Letter Health Consultation

Promenade Apartment Complex (255 Promenade Street):
Known Environmental History and Potential Exposure Concerns, April 2022

PROVIDENCE, PROVIDENCE COUNTY, RHODE ISLAND

Prepared by the
Rhode Island Department of Health

APRIL 29, 2022

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Office of Capacity Development and Applied Prevention Science
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from the Agency of Toxic Substances and Disease Registry (ATSDR) or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in ATSDR's opinion, indicates a need to revise or append the conclusions previously issued.

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Environmental Health Risk Assessment Program
Rhode Island Department of Health
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Agency for Toxic Substances and Disease Registry

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255 Promenade Street
Providence, RI 02908

April 29, 2022

Subject: Known Environmental History and Potential Exposure Concerns
255 Promenade Street
Providence, RI 02908

Dear [REDACTED],

In September 2021, the Rhode Island Department of Environmental Management (DEM) forwarded your environmental health concerns about the Promenade Apartment Complex ("the Promenade," 255 Promenade Street) to the Rhode Island Department of Health (RIDOH). To evaluate potential environmental issues and possible health effects, this review was prepared in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR) as a letter health consultation.

In February 2022, you submitted a written statement to RIDOH requesting a formal review of potential chemical exposures at the Promenade. The Promenade was converted from the former Brown & Sharpe precision toolmaking facility along the Woonasquatucket River (Smith Hill, Providence, RI). The campus was converted in the mid-1960s to offices and then in the early 2000s to multi-family apartments. Although quantitative[1] environmental data is not currently available for this specific building, industrial chemicals potentially used during the facility's history may include volatile organic compounds (VOCs) applied as solvents.

Based on qualitative information, a lack of quantitative data, and professional staff judgement, RIDOH[2] was unable to conclusively verify that VOC solvents had been historically used at 255 Promenade Street. RIDOH was also unable to conclusively verify if indoor air VOC levels could lead to an increased risk of adverse health outcomes at 255 Promenade Street. However, it was reasonable to assume that some VOC solvent use occurred when this was an active

[1] Qualitative data is data that can be classified based on attributes and properties. Quantitative data can be measured and expressed numerically.

[2] Funding for RIDOH's Environmental Health Risk Assessment Program is reserved to estimate exposures to chemical contaminants and community science education. This funding cannot be reserved for environmental sampling, site cleanup, or healthcare services.

manufacturing facility because vapor degreasing was a major part of machine shop operation in the early 20th century (p.6-7).

RIDOH recommended that the Promenade Apartment Complex owners consider communicating with tenants about the potential past chemical uses around the property and potential associated health risks. RIDOH also recommended that the owners consider regular HVAC balancing and ventilation system cleaning, both of which can lower indoor air VOC levels, as part of standard building maintenance. The remainder of this letter health consultation presents detailed information supporting RIDOH's analysis, conclusion, and recommendation. Specific property concerns from the formal statement you provided are individually addressed in Appendix A.

Background

Brown & Sharpe Manufacturing Facility History

The building of interest (255 Promenade Street) is part of the former Brown & Sharpe manufacturing facility, located in a 33-acre parcel in Smith Hill, Providence, RI (Figure 1) north of the Woonasquatucket River and west of the Rhode Island State House (National Park Service 2002). Starting in 1872 at this facility, Brown & Sharpe manufactured precision tools, including calipers, milling machines, micrometers, turret lathes, screw machines, and other tools commonly used in workshops today.

The first manufacturing structure (66,000 sq ft of brick, cast iron, and concrete) at this facility was constructed east of Holden Street. Between the 1870s and the early 1900s, additional structures were built for various purposes: carpenter shop, powerhouse, machine shops, warehouses, grinding shop, and steel storage bins (Figures 2-5). Following a brief economic decline in the 1920s, renewed tool production began in 1936 with early World War II activity.

In 1964, the main manufacturing operations moved to North Kingstown. In 1986, Foundry Associates acquired and converted the buildings at the Smith Hill facility into office spaces. In 2003, the former Smith Hill manufacturing facility was listed on the National Register of Historic Places (contributing: 8 buildings and 2 structures; non-contributing: 4 buildings and 1 structure) and shortly afterward, partially renovated into rental units (National Park Service 2002). Apartment building renovations, including 255 Promenade Street, were fully completed in 2015.

Building of Interest

255 Promenade Street is located between Holden Street and Leland Street and comprised of multiple sections (Figure 4). Designed in the shape of an inverted L, the first two sections were originally constructed in 1891 with four stories (National Park Service 2002). A six-story 1905 add-on and a three-story 1911 add-on completed the structure, and these buildings were collectively operated as Machine Shops #1-5 (Sanborn Map Company 1900; 1921; 1951). As currently advertised, the Promenade includes at least 90 individual floor plans. The apartment

units feature original exposed brick for the exterior walls, although the interior walls were likely installed post-1960s.

DEM Site Inventory List
DEM maintains a public site inventory list, which includes locations that have been investigated under the state program for hazardous substances or the federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) program (DEM 2022). Brownfields (Bell and Manoogian 2000) are included on the DEM inventory list, depending on what environmental data[3] is available[4] for a given site.

While 255 Promenade Street is not included on the inventory, multiple former Brown & Sharpe buildings are listed: 295 Promenade Street (active), 291 Promenade Street (inactive – 2001 Letter of Compliance), 245 Promenade Street (active), 235 Promenade Street (inactive – 2004 No Further Action Determination), 25 Holden Street (inactive – 2016 Letter of Compliance), 34-78 Calverly Street (inactive), the Foundry Associates parking lot (active), and the Foundry parking garage (inactive – 2015 Letter of Compliance).

With this context from DEM, there was an absence of evidence that chemical solvents were historically used at 255 Promenade Street.

Sanborn Fire Insurance Maps and Vapor Degreasing
The Sanborn fire insurance maps (Sanborn Map Company; Figures 2-7) are historic documents that allow insurance companies to assess fire risks in urban areas. The Sanborn maps (Figures 2, 4, and 6) labeled the current 255 Promenade Street building as Machine Shops #1-5 (Sanborn Map Company 1900; 1921; 1951), but did not indicate any areas of chemical storage. However, it's possible that the Sanborn maps would not have specifically identified chemical storage areas because known historic VOC solvents (e.g., trichloroethylene) are non-flammable.

Notably, from the 1920s-1990s, machine shops were very likely to use VOC solvents for metal cleaning, also known as "vapor degreasing" (i.e., method to clean substances that cannot be removed with water such as grease, paint, oil, lubricants, corrosive products, abrasive dust) (Doherty 2000a; 2000b; Davidson 1937; Murphy 2016). Vapor degreasing, unlike liquid

[3] The Environmental Site Assessment (ESA) process occurs in Phases I, II, and III, typically under contract between the person/company that commissioned the work and a qualified environmental consultant. An ESA Phase I reviews the property history (e.g., records review) to determine whether hazardous substances may be present at the site based on current or past use. Banks and other lending agencies may require a Phase I report when clients purchase a commercial property to avoid potential environmental liability. An ESA Phase II evaluates environmental samples (e.g., indoor air) from the site to determine if hazardous substances are present. If hazardous substances are found, then regulatory authorities must be notified to oversee the cleanup process. An ESA Phase III evaluates additional environmental samples and determines what remediation steps would be most effective at the site. Remediation continues until contaminant levels meet acceptable regulatory guidelines, at minimum.

[4] ESA Phase I reports are not public under most circumstances, unless the report was commissioned by a government agency or a government-funded organization.

degreasing or hand cleaning, uses pure solvent for cleaning, which prevents recontamination (Murphy 2016; Davidson 1937). However, spent solvents were only disposed of off-site after the enactment of environmental regulations during the 1970s; as a result, used VOC solvents are common contaminants at former manufacturing sites (Doherty 2000a; Murphy 2016). Such contamination can impact the site's groundwater, soil, and indoor air. Although RIDOH did not have access to documents on historic manufacturing procedures at the Smith Hill Browne & Sharpe facility, it is reasonable to assume vapor degreasing methods occurred at 255 Promenade Street.

