Fact Sheet

Huntington Project

24th/5th Ave. Huntington, WV

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BACKGROUND

The Huntington Facility (Facility) is located at 2401 5th Avenue and occupies 20 acres on both sides of 5th Avenue at 24th Street in Huntington, West Virginia. It was historically used to create colors for paints and production began in 1912. The Facility is currently owned by Flint Group Pigments; previous owners include Standard Ultramarine Company, Chemetron Corporation, and BASF Corporation.

BASF is responsible for remedial activities resulting from past operations at the Facility. Activities are being directed by the U.S. Environmental Protection Agency (USEPA) under the Resource Conservation and Recovery Act (RCRA) Facility Lead Corrective Action Program, /www.epa.gov/hwcorrectiveactionsites/hazardous-waste-cleanup-flint-group-pigments-formerly-xsys-print-solutions.

VAPOR INTRUSION INVESTIGATION

As part of the RCRA Corrective Action Program, BASF has developed a detailed workplan to investigate whether vapor intrusion from groundwater is occurring in residential and commercial buildings on and off the Facility. Results from groundwater sampling in a parking lot at the northeast corner of the facility boundary, between 4th and 5th Avenues, confirm concentrations of volatile organic compounds (VOC) that exceed USEPA's vapor intrusion screening levels. Chemicals used during former manufacturing operations contained VOCs and may have been spilled onto the ground and contaminated groundwater. The VOCs of most concern are carbon tetrachloride, TCE (trichloroethylene) and PCE (tetrachloroethylene).

VOCs are a large group of chemicals that are found in many products used to build and maintain homes, interior furnishing, cleaners, degreasers, and personal care products. "Volatile" means that these chemicals evaporate or can easily get into the air at room temperature. Vapor intrusion occurs when VOCs from contaminated soil or groundwater migrate upwards toward the ground surface into overlying buildings through gaps and cracks in foundation slabs or basement walls, sump pump wells, or where utility pipes enter a structure. The route VOCs take from below the ground to the air inside a building is referred to as the vapor intrusion pathway.

BASF will conduct the vapor intrusion investigation in phases, with initial priority given to the areas where previous ground water sampling results have indicated a potential concern. The goal is to verify if vapors are seeping into adjacent buildings and, if so, whether levels exceed EPA recommendations, and what further action may be required. BASF will coordinate the offsite testing with potentially impacted property owners and share the data collected during the vapor testing with the property owners once the data has been received and reviewed for accuracy.

Currently, no evidence exists that vapor intrusion from groundwater is occurring. There are many factors that can affect whether and how much vapor may enter a building, including the soil type underneath the building, building size and construction, the building ventilation, and weather conditions. The depth of the groundwater and contaminant levels in groundwater may also be factors.

BASF regards the protection of health, safety, and the environment an important responsibility. Environmental remediation activities will continue to be performed based on the best available science and in compliance with all applicable regulations.

Learn more at: www.huntingtonsiteproject.com

Site boundary of the Huntington Facility and Phase I area of interest.

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EPA Sources:
1. https://www.epa.gov/sites/production/files/2016-10/documents/factsheet.pdf
2. http://www.health.pa.gov/My%20Health/Environmental%20Health/Environmental%20Fact%20Sheets/Pages/ATSDR_INVESTIGATING_VAPOR_INTRUSION.pdf

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UNDERSTANDING VAPOR INTRUSION

What is vapor intrusion?

The term "vapor intrusion" refers to the process by which vapors containing volatile chemicals, primarily volatile organic compounds (VOCs), migrate from the soil and/or groundwater into the indoor air of overlying buildings. A naturally occurring example of vapor intrusion is radon gas, which enters buildings the same way as VOCs.

How do the chemicals get in the ground?

Most of the chemicals that cause vapor intrusion are due to spills or leaks in areas where the chemicals were used, conveyed, or stored. For example, degreasing compounds are often found below buildings where vapor degreasing was conducted. Petroleum compounds are often found near gasoline stations where underground tanks have leaked. In many cases, these releases occurred in the past, when the potential for contamination was not well understood and there were fewer environmental controls or regulations.

Small spills or leaks may only impact soils in the immediate area, such as below the floor in a degreasing room. In other situations, sufficient volumes may be released to reach the groundwater table, where flowing groundwater can dissolve and carry VOCs away from the release area.

