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STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

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Environmental Health Section

To: Thomas Stansfield, Torrington Area Health District
Lori Saliby, Director, Emergency Response & Spill Prevention Division, CT DEEP

From: David Kallander, Ph.D., Toxic Hazards Health Assessment Unit

Through: Jim Vannoy, Chief, Environmental Health Section

Subject: Review of air phase hydrocarbon data from [redacted]., Norfolk

Date: January 27, 2023

This memorandum is in response to a request from CT DEEP and the Torrington Area Health District for technical assistance in reviewing air sampling data from homes potentially impacted by the gasoline spill on Route 44 in Norfolk in November 2022.

As indicated in our December 14, 2022 memo, following review of the analysis reports for air testing for BTEX (benzene, toluene, ethylbenzene and xylenes) at two of the homes conducted in November, DPH recommended that Hygenix conduct additional air testing using the Air-Phase Petroleum Hydrocarbon (APH) method, which is used to quantify individual fractions of gaseous phase volatile aliphatic and aromatic hydrocarbons based on the number of carbon atoms in the constituent compounds. Hygenix conducted the air sampling on December 28 and December 29, 2022 at one of the homes ([redacted].) and provided the analysis reports to us on January 14, 2023 for our review. As stated by Hygenix, the indoor air results will be used to confirm that gasoline constituents are not present in indoor air at levels that could pose a public health concern for the occupants.

As requested, DPH has reviewed the reports provided by Hygenix on January 14. The two reports provided are (1) Laboratory Analysis Report from Phoenix Environmental Laboratories for APH Hydrocarbon Ranges and Target APH Analytes for [redacted] (dated 1/3/23) and (2) Summary of Indoor Air Quality Investigation for [redacted] (dated 12/18/22). DPH compared the measured hydrocarbon fractions and target APH analytes with applicable CT Residential Target Air Concentrations (TACs). Table 1 below includes the indoor air data provided by Hygenix and TACs for both the hydrocarbon fractions as well as benzene, which is a target APH analyte and was reported above the detection level in the air sampling results. The data for the outside porch was not included since the residential TACs are applicable to only indoor test results. For this review,

DPH used residential TACs for the three petroleum hydrocarbon fractions for which results were provided in the Phoenix Laboratory report. Two of the three TACS have been updated by DPH to incorporate changes in the Reference Concentration (RfC) in USEPA's Integrated Risk Information System (IRIS) for two of the inhalation surrogates used to represent the toxicity of the corresponding hydrocarbon fractions. More details on this are provided in the footnotes of Table 1 below.

As indicated in Table 1, the air sample results from [redacted]. do not exceed the risk-based TACs for any of the substances tested. DPH notes that it is DEEP policy to consider background concentrations during the process to establish TACs. DEEP is evaluating current literature on background concentrations for the APH fractions and may adjust the risk-based TACs to consider background conditions. This potential adjustment will not impact the risk-based TACs. Rather, it would only potentially impact the level of cleanup that DEEP may require. As we have previously stated, we recommend that air quality in other potentially impacted homes in the area should be checked using the APH method.

Please do not hesitate to contact David Kallander (David.kallander@ct.gov) or Meg Harvey (Margaret.harvey@ct.gov) if you have any questions about the information contained in this memo.

C: Lori Mathieu, Cheryl Fields, Meg Harvey, DPH

Table 1. APH Indoor Air Results for [redacted]., all concentrations in µg/m³

Fraction	Basement 12/28/22 – 12/29/2022	1st Floor Den 12/28/22 – 12/29/2022	Risk-Based Residential TACs	Hydrocarbon conc. vs. DEEP TAC
C5-8 aliphatics	41	55	**400**[a]	Air data do not exceed TAC
C9-10 aromatics	ND	ND	**34**[b]	Air data do not exceed TAC
C9-12 aliphatics	ND	30	114	Air data do not exceed TAC
Benzene	0.68	0.73	3.3[c]	Air data do not exceed TAC[d]

Key: TAC = Target indoor air concentration
Updated TACs are in **bold**

[a]TAC of 400 µg/m³ for C5-C8 aliphatics is based on updated IRIS RfC of 0.7 mg/m³ for n-hexane (IRIS 2005). The updated IRIS value is 3.5-fold higher than outdated IRIS RfC of 0.2 mg/m³ (IRIS 1990) value that was used to derive the previous risk-based TAC of 114 µg/m³.
[b]TAC of 34 µg/m³ for aromatic hydrocarbon ranges of C9-C10 and C11-C22 is calculated using the updated IRIS RfC of 0.06 mg/m³ for all three trimethylbenzene isomers (IRIS 2016
[c]From Proposed Revisions Connecticut's Remediation Standard Regulations Volatilization Criteria, 2003
[d]DPH notesthat the benzene level in the basement exceeded the TAC in the December 13-14 testing using Method TO-15

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Authors
David Kallander, Toxicologist, CT Department of Public Health

Reviewer:
Margaret Harvey, Epidemiologist 4, CT Department of Public Health