No markers for aboveground storage tanks (ASTs) nor underground storage tanks (USTs), which could also have been used for chemical storage, are visible in the building of interest on the Sanborn maps. The nearest potential areas of chemical storage were north of Edith Street (~500 feet away), denoted as a UST (abbreviated "Tank" on maps) and a coal bin (abbreviated as "Coal HO" on maps) (Figures 4 and 6). Closest to 255 Promenade Street, "Storeroom No.13" was built and demolished between 1889 and 1951 (Figure 4), and another generic storeroom was built in the northeast courtyard by 1951.

With this context from the Sanborn maps, there was suggestive, but not conclusive, evidence that chemical solvents were historically used at 255 Promenade Street.

Theoretical Chemical Solvent Use

Based on the above information, RIDOH was unable to conclusively verify that VOC solvents had been historically used at 255 Promenade Street. However, it is reasonable to assume that some chlorinated VOC solvent use occurred when the building was an active manufacturing facility because degreasing was an integral component of machine shop operation in the mid-20th century. RIDOH staff have considered a hypothetical scenario in which chemical solvents were used at 255 Promenade Street. This hypothetical scenario is extensively discussed in subsequent sections of this letter health consultation (Discussion, Public Health Implications, Appendix A).

Examples of VOC solvents include formaldehyde (Appendix B), TCE (Appendix C), and methylene chloride (DCM; Appendix D). TCE (p.10-11) was an especially popular vapor degreasing solvent due to its fast evaporation rate, low flammability, and ability to quickly dissolve organic substances, such as oil and grease (Doherty 2000b; Murphy 2016; ATSDR 2019). These three contaminants were selected as representative examples based on the expertise of RIDOH staff and are not an exhaustive list of historic industrial solvents.

Discussion

Qualitative Environmental Contaminant Data

Although your formal statement included information from multiple air quality monitors, the environmental data provided was qualitative because VOC indoor air levels were not numerically reported. As a result, RIDOH was not able to estimate the risks of non-cancer nor cancer health endpoints associated with VOC inhalation exposures (ATSDR 2005). For these

estimates, RIDOH would need quality-controlled data, which can be provided by a professional environmental consultant. At minimum, this data would need to include the make, model, and reporting units of the air quality monitors, as well as the calibration method using appropriate reference materials and continuing calibration verification data (Willis et al. 1994; ATSDR 2005).

In your statement, the air quality monitors reported general trends related to relative humidity, total VOCs (tVOCs), and formaldehyde (Appendix B). These trends were noted during Summer 2021, at which time "VOC levels would increase first, followed by elevated levels of HCHO." The HCHO levels, or concentrations, were sometimes[5] reported as "out of range" by the monitors, most notably "in the morning during hot sunny days, at night in the early evening after the sun set, and after it rained, and humidity was extremely high." The length of time these "out of range" levels occurred varied from minutes to hours. The "second, higher quality air quality meter [was purchased] due to getting high humidity readings a month prior (60-80% with Honeywell model)."

Formaldehyde Background

HCHO, or CH_2O, is the chemical formula for formaldehyde (Appendix B), one of the better-studied VOCs (ATSDR 1999). Formaldehyde is naturally produced during the body's metabolism and, if the formaldehyde concentration is very high, has a pickle-like pungent odor. In industry, formaldehyde has been used to produce fertilizer, paper, plywood, and latex, but also applied as a biocide, an oil additive, and a wood preservative. Cigarettes, gas cookers, fireplaces, and atmospheric smog from vehicle exhaust are major sources of formaldehyde in air. At the Promenade, formaldehyde may have been used as an oil additive for machinery operation.

Formaldehyde can also be a preservative in food, hospital tissue specimens (e.g., embalming fluid), and common household products (e.g., cosmetics, nail polish, scented candles, dishwashing liquids, fabric softeners, disinfectants, paper towels) (ATSDR 1999). Because it is applied to common household items, formaldehyde can be released into the air when these products are used (ATSDR 1999).

Formaldehyde indoor air emissions are sensitive to changes in environmental factors. Higher temperature and higher relative humidity both increase formaldehyde off-gassing and increase indoor air concentrations (Baughman and Arens 1996). This is a plausible explanation for why indoor air formaldehyde levels increased during the times noted in the statement. People can be exposed by breathing in the formaldehyde emissions or by direct skin contact with a household product (ATSDR 1999).

Total VOC Readings

The most likely explanation for the reported trend is that the air quality meters initially identified formaldehyde as a generic VOC before reclassification. Some commercially available air monitors may require continuing recalibration to correctly function (Osborne 1991; Moreno-

[5] The exact frequency was not reported, so RIDOH was not able to assume this reading occurred every day.

Rangel et al. 2018), which is a limitation of the monitor. Recalibration may also be needed after an "out of range" concentration is reported to ensure that the monitor continues to operate correctly. Manufacturer instructions may provide details on how to recalibrate an air monitor.

Humidity
While a 40% relative humidity is preferred for comfort, the upper limit of acceptable indoor relative humidity is typically in the range of 60% to 80% (Baughman and Arens 1996). Most potential health concerns related to high humidity focus on the growth of biological substances, such as mold, rather than chemical contaminants. Because RIDOH's Environmental Health Risk Assessment Program (EHRAP) focuses on chemical contaminants, this letter health consultation only briefly discusses mold concerns under Additional Considerations (p.11).

Public Health Implications
Reported health symptoms in your formal statement are not directly discussed in this letter health consultation because this document is in the public record and subject to the Health Insurance Portability and Accountability Act (HIPAA).

ATSDR ToxFAQ™ summaries of formaldehyde, TCE, and DCM are included in Appendices B, C, and D, respectively. Brief discussions of possible health implications for each VOC are also included below. Please note that exposure to chemical contaminants does not always result in health effects and depends on several important factors, including how much (dose) and for how long (duration) the exposure lasted (ATSDR 2005). For information about lowering potential VOC indoor air exposures, please see Additional Considerations: Actions to Lower VOC Indoor Air Levels (p.12).

Formaldehyde
Breathing formaldehyde is associated with a variety of non-cancer and cancer health effects (Appendix B). In human exposure studies with occupational workers, acute (short-term; <15 days) formaldehyde inhalation exposure has led to headaches, dizziness, nausea, and irritation of the eyes, nose, throat, and lungs. These studies focused on exposure levels in a workplace setting because workplaces often have higher exposure levels than residential homes. Chronic (long-term; >365 days) formaldehyde inhalation exposure has been associated with cancers of the nasal cavity, larynx, buccal cavity, and lungs (ATSDR 1999).

Formaldehyde is also a well-known skin irritant and skin sensitizer, and some cases of allergic dermatitis have been linked to skin contact with highly concentrated formaldehyde solutions (ATSDR 1999). There is no consistent evidence for links between formaldehyde inhalation exposures and increased allergic responses through immunoglobulin E (IgE) antibody levels. People diagnosed with asthma may be more sensitive to inhaling formaldehyde compared to non-asthmatic people, but exposures have not been linked to people developing new cases of asthma (ATSDR 1999).

From animal studies, high *in utero* formaldehyde inhalation exposures were not associated with any birth defects nor any developmental effects (ATSDR 1999). Children who breathe in formaldehyde may experience nose irritation, eye irritation, and asthma-like symptoms, although it's not currently known whether these health effects happen at lower exposure levels compared to adults (ATSDR 1999).

At the Promenade, formaldehyde may have been historically used as an industrial solvent and may also be emitted from common household products used today (ATSDR 1999). Because specific concentrations were not reported, this letter health consultation was not able to predict the likelihood of adverse health outcomes associated with breathing formaldehyde at the Promenade, although the reported symptoms were consistent with known health effects of acute formaldehyde exposure.

TCE

A wide range of adverse non-cancer health effects are associated with low levels of TCE inhalation exposures (Appendix C). The developing fetus is particularly sensitive to TCE toxicity, based on heart malformations observed in rodents (ATSDR 2019). Major cardiac development in humans occurs over a three-week period during the first three months of pregnancy (Dhanantwari et al. 2009). TCE inhalation exposures during this period may increase the risk of fetal heart malformations (ATSDR 2019). If a mother is exposed to higher TCE levels during early pregnancy, this does not mean that the child will definitely have a birth defect. It means that the baby is more likely to have a birth defect than a baby who was not exposed during pregnancy.

