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Governor



DIVISION OF PUBLIC HEALTH

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Secretary

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Department of Health Services

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RECEIVED

September 9, 2019

SEP 16 2019

Binyoti F. Amungwafor
Wisconsin Department of Natural Resources
2300 N. Dr. Martin Luther King Drive
Milwaukee, WI 53212-3128

BY: _____

Re: Former One Hour Martinizing (BRRTS# 02-41-552219) Indoor Air Quality Site Visit

Dear Mr. Amungwafor:

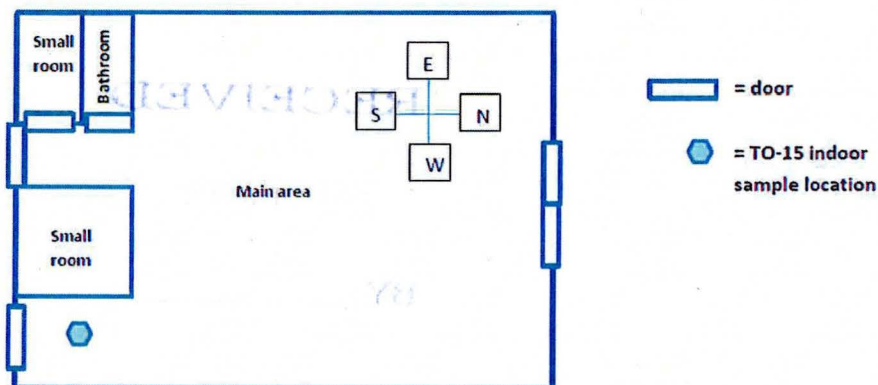
This letter summarizes our findings from the DNR request to assess indoor air at the Former One Hour Martinizing location at 8711A West Fond du Lac Avenue in Milwaukee, WI. **Although DNR vapor action levels for small commercial dwellings were not exceeded for these compounds, additional sampling is warranted to rule out a potential human health hazard due to vapor intrusion. DHS recommends that additional indoor air samples be taken at this location and that follow up groundwater and soil gas sampling occur behind the former dry cleaning facility as DHS has concerns over the unknown potential for downgradient vapor intrusion exposures in neighboring dwellings.**

Background: On April 24, 2019, Wisconsin Department of Health Services (DHS) staff conducted a facility walk through and indoor air sampling event at the Former One Hour Martinizing location. We assessed potential volatile organic compounds (VOCs) inside the building at the facility because previous reports showed high levels of tetrachloroethylene (PCE) detected in groundwater monitoring wells located immediately behind the property. Previous records showed 82,400 $\mu\text{g/L}$ and 218,000 $\mu\text{g/L}$ (Note: DNR groundwater enforcement standard = 5 $\mu\text{g/L}$ ¹) for samples collected on January 26, 2009 by Moraine Environmental, Inc.

Investigation: We conducted the field investigation of the property, which consisted of an inspection of the building and grounds, real-time screening for total VOCs and ammonia, and laboratory VOCs analysis. Wisconsin Department of Natural Resources (DNR) and the City of Milwaukee Health Department were also present.

We used a GrayWolf Indoor Air Quality Monitor, and indoor and outdoor TO-15 air samples for later laboratory analysis. We placed a six liter Summa canister close to the ground inside the former dry cleaner building along with an outdoor ambient air reference six liter Summa canister for a six hour sampling time period (11 am to 5 pm). Air was field-screened on April 24, 2019 at the time the cans were deployed. The Wisconsin State Laboratory of Hygiene (WSLH) analyzed the Summa canister air samples using US EPA Method TO-15 to evaluate for VOCs present. A drawing of the building floor plan can be found in **Figure 1**, and pictures taken during the sampling event can be found in **Attachment 1**.

Figure 1: Floor plan of the former One Hour Martinizing facility, 8711A West Fond du Lac Avenue in Milwaukee, WI. Note: floor plan is not to scale.



