW_t * 1/AT_{nc}$$

$$ADD_i = 100 \text{ mg/d} * 75 \text{ mg/kg} * 275 \text{ d/y} * 12 \text{ yr} * 10^{-6} \text{ kg/mg} * \text{y}/365 \text{ d} * 1/60 \text{ kg} * 1/6 \text{ yr}$$

$$= 0.00019 \text{ mg/kg/day}$$

2a. Dermal Dose

In this calculation, we are estimating the average daily dose of antimony a trespasser, age 6-18 years, would receive from dermal exposure to soil.

$$ADD_d = [Soil] * AF * ABS_d * SA * EF * ED * F * C1 * C2 * 1/BW_t * 1/AT_{nc}$$

$$ADD_d = 75 \text{ mg/kg} * 0.01 \text{ mg/cm}^2\text{-ev} * 0.03 * 9697 \text{ cm}^2 * 275 \text{ d/y} * 12 \text{ yr} * 1 \text{ ev/d} * 10^{-6}$$

$$\text{kg/mg} * \text{y}/365 \text{ d} * 1/60 \text{ kg} * 1/6 \text{ yr}$$

$$= 5.5\text{E-6} \text{ mg/kg/day}$$

3a. Noncancer Hazard Index

$$HI = (ADD_i + ADD_d) / RfD$$

$$HI = 0.000195 \text{ mg/kg/day} / (0.0004 \text{ mg/kg/day})$$

$$HI = 0.49$$

A Hazard Index of 1 means that the estimated dose is equal to the safe dose. A Hazard Index less than 1 indicated that the estimated dose is below the safe dose and noncancer health effects are unlikely. A Hazard Index (HI) greater than 1 indicates that the estimated dose is above the safe dose and noncancer health impacts cannot be ruled out. In this case, the HI for antimony is below 1. This indicates that noncancer health impacts from antimony are unlikely.

WHERE:

- ADD_i = average daily dose from ingestion
- ADD_d = average daily dose from dermal contact
- IR_c = soil ingestion rate for a child; 100 mg/day (EPA 1997)*
- AF = skin-soil adherence factor for default residential child; 0.2 mg/cm²-ev; default residential adult; 0.07 mg/cm²-ev. trespasser teenager; 0.01 mg/cm²-ev. (EPA 2001)
- ABS_d = Soil dermal absorption fraction

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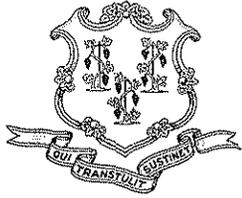


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SA	Arsenic: 0.03 (EPA 2001) [^] = Skin surface area, 50 th percentile legs, arms, hands, and feet, trespasser teenager age 13-18; 9697 cm ² , (EPA 2001)
[Soil]	= soil concentration; maximum concentration in the NWDA, except for the wooded wetlands area.
EF	= exposure frequency; 275 days/year
F	= event frequency, 1 ev/day
ED	= exposure duration; 12 years for trespasser
C1	= conversion factor; 10 ⁻⁶ kg/mg
C2	= conversion factor; 1 year/365 days
Bw _t	= teenager body weight, 13-18 years (EPA 1997); 60kg
AT _{nc}	= averaging time for noncancer risk; 6 years
RfD	= EPA Reference Dose; Antimony; 0.0004 mg/kg/day (IRIS 1991)
HI	= Hazard Index

* EPA (1997) recommends using soil ingestion rates of 100 mg/day for child < 6 years. EPA states that these values represent best estimates of average soil ingestion rates.

[^]Because there is no established soil dermal absorption fraction for antimony, CT DPH assumed the most conservative exposure scenario for a metal and used the soil dermal absorption fraction for arsenic.

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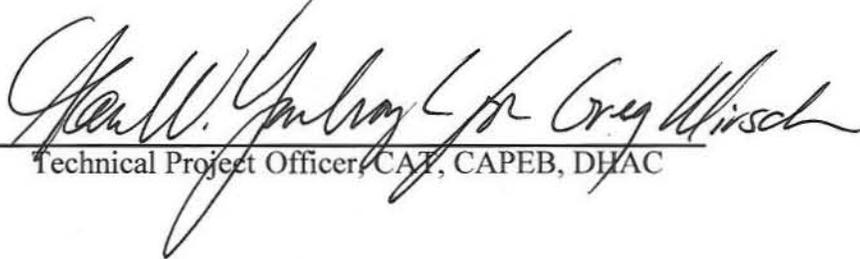
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CERTIFICATION

The letter health consultation for the Cadlerock Properties site 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 consultation was initiated. Editorial review was completed by the cooperative agreement partner.


Technical Project Officer, CAT, CAPEB, DHAC

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


Team Leader, CAT, CAPEB, DHAC, ATSDR