From animal studies, high *in utero* TCE inhalation exposures may also lead to spontaneous abortion, small birth weight, immune system defects, and central nervous system defects (ATSDR 2019). However, fetal heart malformation is considered the most sensitive health endpoint and most likely to occur following early pregnancy exposures.

In human exposure studies with occupational workers, acute TCE inhalation exposure has led to central nervous system depression (i.e., slowed brain activity), loss of consciousness, and death (ATSDR 2019). Chronic TCE inhalation exposure can result in damage to the liver, kidneys, skin, immune system, and reproductive system (ATSDR 2019), with potentially increased risk of developing autoimmune diseases (e.g., scleroderma) (ATSDR 2019). TCE is also a known human carcinogen, associated with an increased risk of kidney cancer, liver cancer, and non-Hodgkin's lymphoma following chronic inhalation exposure (ATSDR 2019).

There is no evidence that breathing TCE leads to exposure-induced allergic responses (ATSDR 2019). However, drinking water with high TCE levels was associated with antigen-stimulated allergic responses among mice and rats, and isolated case studies (i.e., only one participant per study) have demonstrated exfoliative dermatitis and increased skin sensitivity following direct skin contract with concentrated liquid TCE (ATSDR 2019).

At the Promenade, TCE may have been historically used as an industrial solvent, but RIDOH could not conclusively verify its presence from the currently available data. The reported symptoms were not consistent with the known health effects of acute or chronic TCE exposure at any concentration. Because specific concentrations were not reported and its presence could not be confirmed, this letter health consultation was not able to predict the likelihood of adverse health outcomes associated with breathing TCE at the Promenade.

DCM

Breathing large amounts of methylene chloride (also known as dichloromethane or DCM) is associated with both non-cancer and cancer health effects (ATSDR 2000). Acute human inhalation studies have included symptoms of dizziness, nausea, and fingertip numbness, although these effects disappeared shortly after exposures. Direct skin contact with concentrated DCM solvents can cause a burning sensation and mild redness. Chronic DCM inhalation in animals has been linked with lung and liver cancer, and the US Environmental Protection Agency (EPA) has classified DCM as a probable human carcinogen (ATSDR 2000).

There is no evidence that breathing or touching DCM leads to exposure-induced asthma symptoms or allergic responses (ATSDR 2000).

From animal studies, high *in utero* DCM exposures were not associated with any birth defects but were associated with lower birth weights. However, this trend has not been observed in human studies (ATSDR 2000). Children who breath high levels of DCM will likely experience similar symptoms as adults, although it's not clear whether children are more sensitive to DCM exposures than adults (ATSDR 2000).

At the Promenade, DCM may have been historically used as an industrial solvent, but RIDOH could not conclusively verify its presence from the currently available data. The reported symptoms were not consistent with the known health effects of acute or chronic DCM exposure at any concentration. Because specific concentrations were not reported and its presence could not be confirmed, this letter health consultation was not able to predict the likelihood of adverse health outcomes associated with breathing DCM at the Promenade.

Additional Considerations

Limitations of Analysis

RIDOH did not have access to historical documents from Brown & Sharpe about what chemical solvents may have been used at the manufacturing facility and cannot compel the current property owners to submit such documentation due to a lack of jurisdictional authority. The contaminants listed in this letter health consultation were selected as common VOC solvent examples based on the expertise of RIDOH staff and are not an exhaustive list of potentially used industrial solvents. RIDOH's EHRAP staff does not have the available resources or funding to independently sample indoor air.

Actions to Lower VOC Indoor Air Levels
Your formal statement reported "insulation clogging [the] central vent" and poor ventilation in the apartment unit since Summer 2019. Because increasing air ventilation can lower VOC indoor air levels, maintaining a working ventilation system is an effective strategy for limiting VOC inhalation exposures. Besides a clean ventilation system, simple actions like opening a window or turning on a fan (e.g., kitchen or bathroom) can also lower VOC levels.

Air purifiers with an activated carbon filter are also effective at lowering VOC indoor air levels (Sidheswaran et al. 2012; Mondal, De, and Saha 2021), whereas a HEPA-only air purifier lowers particulate matter levels (e.g., dust). Should an air purifier be used, regular filter changes are also recommended for optimal operation.

Human Metabolism of VOCs
The human body naturally breaks down VOCs after breathing them in. Through metabolism, the breakdown products leave the body through the exhaled breath and urine. Detoxification ("detox") therapies, such as body wraps and foot pads, and "immune system booster" products do not help get rid of VOCs in the human body (Cassa Macedo, Oliveira Vilela de Faria, and Ghezzi 2019; Wagner, Marcon, and Caulfield 2020). The liver and kidneys naturally detoxify chemicals on their own, and commercial products do not improve this process.

Mold
Please note that a mold health evaluation is outside of the scope of the RIDOH EHRAP staff's expertise. Your February 2022 statement cited "stains throughout the brick [showing] that our unit has a moisture issue, and [the unit is] at an increased risk for mold. … White rot on a windowpane … has not been addressed." Because white rot has already been identified in the apartment and the unit's relative humidity is typically between 60-80%, it is possible that other fungi (e.g., black mold) are present and could pose a health risk. A clean dehumidifier can keep the relative humidity between 35-50%. The City of Providence Code Enforcement may be able to assist with mold issues.

Some species of mold are associated with adverse health effects (Horner et al. 1995; Fisk, Lei-Gomez, and Mendell 2007; Seltzer and Fedoruk 2007; Simon-Nobbe et al. 2008; Mendell et al. 2011; Denning et al. 2014). Respiratory diseases, such as pneumonia, are well-documented in relation to mold exposures (Fisk, Lei-Gomez, and Mendell 2007; Mendell et al. 2011; Denning et al. 2014). However, allergic responses via immunological hypersensitivity pathways (e.g., IgE) have also received significant attention (Simon-Nobbe et al. 2008; Mendell et al. 2011; Denning et al. 2014). An estimated 3-10% of adults and children are affected by fungal allergy (Horner et al. 1995), with non-seasonal symptoms ranging from migraines and nasal irritation to hay fever, asthma, and contact dermatitis (Simon-Nobbe et al. 2008; Mendell et al. 2011).

An IgE mold allergy test provides specific results for 15 species, but it's important to note that there are an estimated[6] two to four million species of fungi (Hawksworth and Lücking 2017). While the 15 included species are common to indoor and outdoor environments, individuals can be exposed to more than these 15 at a given time. A medical professional can provide further information.

Conclusions and Recommendations

Based on a qualitative review of the Browne & Sharpe manufacturing facility history, RIDOH reached the following conclusions:

1. Due to a lack of quantitative data, RIDOH was unable to conclusively verify that VOC solvents had been historically used at 255 Promenade Street.
2. Due to a lack of quantitative data, RIDOH was unable to conclusively verify if indoor air VOC levels could lead to an increased risk of adverse health outcomes.

From this conclusion, RIDOH made the following recommendation:

1. RIDOH recommends that the Promenade Apartment Complex owners consider communicating with tenants about the potential past chemical uses around the property and potential associated health risks.
2. RIDOH recommends that the owners consider regular HVAC balancing and ventilation system cleaning, both of which can lower indoor air VOC levels, as part of standard building maintenance.

If quality-controlled indoor air samples at the Promenade become available, RIDOH is available to assess the data for potential health effects.

If there are any questions, please contact me at carolyn.poutasse@health.ri.gov.

Sincerely,

Carolyn M. Poutasse, PhD
Environmental Health Risk Assessment Toxicologist

[6] There are about 120,000 fungi species currently accepted, with a discovery rate of over 2,000 per year. By conservative estimates, the currently identified species list could make up less than 10% of the total in existence.

Report Preparation

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Figure 1. Location of historic Brown & Sharpe manufacturing facility (Bell and Manoogian 2000).

