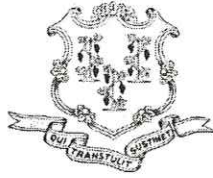


STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH



Raul Pino, M.D., M.P.H.
Commissioner

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Governor
Nancy Wyman
Lt. Governor

Environmental Health Section

To: Robert Bell, Assistant Director, CT DEEP

From: Meg Harvey, CTDPH *MH*

Thru: Gary Ginsberg, CTDPH *GG*

BT Brian Toal, Supervisor, Environmental and Occupational Health Assessment, CTDPH

Date: August 23, 2017

Re: Arsenic and PAHs Alternative Direct Exposure Criteria for Passive Recreation/Trespasser Scenario, Former Bicron Electrics, 54 Barlow Street, North Canaan, CT

The submission by O'Reilly, Talbot & Okun Associates derives alternative risk-based Direct Exposure Criteria (DECs) for arsenic and several PAHs using a passive recreation/trespasser (PR/T) exposure scenario and an Industrial/Commercial (I/C) scenario. The cumulative Excess Lifetime Cancer Risk (ELCR) of 1×10^{-5} was apportioned to each contaminant of concern at the site such that the cumulative site cancer risk did not exceed 1×10^{-5} . As stated in the alternative DEC proposal, the 95% UCL for arsenic at the site is 21.41 mg/kg. The maximum arsenic concentration is 52.1 mg/kg. 95% UCLs for PAHs are all below 1 mg/kg.

The proposed alternative DEC for arsenic is 24 mg/kg for both the I/C and the PR/T scenario. For PAHs, the proposed alternative DECs for both scenarios are at or below the I/C and Residential DECs in the Remediation Standard Regulations (RSRs).

In the calculations supporting the alternative DECs, the cancer potency value (CPV) used for benzo(a)pyrene is $7.3 \text{ (mg/kg/day)}^{-1}$ not the current EPA value of $1.0 \text{ (mg/kg/day)}^{-1}$. The CPV used in the submittal is 7.3 times more conservative than the current CPV.



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For the I/C scenario, worker exposure assumptions are the same as specified in the RSRs. For the PR/T scenario, the proposed exposure assumptions do not align with what DPH would consider to be a “maximum” trespasser scenario or a passive recreational visitor. DPH agrees that both scenarios are appropriate for this site given that (1) the site is located very close to residences, (2) there are walking trails connecting residences to the property and to the adjacent wooded area, and (3) there is no fencing or other administrative controls to limit access to the subject property.

The table below lists the proposed assumptions for the alternative scenario (combined Passive Recreation/Trespasser) and DPH’s Comments. The table also presents DPH’s calculation of cumulative site risk using the alternative DECs presented in the submittal as exposure point concentrations, DPH’s recommended exposure assumptions, the arsenic CPV of 1.5 (mg/kg/day)⁻¹ and the current CPV for benzo(a)pyrene of 1 (mg/kg/day)⁻¹ (and current relative potencies for other PAHs).

Scenario	Proposed Assumptions	DPH Recommended Assumptions	DPH Comments	Cumulative ELCR [^]
Trespasser	EF=90 d/yr ED=30 y (child 1-15 & adult 15-31) IR= 100 mg/d (child) IR=50 mg/d (adult) BW=28 kg (child) BW=58.7 kg (adult)	EF=144 d/yr ED=11 y (age 8-18 y) IR=100 mg/d BW=53.19 kg	144 d/yr represents 4 d/w for 9 mo/yr and is reasonable given the proximity to residences, presence of trails from residences to site and the lack of barriers to trail access. 8-18 year olds are a more appropriate receptor population for a trespasser scenario than a child/adult age 1-31 yrs.	6.88 x 10 ⁻⁶
Passive Recreation	EF=90 d/yr ED=30 y (child 1-15 y and adult 15-31 y) IR=100 mg/d (child) IR=50 mg/d (adult) BW=28 kg (child) BW=58.7 kg (adult)	IR=200 mg/d (child 1<6 y) IR=100 mg/d (age 6-25 yr) BW=16.2 kg (child 1<6 y)* BW=64 kg (age 6-31 y)*	Proposed assumptions provide reasonably conservative defaults so DPH agrees except for ingestion rate. Increased rates warranted given that the full daily soil ingestion may come while recreating on these paths. IR=200 mg/d* is upper percentile rate for young children. IR=100 mg/day* is central tendency rate for older children	1.33 x 10 ⁻⁵

[^] Cumulative risk from arsenic and PAHs using the alternative DECs presented in the submittal and using CPV of 1 (mg/kg/day)⁻¹ for benzo(a)pyrene and 1.5 (mg/kg/day)⁻¹ for arsenic.

*EPA Exposure Factors Handbook, 2011

As shown in Table 1, the DPH calculated cumulative site risks for the trespasser scenario do not exceed the limit of 1×10^{-5} . For the passive recreation scenario, cumulative site risks are slightly above 1×10^{-5} but round down to 1×10^{-5} . Therefore the alternative DEC's proposed in this submission are acceptable to DPH.

Please contact me if you would like to discuss this further.

cc: Carl Gruszczak, CT DEEP
Rosemary Gatter-Evarts, CT DEEP

