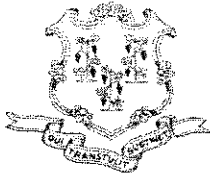


STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC HEALTH



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Commissioner

Environmental Health Section Environmental and Occupational Health Program

To: James Hricay, Greenwich Board of Education
FROM: *SR* Sharee Rusnak, Epidemiologist, Site Assessment and Chemical Risk Unit
SUBJ: Western Middle School Athletic Fields
DATE: March 30, 2017

As requested by the Greenwich Board of Education (GBOE), I reviewed the Human Health Risk Assessment (HHRA) for the Western Middle School Athletic Fields (Site) in Greenwich, Connecticut. This HHRA (dated September 7, 2016), was transmitted to the Connecticut Department of Public Health (CT DPH) on September 7, 2016.

My review focused on:

1. Whether the approaches and assumptions in the exposure assessment are health protective and appropriate, given how the site is used.
2. Whether the remedial recommendations are appropriate and health protective.
3. Whether additional remedial recommendations are necessary to protect public health.

Site Background

The HHRA was prepared by Langan Engineering for the GBOE. It provides a brief summary of the Site history. The Site is approximately 6.9 acres in area and is bounded by a wooded area to the north, Muskat Pond Drive to the northeast, Bimbo Bakeries to the southeast, and Western Middle School buildings and a school owned parcel to the west and southwest. A town owned incinerator once operated on the Site or on the site's border and there has been some recent community concern about environmental contamination on the Site.

In July 2016, the GBOE requested that the Connecticut Department of Public Health (CT DPH) Agency for Toxic Substances and Disease Registry (ATSDR) Unit evaluate surface soil sampling data for a small grassy parcel adjacent to Western Middle School. This parcel was



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being considered as an area for placement of temporary modular classrooms to house children from an elementary school while their school was being renovated. After evaluating the surface soil sampling results of this parcel, CTDPH recommended that the GBOE sample surface soil in the adjacent athletic fields (Site) because it was likely that the children using the temporary classrooms will have access to the Site. The GBOE hired Langan Engineering to perform soil sampling on the Site in July 2016. Langan also wrote a Human Health Risk Assessment (HHRA) that evaluated soil sampling data from the Western Middle School athletic field and asked CTDPH to review this HHRA (Langan 2016).

In July 2016, a total of 30 surface soil samples (0-3 inches below ground surface (bgs)) were collected from the Site and analyzed for semi-volatile organic compounds (SVOCs), herbicides, pesticides, metals, and polychlorinated biphenyls (PCBs). The surface soil sampling results were evaluated in the HHRA using current risk assessment assumptions and guidance from the United States Environmental Protection Agency (USEPA) (Langan 2016).

The primary goal of the HHRA was to provide site-specific evaluation of potential health risks associated with exposure to polycyclic aromatic hydrocarbons (PAHs), chlordane, arsenic, and lead identified in soils at the Site. Elementary school students (using the modular classrooms), middle school students, teachers, and construction workers were assumed to be the potentially exposed groups and cancer and non-cancer risks were calculated for each of these receptor groups. Site-specific lead cleanup levels were derived for surface soil using USEPA guidance on the assessment of intermittent or variable exposures at lead sites, and the USEPA's Adult Lead Model (Langan Engineering 2016).

Comments and Recommendations

I have reviewed the HHRA and concur with the results of the risk assessment, including its assumptions, approaches, and its cleanup recommendations. I concur that the remedial activities from the HHRA that are list below are necessary and appropriate to protect public health:

1. Development and execution of action plans for the protection of students, faculty, onsite workers, community, and the environment during soil disturbance activities (i.e. remedial action plan, community air monitoring plan, etc)
2. Excavation and off-site disposal of lead impacted soils exceeding 606 mg/kg.
3. Excavation and off-site disposal of PCB impacted soils exceeding 1 mg/kg.
4. Backfilling of remedial excavation areas to grade with certified clean fill.



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I have the following recommended actions to provide additional public health protectiveness:

1. Remediation of surface soil at location SS-31 since it approaches Connecticut's Residential Direct Exposure Criteria (CT Res DEC) of 1 ppm for PCBs in soil. One part per million is the cleanup level for PCBs in surface soil noted in the HHRA.
2. Remediation of surface soil at location SS-22 because the chlordane concentration is 14x greater than the CT Res DEC and approaches the Significant Environmental Hazard Notification (15x the CT Res DEC). In addition, since this is the maximum chlordane level found on the ball field, removing the contaminated surface soil in this area would significantly reduce to the overall average concentration on the Site. Lastly, since this area is in the middle of the soccer field, there is an increased likelihood of exposure (as opposed to the periphery of the field).
3. Remediation at location SS-9. Chlordane levels in surface soil exceed the CT Res DEC. Because it is located in the baseball infield and is not covered with grass, there is an increased likelihood of exposure to chlordane in surface soil.
4. The HHRA does not specify a remediation depth. Per our email and phone conversations, we concur with Langan's plan to excavate 1 foot and replace with it with clean fill. We recommend the same 1 foot excavation depth in the additional areas noted in 1, 2 and 3 above. We also recommend a soil management plan for the areas of the field that will be remediated which should include placement of a marker barrier liner between the clean soil and the soil that was not remediated. In addition, details of the remediation should be noted on the property deed. Existing grass covering on the field should also be maintained.
5. Concentrations of PCBs in soil may not meet requirements imposed by the Connecticut Department of Energy and Environmental Protection (CT DEEP) and/or the USEPA's cleanup program for PCB's. This indicates that further assessment and remedial action may be needed in order for the site to meet state/federal requirements. We recommend that the GBOE communicate directly with the CT DEEP and/or USEPA about their requirements regarding PCB characterization and cleanup in soil at the Site.

Please contact me at (860) 509-7583, sharee.rusnak@ct.gov if you have any questions.

Reference

[Langan 2016]. Langan Engineering. 2016. Human Health Risk Assessment, Western Middle School. Greenwich, CT. Spetember 9, 2016.



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