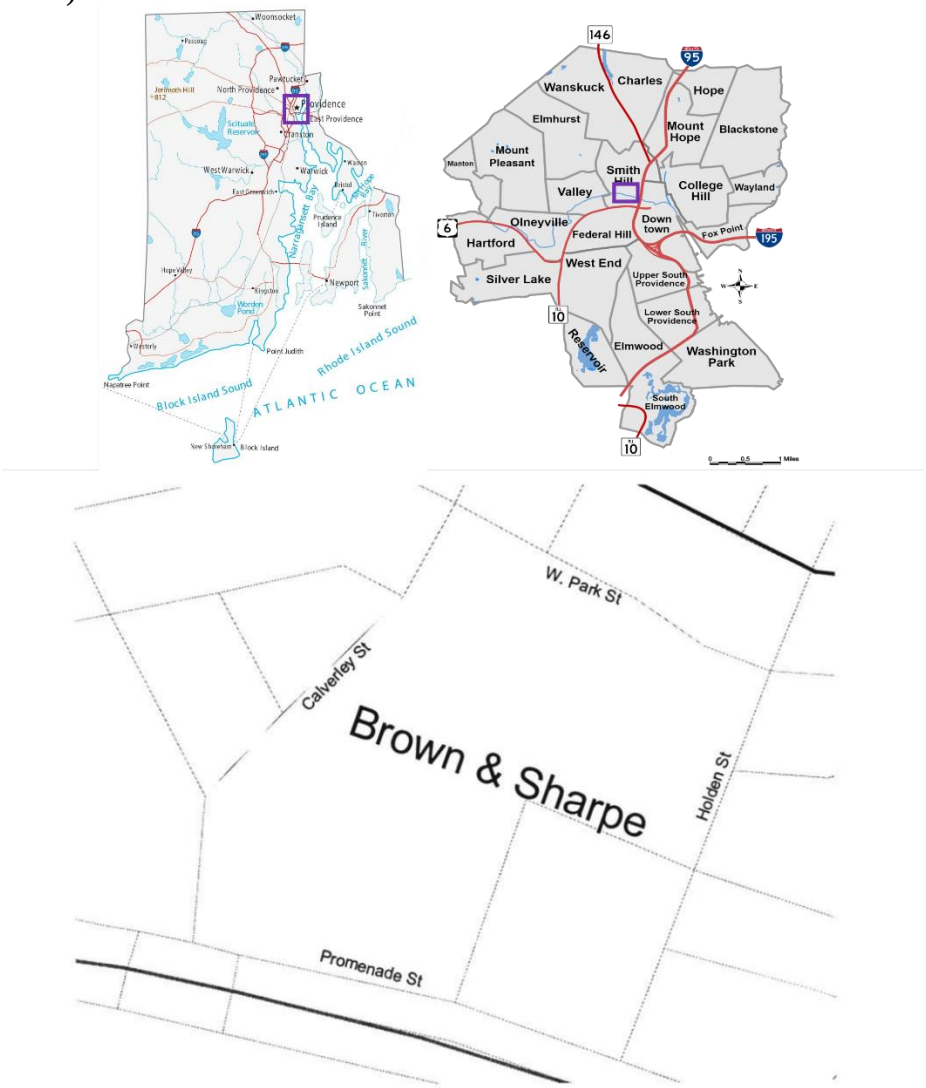


Figure 2. 1889 Sanborn fire insurance map, Section 145. The building of interest (in pink) is located between Leland Street and Holden Street (Sanborn Map Company 1900).

Figure 3. 1889 Sanborn fire insurance map, Section 146. While the building of interest is located to the west of Holden Street, the remainder of the Brown & Sharpe manufacturing facility is including for context (Sanborn Map Company 1900).

Figure 4. 1920 Sanborn fire insurance map, Section 53. The building of interest (in pink) is located between Leland Street and Holden Street (Sanborn Map Company 1921).

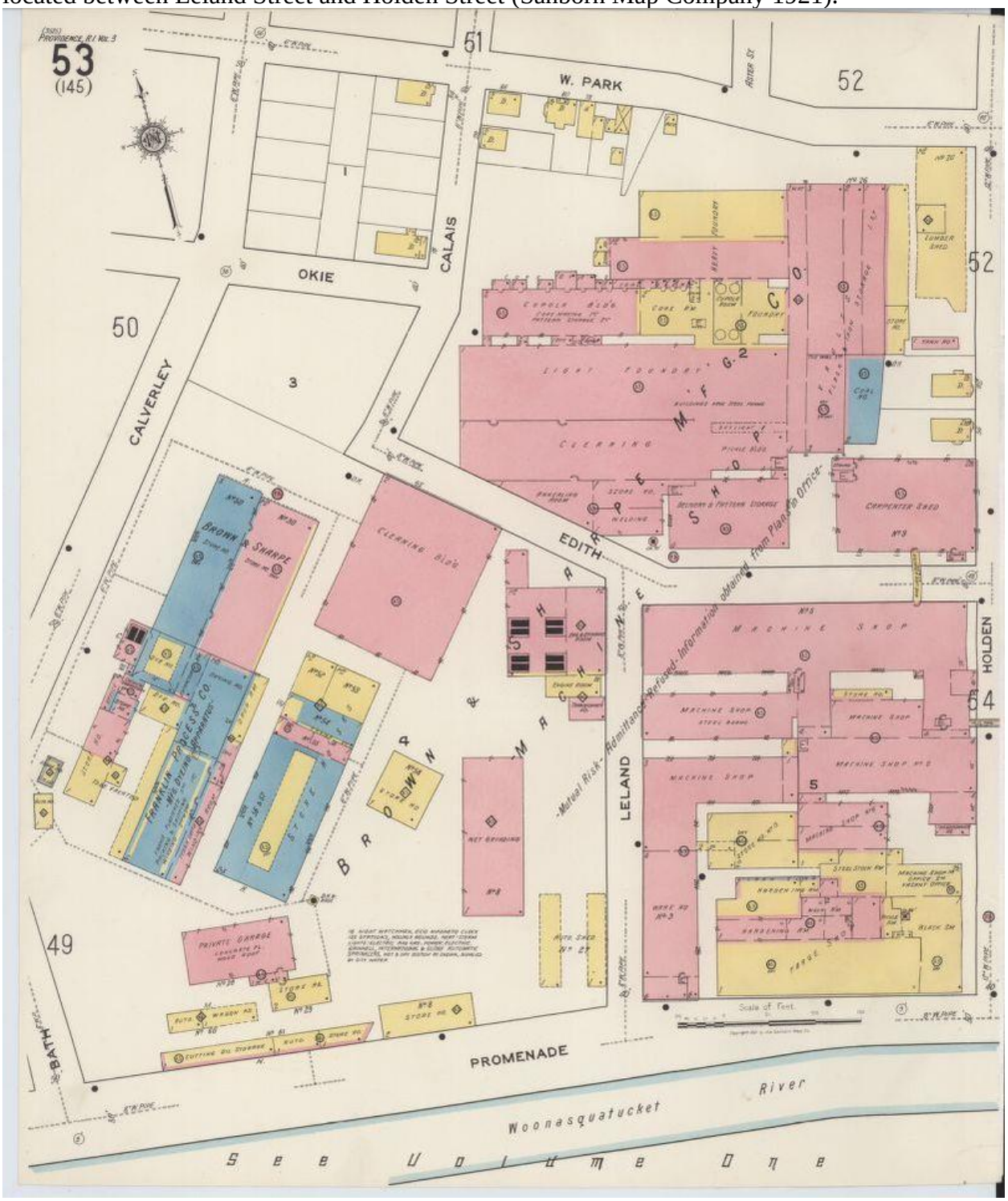


Figure 5. 1920 Sanborn fire insurance map, Section 54. While the building of interest is located to the west of Holden Street, the remainder of the Brown & Sharpe manufacturing facility is including for context (Sanborn Map Company 1921).