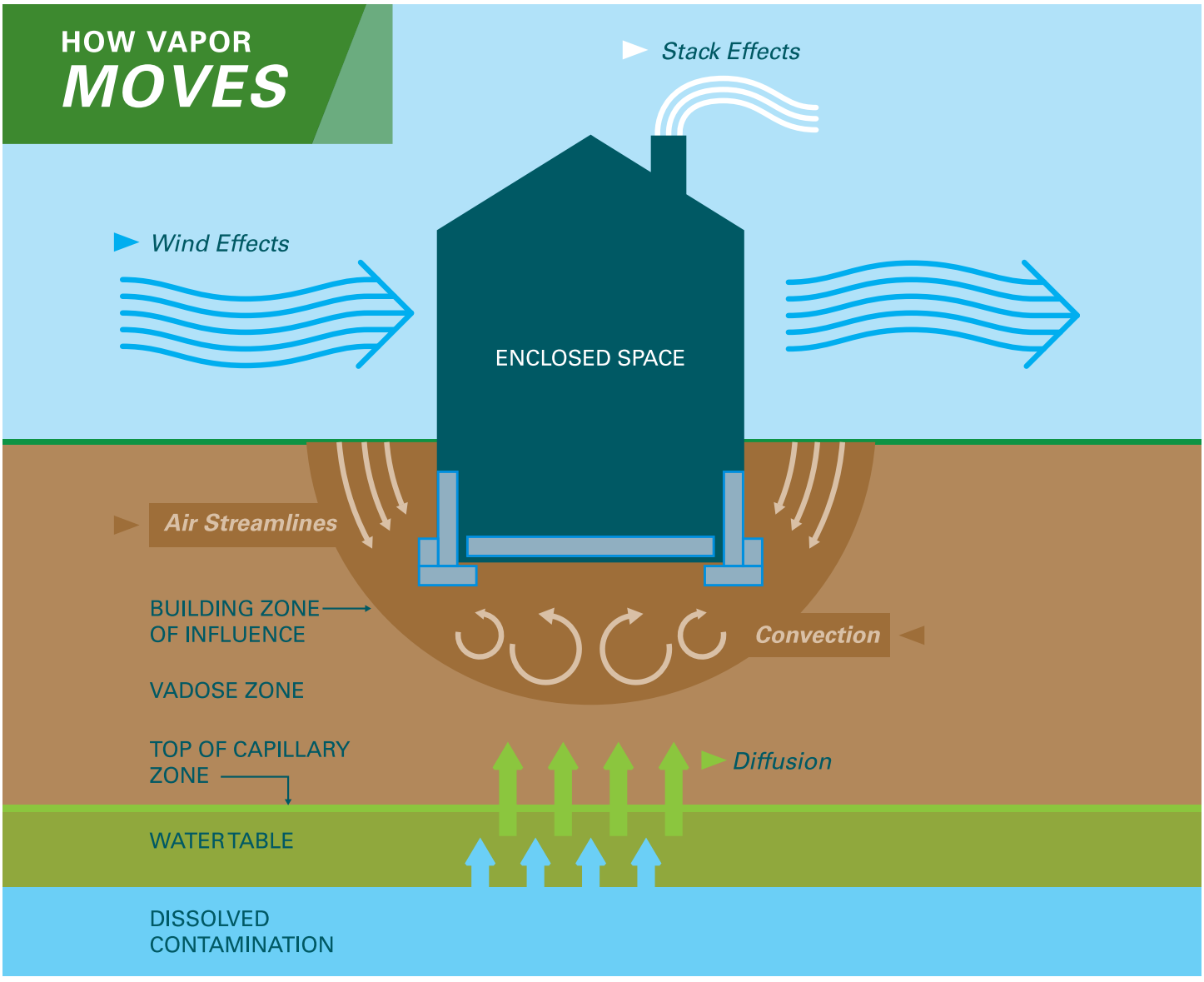
How do soil vapors get into buildings?

VOCs in soil or groundwater will evaporate and diffuse upwards toward the ground surface and any overlying buildings. Once the VOCs reach a building, they may continue to diffuse through cracks and other openings in the foundations and into the building. In some cases, the soil vapors may be pulled into the building by small negative pressures (i.e., a small vacuum) that result from heating and ventilation (HVAC) systems, exhaust fans, or the "chimney" effect of warm building air during cold weather.

Is vapor intrusion harmful?