Results: Background total VOCs were observed at approximately 200 ppb prior to entering the building and indoor total VOCs concentrations ranged from 168 ppb (back of room on east side) to 339 ppb (back of room on west side), Ammonia was detected at ambient air background concentrations of between 0.2 and 0.6 ppm both outdoors and indoors during the inspection. Results from the GrayWolf real time air monitoring are included in **Attachment 2**.

Results from the TO-15 laboratory analysis are included in **Attachment 3** and summarized in **Table 1** below. Reported concentrations were compared to action² or human health based screening³ levels published by the WI DNR or the U.S. EPA. The chlorinated solvents, tetrachloroethylene (PCE), trichloroethylene (TCE), and cis-1,2-dichloroethylene were detected in the indoor air of the former dry cleaner facility at levels below the DNR indoor air vapor action levels for small commercial buildings.

Table 1: Summary of chlorinated solvent sampling results

	ppbV Results				Action Level ppbV	Action Level Source ^{2,3}	Notes
	Outdoor		Indoor				
VOC Detected	ppbV	flag	ppbV	flag			
Cis-1,2-Dichloroethylene	ND		0.35		No indoor action level	No indoor action level	
Tetrachloroethylene (PCE)	ND		8.7		27	DNR	
Trichloroethylene (TCE)	0.13	F	0.43		1.6	DNR	outdoor influence

Abbreviations: VOC = volatile organic compound, ppbV = parts per billion on a volumetric basis, ND = not detected. Flag F = result is between limit of detection and limit of quantification

Key observations from the meteorological conditions during sampling follow: mostly sunny, wind S at 6 mph, temperature 64 degrees F, humidity 51%, barometer 30.00 in., dew point 40 degrees F, visibility 10 mi., source – NOAA Website, Milwaukee General Mitchel Airport, accessed 4/24/19.

Discussion: A review of the GrayWolf real time air monitoring data resulted in the following comments. The total VOCs levels observed were within expected concentration ranges for small commercial building indoor air⁴ during the walk through. The slightly elevated total VOCs observed in the back area on the west side of the building is not surprising as there is a sump well located in that area.

The following is noted after a review of the TO-15 laboratory analysis results. While the chlorinated solvents PCE, TCE, and cis-1,2-dichloroethylene were detected in the indoor air of the former dry cleaner facility at levels below the DNR indoor air vapor action levels for small commercial buildings, indoor air concentrations of VOCs are known to vary in indoor air over time. DNR⁵ and EPA⁶ recommend that

indoor air sampling occur at more than one point in time during vapor intrusion investigations to address this variability. In addition, the results from the TO-15 samples analyzed for this site visit were flagged due to the sample hold time being exceeded from equipment down time at the laboratory.

Site Visit Limitations: The results from this site visit represent a snap shot in time, and can only be used to evaluate the environmental conditions of the dwelling at that point in time.

Due to instrument down time, the laboratory was not able to analyze the samples within the 30 day hold time as recommended by the U.S. EPA Method TO-15. The U.S. EPA Method TO-15 results contain the flag, F, if the analytical result is between the limit of detection (LOD) and limit of quantitation (LOQ), which indicates there may be more quantitative uncertainty (i.e. > 30%) associated with these results.

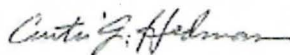
Human Health Concerns: The primary target for PCE toxicity is the central nervous system⁷. Exposure to moderate amounts of PCE may cause dizziness or drowsiness, headache and loss of coordination. Exposure to low amounts of PCE over a long time period may cause changes in mood, memory, attention, reaction time, and vision. Animal studies also show PCE has toxic effects on the liver and kidney. Epidemiological studies suggest that PCE might lead to a higher risk of developing bladder cancer, multiple myeloma, or non-Hodgkin's lymphoma. The central nervous system is also a target for TCE toxicity, and exposure to moderate amounts may cause headaches, dizziness, and sleepiness⁸. Exposure to higher levels of TCE can also cause heart rhythm changes and damage to the liver and kidney. Human and animal studies show that TCE may cause developmental effects such as spontaneous abortion, congenital heart defects, central nervous system defects, and lowered birth weight. There is strong evidence that TCE exposure over long periods can cause kidney cancer and some evidence for TCE to increase risk for liver cancer and malignant lymphoma. Lower dose exposures to cis-1,2-dichloroethylene may cause lowered red blood cell counts and liver effects⁹.