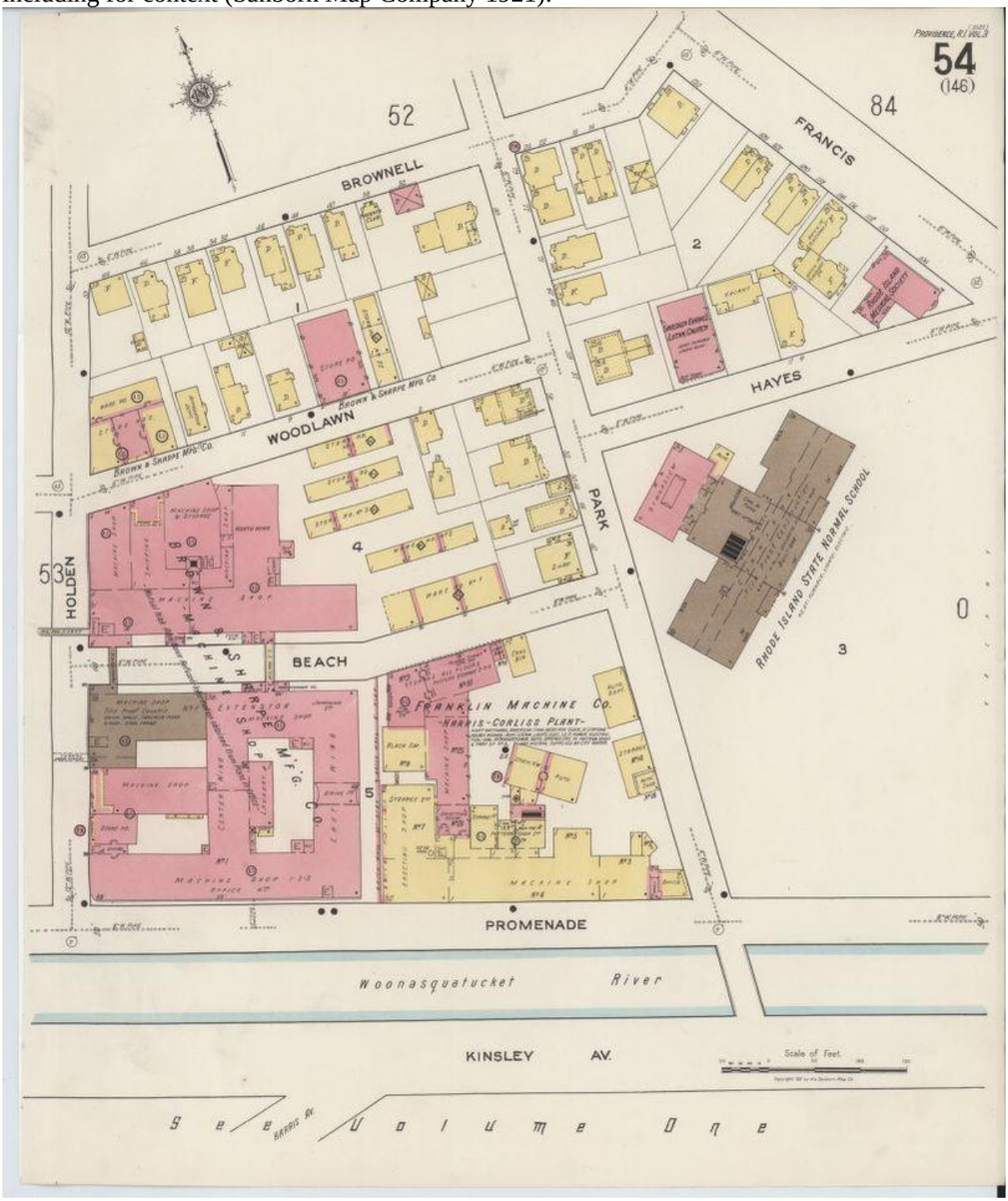


Figure 6. 1951 Sanborn fire insurance map, Section 53. The building of interest (in pink) is located between Leland Street and Holden Street (Sanborn Map Company 1951).

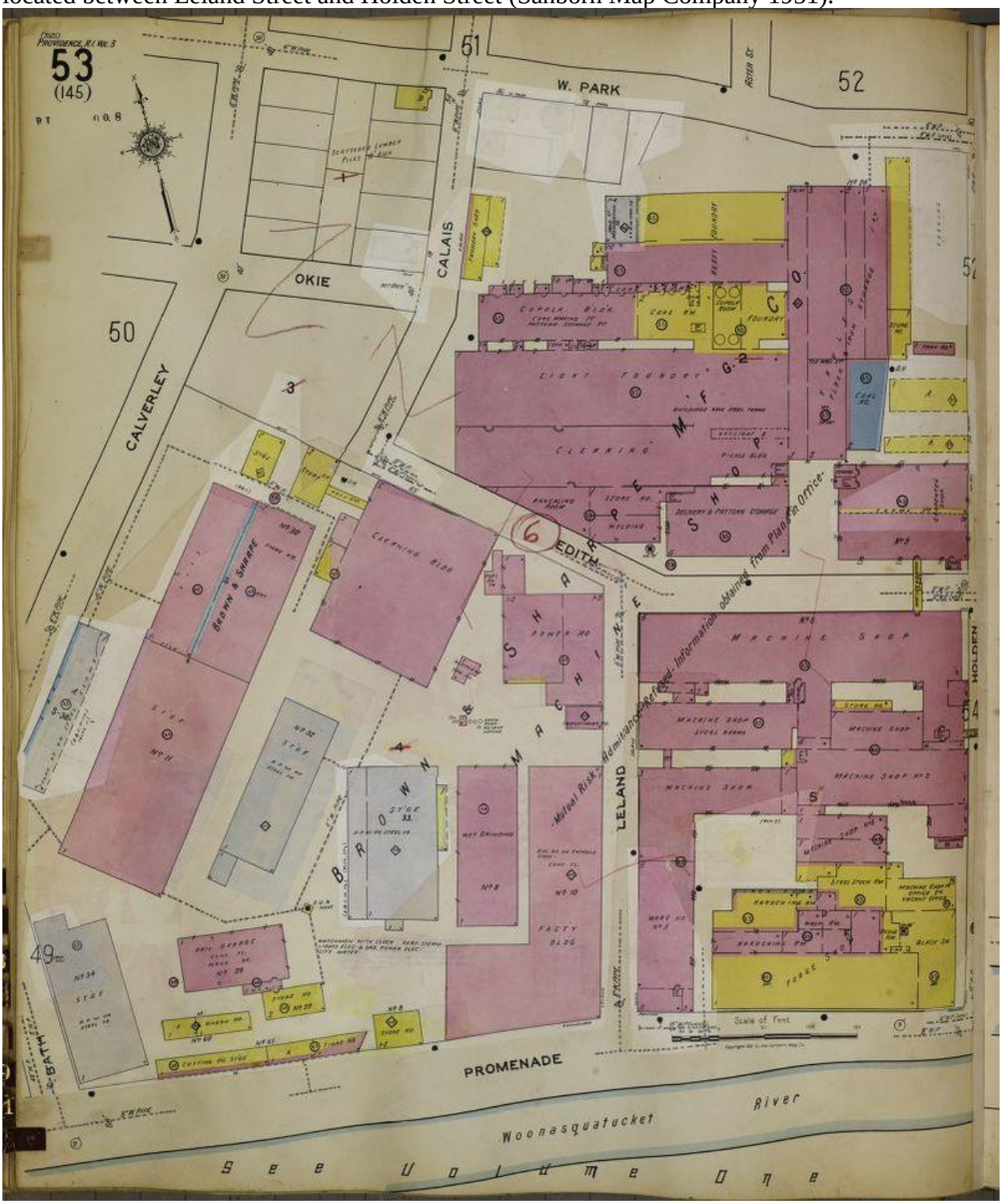
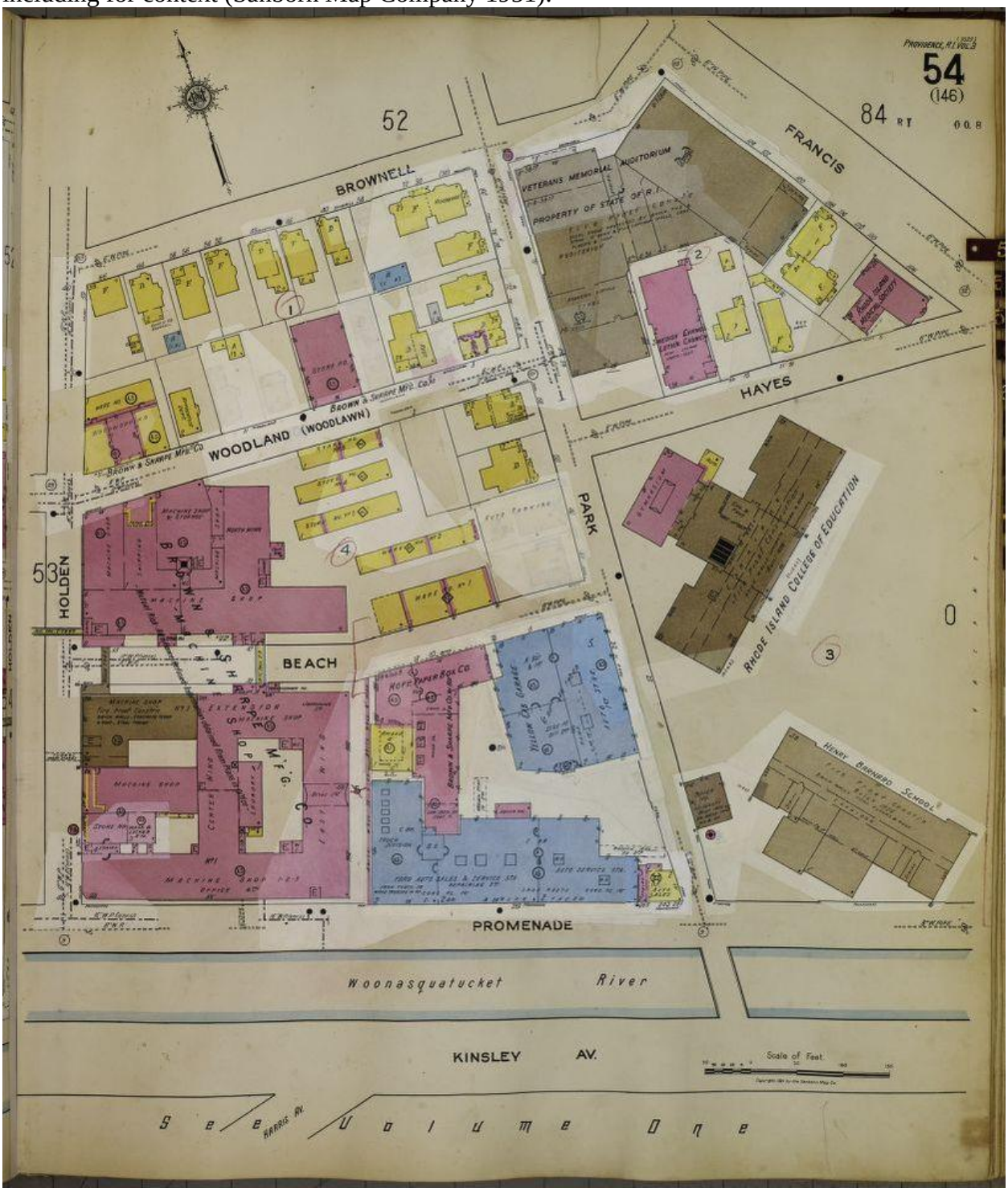


