

Kale-Bindex Brownfields Site (Helix South End Townhomes) Charlotte, N.C.



Factsheet

March 2021

Site History

Brownfields sites are redeveloped properties on contaminated or formerly abandoned sites. Prospective developers, who did not cause or contribute to the contamination, work with the North Carolina Department of Environmental Quality's (DEQ) Brownfields Program to put these properties back into reuse by committing to remedial actions and land-use restrictions that protect public health and the environment. The site, known as the Kale-Bindex Brownfields site, was redeveloped into the Helix South End Townhomes, located on Helix Way in Charlotte.

The property was originally developed in the 1960s and was occupied by Package Products Co. Inc. until 1975. From approximately 1980 until 2005, the property was occupied by Kale-Bindex, a book-binding company. The area surrounding the brownfields property in South End Charlotte has historically been used for industrial and commercial purposes. The Kale-Bindex property was entered into the DEQ's Brownfields Program in July 2012 (Brownfields Project Number 16028-12-060). The property was redeveloped by 2000 Hawkins, LLC.

As part of environmental assessment activities on the property, chlorinated solvents were identified in soil, groundwater, soil vapor and indoor air above applicable DEQ standards. The chlorinated solvents found at the site are a class of chemicals that evaporate easily, known as volatile chemicals. When these volatile chemicals get in the soil or groundwater because of spills or leaks at a facility, they can evaporate and get into a building through seams and cracks in the building's foundation. This process is called vapor intrusion. When contaminants move indoors, people can be exposed to them by breathing indoor air. The main chlorinated solvent of concern at this property is trichloroethylene (also called trichloroethene or TCE). TCE is a manmade, colorless liquid used mainly as a solvent to remove grease from metal parts. It is also used in glues and paint removers.

Because of the contaminants present at the site, a land-use restriction was put into place that stated no building would be constructed until vapor intrusion mitigation measures were implemented to the satisfaction of a professional engineer licensed in North Carolina and approved in writing by DEQ.

TCE Health Concerns

The possible health effects from breathing TCE depend on its level in the air, how long you breathe the air with TCE, and if you are in contact with TCE during the first trimester of pregnancy. TCE at a level of 2.1 micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$) or more can be of concern for pregnant women in their first trimester because TCE above this level may increase the risk of damage to the heart of the baby during the time the heart is forming. Contact with TCE above 2.1 $\mu\text{g}/\text{m}^3$ does not mean it will cause heart damage to the baby; however, there may be a higher risk of heart damage. Breathing air with TCE over a long period of time also may affect the immune system of any individual, therefore increasing the chance of getting infections. Contact with TCE for a long time may increase the risk of kidney cancer, liver cancer and non-Hodgkin's lymphoma.

FOR MORE INFORMATION

DEQ Brownfields Program | Jordan Thompson (704) 223-6549 | Bruce Nicholson (919) 441-2504
<https://deq.nc.gov/about/divisions/waste-management/brownfields-program>

Vapor Intrusion Guidance

<https://deq.nc.gov/about/divisions/waste-management/waste-management-permit-guidance/dwm-vapor-intrusion-guidance>

Kale-Bindex Brownfields Site Files (Brownfields Project Number 16028-12-060)

[https://edocs.deq.nc.gov/WasteManagement/Search.aspx?dbid=0&searchcommand={WM};\[Program_ID\]%20=%20%2216028-12-060%22}&cr=1](https://edocs.deq.nc.gov/WasteManagement/Search.aspx?dbid=0&searchcommand={WM};[Program_ID]%20=%20%2216028-12-060%22}&cr=1)