The soil vapors that enter a building are diluted in the large building volume (compared to soil pore spaces) and by air exchange due to air conditioning and heating system operation or natural ventilation. The resulting concentrations are often below levels of concern for human health but, in some cases, can exceed the levels recommended by the U.S. Environmental Protection Agency (USEPA) or state agencies for residential or commercial buildings, as applicable, over certain exposure time periods. Whether or not individuals experience health effects from breathing volatile chemicals depends on many factors, including the concentration, the length of exposure (short-term versus long-term), the frequency of exposure, the toxicity of the volatile chemical, and the individual's sensitivity to the chemical.

Learn more at: www.huntingtonsiteproject.com



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EPA Sources:

1. https://www.epa.gov/sites/production/files/2016-10/documents/factsheet.pdf

2. http://www.health.pa.gov/My%20Health/Environmental%20Health/Environmental%20Fact%20Sheets/Pages/ATSDR_INVESTIGATING_VAPOR_INTRUSION.pdf

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MITIGATION & COMMON VOLATILE ORGANIC COMPOUNDS

Is vapor intrusion the only source of volatile chemicals in indoor air?

No. VOCs are commonly found in indoor air due to the presence or use of many commercial and household products such as paints, paint strippers and thinners, mineral spirits, glues, solvents, cigarette smoke, aerosol sprays, moth balls, air fresheners, lubricants, fuels, and other products. Volatile chemicals can also be released to the indoor air from recently dry-cleaned clothes, new carpet, new furniture, and building materials. These commercial and household products and materials are often a more significant source of indoor air VOCs than soil vapor.

Outdoor air containing VOCs from sources such as gasoline stations, dry cleaners and other commercial/industrial facilities may also impact indoor air.

How long have scientists and regulators known about vapor intrusion?

Although the potential for landfill gas and fumes in sewers to impact buildings has been understood for several decades, the potential for leaks or spills of other VOCs to impact indoor air was not generally recognized until the early 2000s. The U.S. Environmental Protection Agency introduced draft guidance for vapor intrusion investigations and mitigations in late 2002, but did not finalize its vapor intrusion guidance documents until 2015.

How is vapor intrusion investigated?

Because of the potential for other sources of volatile chemicals in buildings that are not related to vapor intrusion, the USEPA (2015) recommends considering several lines of evidence when evaluating the potential for vapor intrusion. This can include collection and analysis of soil, groundwater, and soil vapor samples below and near buildings, as well as indoor air samples. Many state agencies often prefer collecting indoor air samples in the winter (i.e., during the heating season), when the potential for vapor intrusion is the greatest due to the "chimney" effect. Evaluation of building floor and ventilation conditions, and the potential for background sources of the same chemicals, is also recommended by federal and state agencies, to help evaluate the potential for vapor intrusion.

How is vapor intrusion mitigated?

Vapor intrusion is mitigated the same way that radon is mitigated, most commonly using small fans to withdraw vapors from below the building floor and exhaust them above the roof, where they quickly disperse to harmless levels. This technique is called "sub-slab depressurization." Other mitigation techniques include increasing building air pressures and/or ventilation rates, sealing cracks and other openings in the floor, and indoor air treatment.

Are mitigation systems reliable?

Properly designed and installed, mitigation systems are very reliable and can quickly reduce concentrations below levels of concern.