Figure 6. 1951 Sanborn fire insurance map, Section 54. While the building of interest is located to the west of Holden Street, the remainder of the Brown & Sharpe manufacturing facility is including for context (Sanborn Map Company 1951).



Appendix A. Responses to specific written concerns from resident.

In February 2022, [REDACTED] submitted a formal written letter to RIDOH detailing specific concerns with the Promenade (255 Promenade Street). Those concerns not addressed in the main text of the letter health consultation have been quoted here and are organized by location in the building or broader environmental health comment. To avoid discussing personal identifiable information and to comply with the Health Insurance Portability and Accountability Act of 1996, direct quotes involving health symptoms are not included. The responses below are based on the qualitative data available and professional judgment from RIDOH staff.

Apartment Unit

1. "In our apartment the floors feel like they have softened over the years as if it is rotting, I have used the word mush to describe it to maintenance and management through conversations in the past and I was told it's normal and just "floating floors" by maintenance."

Please note that RIDOH does not have access to Promenade floor plans or other relevant specifications. If the flooring is original, then floorboard decay is a possibility because the building was constructed over 100 years ago. If the flooring was renovated since the 1960s, then the floating floor design is also a possibility, depending on the final contracted design.

2. "(in February 2022) The hatch where the [HVAC] compressor and unit live are always opened during these [heat/fire alarm] checks. … it smelt of radiator fume… I've lived with radiator's my whole life [and am] extremely familiar with that smell. … I was told by maintenance that it could be [an] old rubber part of the fan."

Among the odors that radiators can give off, a burning smell is the most common. If a heating system has not been used for a while, accumulated dust is burnt off the radiator and produces a smell like scorched clothing. Because the HVAC compressors at the Promenade units are contained in a hatch, it is possible that the smell was contained or some larger debris was trapped in a vent. The maintenance explanation of an old rubber part could be correct, particularly if there is continual degradation. An HVAC specialist can provide more specific information.

Non-Apartment Unit Locations

3. "Since 7/2021, I have noticed different maintenance related projects (could've been started at earlier date). One being the garage over the summer (See attached picture 8/15/21) where I noticed a ladder and construction pale … and then drew my attention to several points of the roof on each level that are deteriorating and have been respackled. I also have noticed the mill smoke tower having construction done to the brick and scaffolding since 7/4/21."

While it is useful to know approximately when maintenance projects occurred, particularly for older buildings like the Promenade, non-apartment locations (e.g., garage, roof, smoke tower) are not typically locations where tenants spend most of their time (>10%). As a result, tenants are not likely to be exposed to construction materials.

Property In General

4. "There has been a lack of providing documentation of environmental remediations done to the inside of the property … and there has not been any formal surveying of the property post remediation. … The project manager confirmed that neither the brick nor water was ever evaluated in our building. I also asked about the frequency of which the soil caps are assessed [because] they require long-term maintenance… . [REDACTED] responded by saying that there was no upkeep involved with the caps because it is a parking lot, and they just must show proof that it is just still physically there to the insurance companies."

As mentioned in the main text, 255 Promenade Street (the building of interest) is not included on DEM's public site inventory list (DEM 2022). Other former Brown & Sharpe buildings are listed: 295 Promenade Street (active), 291 Promenade Street (inactive – 2001 Letter of Compliance), 245 Promenade Street (active), 235 Promenade Street (inactive – 2004 No Further Action Determination), 25 Holden Street (inactive – 2016 Letter of Compliance), 34-78 Calverly Street (inactive), the Foundry Associates parking lot (active), and the Foundry parking garage (inactive – 2015 Letter of Compliance). Please note that DEM is in the process of digitizing their >2500 site records, and that document requests may take longer than anticipated to complete.

For remediation, a soil cap prevents humans from coming into contact with contaminants in the soil. The soil cap underneath the parking lot would likely have involved encapsulation (i.e., ≥6 inches clean soil and ≥4 inches asphalt) with institutional controls. In general, people are very unlikely to come into contact with soil contamination beneath a cap ≥10 inches thick, even if damage happens to the upper asphalt layer. Previous research has shown that even a rare storm event may not necessarily result in re-exposure to buried soil contaminants (Ziegler 2002), and the asphalt makes re-exposure even less likely. The referenced "[soil cap] long-term maintenance" may refer to a soils management plan, which would address the risks and management in the event of future soil disturbances or damage.

Brick is not typically included in environmental site investigations. Instead, indoor air is sampled to estimate inhalation exposures, which can capture particulate matter exposures (e.g., brick dust). Drinking water samples may be included if it's sourced from a contaminated well, but the Promenade's drinking water supply comes from Providence Water (https://www.provwater.com/reports). Groundwater samples may be included if historic contamination is suspected, although groundwater contamination would likely impact the first floor indoor air more than the upper floors (Ma et al. 2020).