Conclusions: DHS detected chlorinated VOCs which may be attributed to their historical use during the time the dry cleaner was operational. Although DNR vapor action levels for small commercial dwellings were not exceeded for these compounds, additional sampling is warranted to rule out a potential human health hazard due to vapor intrusion.

Recommendations: DHS recommends that additional indoor air samples be taken at this location due to the inherent variability of VOC concentrations that occur in indoor air over time and the fact that the analytical report from this sampling event contained flagged results due to exceedance of sample hold time. DHS further recommends that follow up groundwater and soil gas sampling occur behind the former dry cleaning facility, as the high levels of PCE detected in 2009 raises concerns over the unknown potential for downgradient vapor intrusion exposures in neighboring dwellings.

Please contact me at (608) 266-6677, or curtis.hedman@wisconsin.gov if you have any questions about the health recommendations made in this letter.

Sincerely,



Curtis Hedman, Ph.D.
Toxicologist

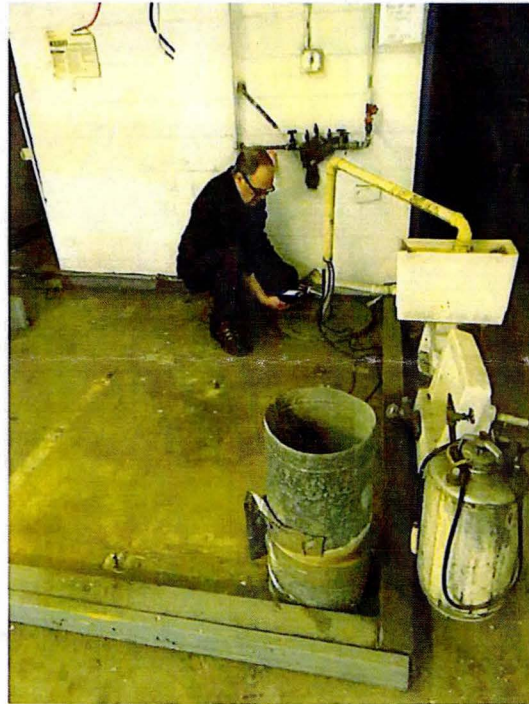
Cc: Lindor Schmidt, Milwaukee Health Department
Gerald and Betty Mutza

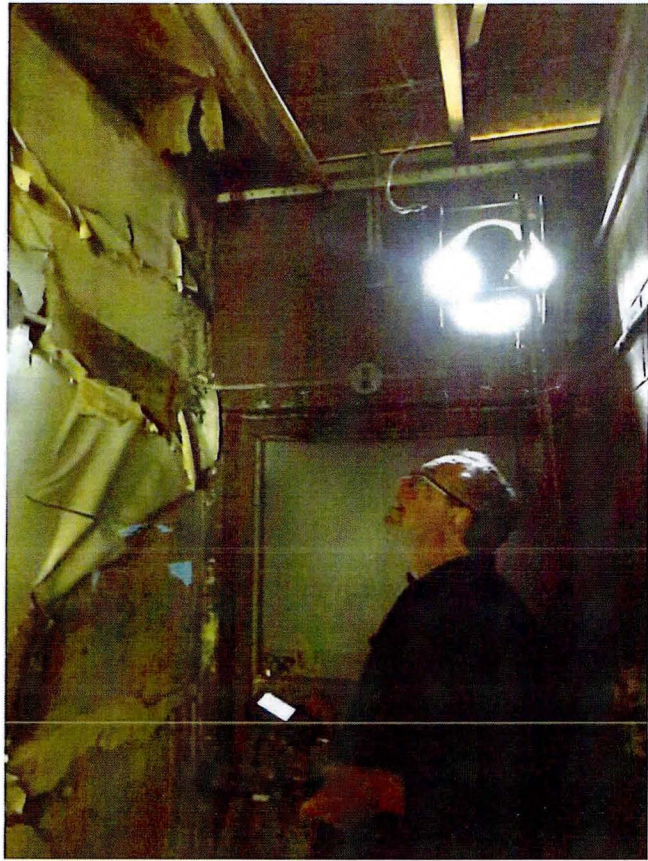
References:

- ¹ Wisconsin Department of Natural Resources (DNR) Drinking Water and Groundwater Quality Standards/Advisory Levels, May 2017. Accessed online at: <https://dnr.wi.gov/topic/DrinkingWater/documents/HALtable.pdf>.
- ² U.S. Environmental Protection Agency (US EPA) Regional Screening Level (RSL) Resident Ambient Air Table, April 2019. Accessed online at: https://19january2017snapshot.epa.gov/sites/production/files/2016-06/documents/resair_sl_table_run_may2016.pdf.
- ³ Wisconsin DNR Indoor Air Vapor Action Levels and Vapor Risk Screening Levels Based on November 2017 U.S. EPA Regional Screening Levels. Accessed online at: <https://dnr.wi.gov/topic/Brownfields/documents/vapor/vapor-quick.pdf>.
- ⁴ American Industrial Hygiene Association (AIHA). 2017. Volatile Organic Compounds (VOC) Criteria for New Construction. Accessed online at: <https://www.aiha.org/government-affairs/PositionStatements/VOC%20White%20Paper.pdf>.
- ⁵ WI DNR Remediation and Redevelopment Program Publication RR-800: Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin. 2018. Accessed online at: <https://dnr.wi.gov/files/PDF/pubs/rr/RR800.pdf>.
- ⁶ U.S. Environmental Protection Agency (US EPA) Office of Solid Waste and Emergency Response Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air, June 2015. Accessed online at: <https://www.epa.gov/sites/production/files/2015-09/documents/oswer-vapor-intrusion-technical-guide-final.pdf>.
- ⁷ Agency for Toxic Substances and Disease Registry (ATSDR). 2019. Toxicological Profile for Tetrachloroethylene. Accessed online at: <https://www.atsdr.cdc.gov/toxprofiles/tp18.pdf>.
- ⁸ Agency for Toxic Substances and Disease Registry (ATSDR). 2019. Toxicological Profile for Trichloroethylene. Accessed online at: <https://www.atsdr.cdc.gov/toxprofiles/tp19.pdf>.
- ⁹ Agency for Toxic Substances and Disease Registry (ATSDR). 1996. Toxicological Profile for 1,2-Dichloroethene. Accessed online at: <https://www.atsdr.cdc.gov/toxprofiles/tp87.pdf>.