Learn more at: www.huntingtonsiteproject.com

COMMON HOUSEHOLD SOURCES OF BACKGROUND INDOOR AIR CONTAMINATION

Acetone	Rubber cement, cleaning fluids, nail polish remover
Benzene	Automobile exhausts, gasoline, cigarette smoke, scatter rugs, carpet, glue
Bromomethane	Soil or space fumigant
2-Butanone (MEK)	Printing inks, fragrance/flavoring agent in candy and perfume, cigarette smoke
Chlorobenzene	Plastic foam insulation, paint related products
Chloroethane	Refrigerant
Chloroform	Generated from chlorinated water (showers)
Cyclohexane	Paint thinner, paint, varnish remover
1,4-Dichlorobenzene	Moth balls, general insecticide in farming, air deodorant, toilet disinfectant
Dichlorodifluoromethane	Refrigerant (CFCs), cleaning solvent
1,1-Dichloroethane	Plastic products (food and other packaging material), flame retardant fabrics
1,3-Dichloropropene	Fungicides
Ethylbenzene	Paint thinners, insecticides, wood office furniture, gasoline
Formaldehyde	Building materials (particle board), furniture, insulation, cigarette smoke
n-Heptane	Nail polishes, wood office furniture, petroleum products
n-Hexane	Gasoline, rubber cement, typing correction fluid, aerosols in perfumes
Methylene Chloride	Hairspray, paint stripper, rug cleaners, insecticides, furniture polish
Methyl Isobutyl Ketone	Paints, varnishes, dry cleaning preparations, naturally found in oranges, grapes, and vinegar
Methyl Tert Butyl Ether	Gasoline (oxygenating agent)
Styrene	Cigarette smoke, automobile exhaust, fiberglass, rubber and epoxy adhesives, occurs naturally in various fruits, vegetables, nuts, and meats
1,1,2,2-Tetrachloroethane	Solvent, paint and rust removers, varnishes, lacquers
Tetrachloroethene (PCE)	Dry cleaning, metal degreasing, adhesives and glues, insecticide, rug cleaner
Toluene	Gasoline, automobile exhaust, polishes, nail polish, paint thinner, cigarette smoke
1,1,1-Trichloroethane	Spot cleaners, glues, insecticides, drain cleaners, shoe polish
Trichloroethene (TCE)	Scented candles, automotive cleaning and degreasing products
Xylenes, total	Water sealer, gasoline, automobile exhaust, markers, floor polish, cigarette smoke

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2. *http://www.health.pa.gov/My%20Health/Environmental%20Health/Environmental%20Fact%20Sheets/Pages/ATSDR_INVESTIGATING_VAPOR_INTRUSION.pdf*

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TESTING FOR VAPOR INTRUSTION

HOW DO SOIL VAPORS GET INTO BUILDINGS?

VOCs in soil or groundwater can evaporate and diffuse upwards toward the ground surface and overlying buildings. VOCs that reach a building may, under certain building heating and ventilation conditions, be drawn through cracks in the floor, drain pipes and other openings in the foundations. The process of VOC vapor migration from the subsurface into a building is called vapor intrusion. Building conditions that can lead to vapor intrusion occur when buildings are warmer relative to outside air (due to the chimney effect) or exhaust fans are operating.

HOW DO YOU TEST FOR VAPOR INTRUSION?

With the property owner / occupant's permission, samples of air from a crawlspace, basement, garage and/or living space are collected in basket-ball sized steel canisters (called Summa Canisters) that sample the air over a specified period of time (usually 8 hours in commercial settings and 24-hours in residential settings). Afterwards, the air is sent to a certified laboratory and analyzed for volatile organic compounds (VOC).

Where building foundations consist of concrete slabs, samples of air in the soil (called soil gas) under the foundation can be collected by drilling a small hole (3/8 inch) through the slab and collecting the soil gas using steel canisters. This type of sampling (called sub-slab sampling) helps determine if VOCs have reached the building foundation. This method of assessment may also be used during the upcoming investigation.

The type and level of VOCs measured in indoor or basement air compared to the type and level of VOCs measured in crawlspace air or sub-slab samples helps to determine whether and to what extent vapor intrusion is occurring.

Other portable devices that measure total VOC concentrations may also be utilized to identify potential vapor entry points and or potential background sources. For example, these devices can be used to determine whether household items, such as carpets, household cleaners, stored lawn equipment, etc., may be sources of VOCs, or whether there are large cracks or drains that may be a conduit of subsurface vapors.

WHAT IS DONE TO REDUCE VAPOR INTRUSION AND IMPROVE INDOOR AIR QUALITY?

The results of sampling crawlspace air or sub-slab soil gas and basement, garage or living space air are analyzed to determine if further testing or action is required. If VOCs are found in sub-slab soil gas, crawlspace air or indoor air at levels that could indicate a concern from vapor intrusion, a mitigation system can be installed to remove the VOCs from beneath the foundation and vent them to the outside air. These are the same systems commonly used to keep radon from entering homes. They are relatively inexpensive to operate, simple to design and install, and are a proven solution to radon and vapor intrusion problems. Once the source of vapor is eliminated the system is no longer needed.

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EPA Sources:
1. *https://www.epa.gov/sites/production/files/2016-10/documents/factsheet.pdf*
2. *http://www.health.pa.gov/My%20Health/Environmental%20Health/Environmental%20Fact%20Sheets/Pages/ATSDR_INVESTIGATING_VAPOR_INTRUSION.pdf*