5. "There is also an insightful, well executed MIT thesis on this area, and it highlights a building on my complex, and elaborated the complaints made by tenants and the need to remediate a second time due to residual contamination (See attachment)."

Thank you for sharing the Bell and Manoogian environmental engineering thesis (Bell and Manoogian 2000). As previously mentioned in the response to Question 4, DEM has included 12 former Brown & Sharpe buildings on its site inventory list (DEM 2022). Notably, 11 of the 12 buildings were either added or had investigative activities happen after 2000, so the thesis may have already brought the former manufacturing facility to DEM's attention.

6. "My requests for an industrial hygienist to evaluate the apartment was never honored, and instead, a microbiologist with the same quality meter that I own checked an empty unit on the opposite side of the building."

Depending on when the VOC levels were tested (e.g., summer), management might consider reevaluating indoor air quality during the winter months to capture seasonal trends.

It is possible that the microbiologist had additional training in environmental contamination after completing their degree, like many people who take their career in a different direction post-education. The microbiologist may also have had appropriate training during their degree to investigate mold concerns. As mentioned in the main text, some commercially available air monitors require continuing sensor recalibration to correctly function, and the microbiologist may have completed this in a quality-controlled procedure. Testing indoor air VOC levels in an empty unit isolates contributions from the building itself and eliminates possible interference from household items, although RIDOH staff do not have a logical explanation for "the opposite side of the building."

7. "I am deeply concerned and confused at how private owners can dismiss public health concerns and not have to report these issues to higher public health agencies. It is extremely dangerous to allow this level of autonomy and discretion to the private sector of what they deem as reportable, when they do not have the education or qualifications to understand the effect this can have on, not only the residents of this building, but the surrounding community."

State health departments can propose environmental health and safety policies, but states legislatures can take years to finalize regulations based on those recommendations. In Rhode Island, RIDOH staff can also submit proposed health and safety regulations to the governor's office for consideration, but this process can similarly take years to finalize. Several organizations, such as the Conservation Law Foundation, have worked in support of environmental legislation and may serve as an additional resource.

Appendix B. ATSDR ToxFAQ for formaldehyde (https://www.atsdr.cdc.gov/toxfaqs/tfacts111.pdf).

Formaldehyde - ToxFAQs™

CAS # 50-00-0

This fact sheet answers the most frequently asked health questions (FAQs) about formaldehyde. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important that you understand this information because this substance may cause harm to you if you are exposed to it. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Everyone is exposed to small amounts of formaldehyde in air and some foods and products. Formaldehyde can cause irritation of the eyes, nose, and throat and neurological effects. Formaldehyde has been found in at least 29 of the 1,669 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is formaldehyde?

At room temperature, formaldehyde is a colorless, flammable gas that has a distinct, pungent smell. Small amounts of formaldehyde are naturally produced by plants, animals, and humans.

It is used in the production of fertilizer, paper, plywood, and urea-formaldehyde resins. It is also used as a preservative in some foods and in many house-hold products, such as antiseptics, medicines, and cosmetics.

What happens to formaldehyde when it enters the environment?

- Once formaldehyde is in the air, it is quickly broken down, usually within hours.
- Formaldehyde dissolves easily but does not last a long time in water.
- Formaldehyde evaporates from shallow soils.
- Formaldehyde does not build up in plants and animals.

How might I be exposed to formaldehyde?

- The primary way you can be exposed to formaldehyde is by breathing air containing it.
- Releases of formaldehyde into the air occur from industries using or manufacturing formaldehyde, wood products (such as particle-board, plywood, and furniture), automobile exhaust, cigarette smoke, paints and varnishes, and carpets and permanent press fabrics.
- Indoor air contains higher levels of formaldehyde than outdoor air. Levels of formaldehyde measured in indoor air range from 0.02–4 parts per million (ppm). Formaldehyde levels in outdoor air range from 0.0002 to 0.006 ppm in rural and suburban areas and 0.001 to 0.02 ppm in urban areas.
- Breathing contaminated workplace air. The highest potential exposure occurs in the formaldehyde-based resins industry.

How can formaldehyde affect my health?

Nasal and eye irritation, neurological effects, and increased risk of asthma and/or allergy have been observed in humans breathing 0.1 to 0.5 ppm. Eczema and changes in lung function have been observed at 0.6 to 1.9 ppm.

Decreased body weight, gastrointestinal ulcers, liver and kidney damage were observed in animals orally exposed to 50–100 milligrams/kilogram/day (mg/kg/day) formaldehyde.

How likely is formaldehyde to cause cancer?

The Department of Health and Human Services (HHS) determined in 2011 that formaldehyde is a known human carcinogen based on sufficient human and animal inhalation studies.

How can formaldehyde affect children?

A small number of studies have looked at the health effects of formaldehyde in children. It is very likely that breathing formaldehyde will result in nose and eye irritation. We do not know if the irritation would occur at lower concentrations in children than in adults.

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Health Human Sciences

CS256542A

Formaldehyde

CAS # 50-00-0

There is some evidence of asthma or asthma-like symptoms for children exposed to formaldehyde in homes.

Animal studies have suggested that formaldehyde will not cause birth defects in humans.

How can families reduce the risk of exposure to formaldehyde?

- Formaldehyde is usually found in the air, and levels are usually higher indoors than outdoors. Opening windows and using fans to bring fresh air indoors are the easiest ways to lower levels in the house. Not smoking and not using unvented heaters indoors can lower the formaldehyde levels.
- Formaldehyde is given off from a number of products used in the home. Removing formaldehyde sources in the home can reduce exposure. Providing fresh air, sealing unfinished manufactured wood surfaces, and washing new permanent press clothing before wearing can help lower exposure.

Is there a medical test to show whether I've been exposed to formaldehyde?

Formaldehyde cannot be reliably measured in blood, urine, or body tissues following exposure. Formaldehyde is produced in the body and would be present as a normal constituent in body tissues and fluids.

Has the federal government made recommendations to protect human health?

The US EPA has determined that exposure to formaldehyde in drinking water at concentrations of 10 milligrams/liter (mg/L) for 1 day or 5 mg/L for 10 days is not expected to cause any adverse effects in children.

The US EPA has also determined that a lifetime exposure to 1 mg/L of formaldehyde in drinking water is not expected to cause any adverse health effects.

The Occupational Health and Safety Administration (OSHA) has limited workers' exposure to an average of 0.75 ppm for an 8-hour workday, 40-hour workweek.

The U.S. Department of Housing and Urban Development (HUD) has set standards for formaldehyde emissions in manufactured housing of less than 0.2 ppm for plywood and 0.3 ppm for particle board. The HUD standards are designed to provide an ambient air level of 0.4 ppm or less in manufactured housing.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological Profile for Formaldehyde. Addendum to the Profile for Formaldehyde. 2010. Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ on the web: www.atsdr.cdc.gov/toxFAQs.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Appendix C. ATSDR ToxFAQ for TCE (https://www.atsdr.cdc.gov/toxfaqs/tfacts19.pdf).

Trichloroethylene - ToxFAQs™

CAS # 79-01-6

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is used as a solvent for cleaning metal parts. Exposure to very high concentrations of trichloroethylene can cause dizziness headaches, sleepiness, incoordination, confusion, nausea, unconsciousness, and even death. Trichloroethylene has been found in at least 1,051 of the 1,854 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene is a colorless, volatile liquid. Liquid trichloroethylene evaporates quickly into the air. It is nonflammable and has a sweet odor.

The two major uses of trichloroethylene are as a solvent to remove grease from metal parts and as a chemical that is used to make other chemicals, especially the refrigerant, HFC-134a.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene can be released to air, water, and soil at places where it is produced or used.
- Trichloroethylene is broken down quickly in air.
- Trichloroethylene breaks down very slowly in soil and water and is removed mostly through evaporation to air.
- It is expected to remain in groundwater for long time since it is not able to evaporate.
- Trichloroethylene does not build up significantly in plants or animals.

How might I be exposed to trichloroethylene?