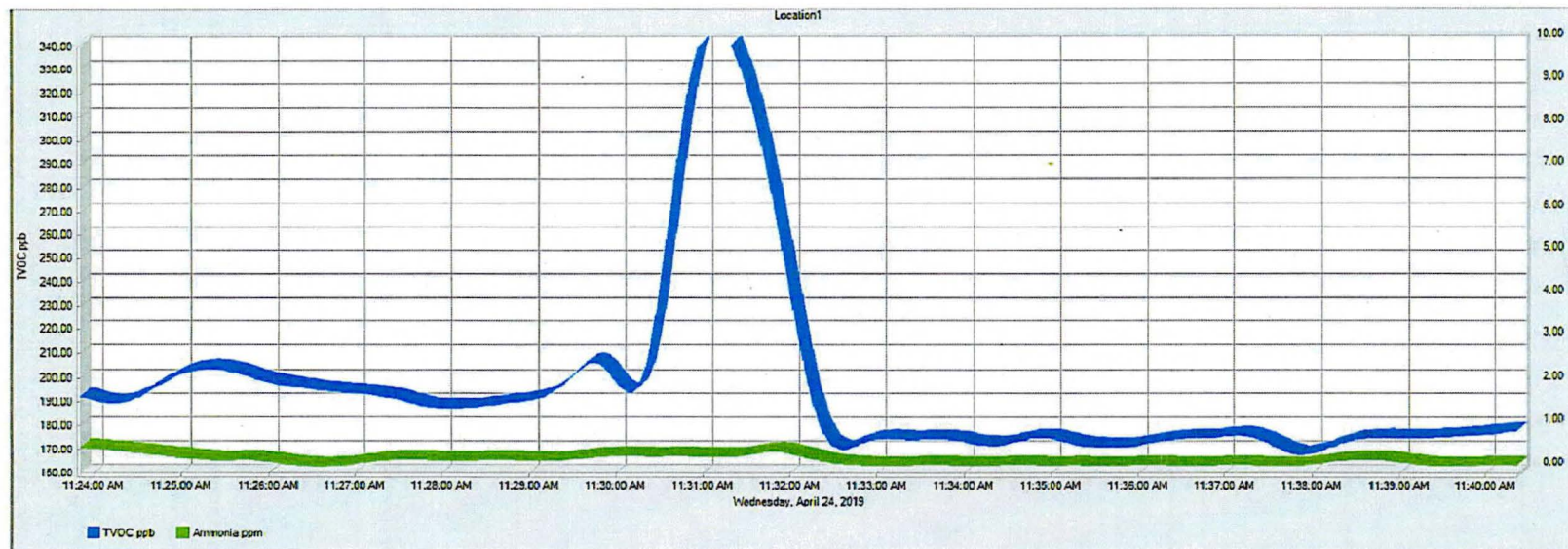
Attachment 1

Photos from Sampling Event





DateTime	TVOC ppb	Ammonia ppm	
4/24/2019 11:23	192	0.6	Outdoors prior to entering
4/24/2019 11:24	190	0.5	
4/24/2019 11:24	199	0.4	
4/24/2019 11:25	204	0.3	
4/24/2019 11:25	200	0.3	Just inside front entrance
4/24/2019 11:26	196	0.2	
4/24/2019 11:26	194	0.2	
4/24/2019 11:27	192	0.3	
4/24/2019 11:27	188	0.3	Middle area of main room
4/24/2019 11:28	188	0.3	
4/24/2019 11:28	190	0.3	
4/24/2019 11:29	196	0.3	
4/24/2019 11:29	205	0.4	
4/24/2019 11:30	205	0.4	
4/24/2019 11:30	325	0.4	Back room - right side
4/24/2019 11:31	339	0.4	
4/24/2019 11:31	266	0.5	
4/24/2019 11:32	181	0.3	
4/24/2019 11:32	173	0.2	
4/24/2019 11:33	174	0.2	
4/24/2019 11:33	174	0.2	
4/24/2019 11:34	172	0.2	
4/24/2019 11:34	175	0.2	
4/24/2019 11:35	172	0.2	Back room - left side
4/24/2019 11:35	171	0.2	
4/24/2019 11:36	174	0.2	
4/24/2019 11:36	175	0.2	
4/24/2019 11:37	175	0.2	
4/24/2019 11:37	168	0.2	
4/24/2019 11:38	173	0.3	
4/24/2019 11:38	175	0.3	
4/24/2019 11:39	175	0.2	
4/24/2019 11:39	176	0.2	
4/24/2019 11:40	178	0.2	





Wisconsin State Laboratory of Hygiene
2601 Agriculture Drive, PO Box 7996
Madison, WI 53707-7996
(800)442-4618 - FAX (608)224-6213
<http://www.slh.wisc.edu>