Timeline of Past Actions

- December 2015: A Vapor Mitigation Plan was submitted by environmental consultant Hart & Hickman on behalf of the property developer. The vapor mitigation plan stated that no occupiable space was present on the bottom level of two of the planned buildings (now identified as Buildings 4 and 5), and therefore, no sub-slab depressurization systems were included in those buildings.
- July 2017: A Vapor Mitigation System Installation Report was submitted to DEQ that showed installation of the vapor barrier liner beneath all site buildings and active depressurization systems beneath Buildings 1, 2 and 3.
- November 2018: A site inspection by DEQ staff showed inconsistencies with the property layout as compared to the approved Vapor Mitigation Plan.
- December 2018: DEQ asked the Helix South End Homeowners Association (HOA) to submit a plan to conduct indoor air sampling in Buildings 4 and 5 that would verify vapor mitigation effectiveness.
- February 4, 2019: NC DEQ, DHHS, and the DEQ Secretary's Science Advisory Board confirmed the use of an Action Level of 2.1 $\mu\text{g}/\text{m}^3$ for TCE in indoor air of residential locations based on updated health science.
- April 2019: The HOA submitted an indoor air sampling plan, which was approved by DEQ's Brownfields Program.
- July 2019: Initial indoor air sample results were collected. TCE results were below the immediate action level of 2.1 $\mu\text{g}/\text{m}^3$ of air but indicated that additional sampling was warranted by the presence of TCE within the units.
- August 2019: Sampling results were mailed to all townhome units and the Helix South End HOA.
- September 2019: Additional indoor air sampling was conducted within three of four townhome units in Building 5. Sample results showed vapor intrusion and TCE indoor air levels above the residential action level of 2.1 $\mu\text{g}/\text{m}^3$ of air in two units. Residents with TCE above the action level were notified in person. An Austin Air Health Mate Plus filter was provided as an interim measure to homes with results above the action level as well as to other units within Building 5.
- October 2019: Sampling was conducted in a home with an air filtration unit to verify the effectiveness at reducing TCE levels in the indoor air. Results confirmed effectiveness of the filtration system.
- October/November 2019: DEQ discussed the sample results with Hart & Hickman, the property developer's engineering consultant firm. Openings in walls where utility lines like cable, telephone or waterlines enter the building could be conduits for vapor intrusion. During these discussions, the consultant firm suggests sealing utility conduits to reduce vapor intrusion.
- December 2019: Utility line openings were sealed in two units in Building 5.
- January 2020: Samples were collected to test effectiveness of sealing the utility conduits or wall openings. Results showed TCE within the units but below immediate action levels. DEQ requested additional sampling.
- August 2020: Additional indoor air sampling in all units within Buildings 4 and 5 was completed.
- September 30, 2020: DEQ received sample results from the August sampling. Results showed TCE above the action level in six of the 12 townhome units, and signs of vapor intrusion in the other six units.
- October 2020: DEQ staff shared individual results with each townhome owner. Air filters were offered for all residents of buildings 4 and 5 as a precautionary measure (even where TCE indoor air values were below the 2.1 action level) and are encouraged especially in units where people that could get pregnant, live or visit. DEQ conducted a community meeting to answer questions.
- October/ November 2020: Townhome developer worked with DEQ to address the indoor air issues, which will require the design and installation of a vapor mitigation system. Developer continued to conduct assessment work for indoor air, soil vapor and other items listed in a draft settlement agreement.
- October 5, 2020: Indoor air samples were collected to confirm the effectiveness of the interim indoor air filtration units within the residences where TCE was detected above 2.1 $\mu\text{g}/\text{m}^3$.
- December 30, 2020: Additional sampling performed, as included in the draft settlement agreement, to determine if soil-backfilled sidewalls around Buildings 3, 4 and 5 are contributing to a vapor intrusion pathway.
- March 1, 2021: Developer submitted the soil gas sampling results from the sidewalls around Buildings 3, 4 and 5, satisfying one of the settlement agreement items listed below. The results showed contaminants in soil vapor along sidewalls are very low in comparison to beneath the slab. The developer's environmental consultant concluded that the vapor mitigation system is only needed beneath the slab. The submittal of the system design is pending.
- March 9, 2021: Settlement agreement signed between DEQ Brownfields Program and the developer. The agreement outlines the following five actions that the developer must do:
 - Maintain all interim mitigation measures (air filters) within Buildings 4 and 5 until permanent measures are in place;
 - Provide a work plan for soil gas sampling of Buildings 3, 4 and 5, and perform soil gas sampling within 15 days of plan approval by DEQ (satisfied by the March 1, 2020 sampling report);
 - Provide a work plan for indoor air monitoring of Buildings 4 and 5, and perform sampling within 10 days of plan approval by DEQ;
 - Provide a comprehensive vapor mitigation plan following receipt of soil gas and indoor air sampling results that determines a permanent mitigation system for Buildings 4 and 5; and
 - Provide a work plan for DEQ approval for the evaluation of pressure differential data within the garage spaces of Buildings 1 and 2 as well as the garage and living spaces of Building 3.

Next Steps

- DEQ continues to actively work with the developer on implementing a permanent approach to address the vapor intrusion pathway. Specific details can be found in the settlement agreement referenced above.