- Breathing trichloroethylene in contaminated air.
- Drinking contaminated water.
- Workers at facilities using this substance for metal degreasing are exposed to higher levels of trichloroethylene.
- If you live near such a facility or near a hazardous waste site containing trichloroethylene, you may also have higher exposure to this substance.

How can trichloroethylene affect my health?

Trichloroethylene was once used as an anesthetic for surgery. Exposure to moderate amounts of trichloroethylene may cause headaches, dizziness, and sleepiness; large amounts may cause coma and even death. Eating or breathing high levels of trichloroethylene may damage some of the nerves in the face. Exposure to high levels can also result in changes in the rhythm of the heartbeat, liver damage, and evidence of kidney damage. Skin contact with concentrated solutions of trichloroethylene can cause skin rashes. There is some evidence exposure to trichloroethylene in the work place may cause scleroderma (a systemic autoimmune disease) in some people. Some men occupationally-exposed to trichloroethylene and other chemicals showed decreases in sex drive, sperm quality, and reproductive hormone levels.

How likely is trichloroethylene to cause cancer?

There is strong evidence that trichloroethylene can cause kidney cancer in people and some evidence for trichloroethylene-induced liver cancer and malignant lymphoma. Lifetime exposure to trichloroethylene resulted in increased liver cancer in mice and increased kidney cancer and testicular cancer in rats.

The Department of Health and Human Services (DHHS) considers trichloroethylene to be a known human carcinogen. The International Agency for Research on Cancer (IARC) classified trichloroethylene as carcinogenic to humans. The EPA has characterized trichloroethylene as carcinogenic to humans by all routes of exposure.

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences

Trichloroethylene

CAS # 79-01-6

How can trichloroethylene affect children?

It is not known whether children are more susceptible than adults to the effects of trichloroethylene.

Some human studies indicate that trichloroethylene may cause developmental effects such as spontaneous abortion, congenital heart defects, central nervous system defects, and small birth weight. However, these people were exposed to other chemicals as well.

In some animal studies, exposure to trichloroethylene during development caused decreases in body weight, increases in heart defects, changes to the developing nervous system, and effects on the immune system.

How can families reduce the risk of exposure to trichloroethylene?

- Avoid drinking water from sources that are known to be contaminated with trichloroethylene. Use bottled water if you have concerns about the presence of chemicals in your tap water. You may also contact local drinking water authorities and follow their advice.
- Prevent children from playing in dirt or eating dirt if you live near a waste site that has trichloroethylene.
- Trichloroethylene is used in many industrial products. Follow instructions on product labels to minimize exposure to trichloroethylene.

Is there a medical test to determine whether I've been exposed to trichloroethylene?

Trichloroethylene and its breakdown products (metabolites) can be measured in blood and urine. However, the detection of trichloroethylene or its metabolites cannot predict the kind of health effects that might develop from that exposure. Because trichloroethylene and its metabolites leave the body fairly rapidly, the tests need to be conducted within days after exposure.

Has the federal government made recommendations to protect human health?

The EPA set a maximum contaminant goal (MCL) of 0.005 milligrams per liter (mg/L; 5 ppb) as a national primary drinking standard for trichloroethylene.

The Occupational Safety and Health Administration (OSHA) set a permissible exposure limit (PEL) of 100 ppm for trichloroethylene in air averaged over an 8-hour work day, an acceptable ceiling concentration of 200 ppm provided the 8 hour PEL is not exceeded, and an acceptable maximum peak of 300 ppm for a maximum duration of 5 minutes in any 2 hours.

The National Institute for Occupational Safety and Health (NIOSH) considers trichloroethylene to be a potential occupational carcinogen and established a recommended exposure limit (REL) of 2 ppm (as a 60-minute ceiling) during its use as an anesthetic agent and 25 ppm (as a 10-hour TWA) during all other exposures.

Reference

This ToxFAQs™ information is taken from the 2019 Toxicological Profile for Trichloroethylene produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636

ToxFAQs™ on the web: www.atsdr.cdc.gov/ToxFAQs

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Appendix D. ATSDR ToxFAQ for DCM (https://www.atsdr.cdc.gov/toxfaqs/tfacts14.pdf).

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

METHYLENE CHLORIDE
CAS # 75-09-2

Division of Toxicology ToxFAQs™ **February 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about methylene chloride. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to methylene chloride occurs mostly from breathing contaminated air, but may also occur through skin contact or by drinking contaminated water. Breathing in large amounts of methylene chloride can damage the central nervous system. Contact of eyes or skin with methylene chloride can result in burns. Methylene chloride has been found in at least 882 of 1,569 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is methylene chloride?

Methylene chloride is a colorless liquid with a mild, sweet odor. Another name for it is dichloromethane. Methylene chloride does not occur naturally in the environment.

Methylene chloride is used as an industrial solvent and as a paint stripper. It may also be found in some aerosol and pesticide products and is used in the manufacture of photographic film.

What happens to methylene chloride when it enters the environment?

❏ Methylene chloride is mainly released to the environment in air. About half of the methylene chloride in air disappears in 53 to 127 days.

❏ Methylene chloride does not easily dissolve in water, but small amounts may be found in drinking water.

❏ We do not expect methylene chloride to build up in plants or animals.

How might I be exposed to methylene chloride?

❏ The most likely way to be exposed to methylene chloride is by breathing contaminated air.

❏ Breathing the vapors given off by products containing methylene chloride. Exposure to high levels of methylene chloride is likely if methylene chloride or a product containing it is used in a room with inadequate ventilation.

How can methylene chloride affect my health?

If you breathe in large amounts of methylene chloride you may feel unsteady, dizzy, and have nausea and a tingling or numbness of your finger and toes. A person breathing smaller amounts of methylene chloride may become less attentive and less accurate in tasks requiring hand-eye coordination. Skin contact with methylene chloride causes burning and redness of the skin.

How likely is methylene chloride to cause cancer?

We do not know if methylene chloride can cause cancer in humans. An increased cancer risk was seen in mice

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, Public Health Service
Agency for Toxic Substances and Disease Registry

METHYLENE CHLORIDE
CAS # 75-09-2

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

breathing large amounts of methylene chloride for a long time.

The World Health Organization (WHO) has determined that methylene chloride may cause cancer in humans.

The Department of Health and Human Services (DHHS) has determined that methylene chloride can be reasonably anticipated to be a cancer-causing chemical.

The EPA has determined that methylene chloride is a probable cancer-causing agent in humans.

How can methylene chloride affect children?

It is likely that health effects seen in children exposed to high amounts of methylene chloride will be similar to the effects seen in adults. We do not know if methylene chloride can affect the ability of people to have children or if it causes birth defects. Some birth defects have been seen in animals inhaling very high levels of methylene chloride.

How can families reduce the risk of exposure to methylene chloride?

❏ Families may be exposed to methylene chloride while using products such as paint removers. Such products should always be used in well-ventilated areas and skin contact should be avoided.
❏ Children should not be allowed to remain near indoor paint removal activities.

Is there a medical test to show whether I've been exposed to methylene chloride?

❏ Several tests can measure exposure to methylene chloride. These tests are not routinely available in your doctor's office.
❏ Methylene chloride can be detected in the air you breathe out and in your blood. These tests are only useful for detecting exposures that have occurred within a few days.
❏ It is also possible to measure carboxyhemoglobin (a chemical formed in the blood as methylene chloride breaks down in the body) in the blood or formic acid (a breakdown product of methylene chloride) in the urine. These tests are not specific for methylene chloride.

Has the federal government made recommendations to protect human health?

❏ The EPA requires that releases of methylene chloride of 1,000 pounds or more be reported to the federal government.
❏ The EPA recommends that exposure of children to methylene chloride be limited to less than 10 milligrams per liter of drinking water (10 mg/L) for 1 day or 2 mg/L for 10 days.
❏ The Food and Drug Administration (FDA) has established limits on the amounts of methylene chloride that can remain after processing of spices, hops extract, and decaffeinated coffee.
❏ The Occupational Safety and Health Administration (OSHA) has set limits of 25 parts methylene chloride per million parts of workplace air (25 ppm) for 8-hour shifts and 40-hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for methylene chloride. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.