Laboratory Report

D.F. Kurtycz, M.D., Medical Director - Prof. James J. Schauer, Ph.D., Director

Environmental Health Division

WDNR LAB ID: 113133790

NELAP LAB ID: 2091

EPA LAB ID: WI00007, WI00008 WI DATCP ID: 105-415

WSLH Sample: 442401001

Report To:
CURTIS HEDMAN
1 W. WILSON ST
RM 150
MADISON, WI 53701

Invoice To:
DEPARTMENT OF HEALTH

Customer ID: DH060

Field #: BLANK-OUTDOOR
Project No:
Collection End: 4/24/2019 5:00:00 PM
Collection Start: 04/24/19 1113
Collected By: C. HEDMAN
Date Received: 4/25/2019
Date Reported: 6/14/2019
Sample Reason:

ID#:
Sample Location:
Sample Description:
Sample Type: AR-AIR
Waterbody:
Point or Outfall:
Sample Depth:
Program Code:
Region Code:
County:

Sample Comments

Analyzed past the 30 days holding time: Method EPA TO-15 analyzed on 06/10/19 1330

OC-Volatiles

Analyte	Analysis Method	Result	Units	LOD	LOQ
Prep Date 06/10/19	Analysis Date 06/10/19				
Comments: Analyzed past the 30 days holding time.					
Propene	EPA TO-15	<.276	ppbv	0.24	0.78
Interference					
Vinyl chloride	EPA TO-15	ND	ppbv	0.050	0.16
trans-1,2-Dichloroethene	EPA TO-15	ND	ppbv	0.056	0.19
Vinyl acetate	EPA TO-15	<.2579	ppbv	0.14	0.47
Interference					
cis-1,2-Dichloroethene	EPA TO-15	ND	ppbv	0.050	0.17
Trichloroethene	EPA TO-15	ND	ppbv	0.058	0.19
Tetrachloroethene	EPA TO-15	0.13F	ppbv	0.052	0.17



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WSLH Sample: 442401001

List of Abbreviations:

LOD = Level of detection

LOQ = Level of quantification

ND = None detected. Results are less than the LOD

F next to result = Result is between LOD and LOQ

Z next to result = Result is between 0 (zero) and LOD

if LOD=LOQ, Limits were not statistically derived

Test results for NELAP accredited tests are certified to meet the requirements of the NELAC standards. For a list of accredited analytes see <http://www.slh.wisc.edu/about/compliance/nelac-laboratory-accreditation>

Results, LOD and LOQ values have been adjusted for analytical dilutions and percent moisture where applicable.

Results relate only to the items tested.

This Laboratory Report shall not be reproduced except in full, without written approval of the laboratory.

The water microbiology unit analyzes samples as received and not all samples are tested for preservation before analysis is performed.

Responsible Party

Inorganic chemistry: Graham Anderson 608-224-6281

Metals: Graham Anderson 608-224-6280

Organics: Erin Mani 608-224-6269

Environmental Toxicology: David Webb 608-224-6230

Water microbiology: Martin Collins 608-224-6239

Radiochemistry: David Webb 608-224-6227



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Environmental Health Division

WDNR LAB ID: 113133790

NELAP LAB ID: 2091

EPA LAB ID: WI00007, WI00008 WI DATCP ID: 105-415

WSLH Sample: 442401002

Report To:

CURTIS HEDMAN
1 W. WILSON ST
RM 150
MADISON, WI 53701

Invoice To:

DEPARTMENT OF HEALTH

Customer ID: DH060

Field #: INDOOR
Project No:
Collection End: 4/24/2019 5:06:00 PM
Collection Start: 04/24/19 1133
Collected By: C. HEDMAN
Date Received: 4/25/2019
Date Reported: 6/14/2019
Sample Reason:

ID#:
Sample Location:
Sample Description:
Sample Type: AI-INDOOR AIR
Waterbody:
Point or Outfall:
Sample Depth:
Program Code:
Region Code:
County:

Sample Comments

Analyzed past the 30 days holding time: Method EPA TO-15 analyzed on 06/10/19 1134

OC-Volatiles

Analyte	Analysis Method	Result	Units	LOD	LOQ
Prep Date 06/10/19	Analysis Date 06/10/19				
Comments: Analyzed past the 30 days holding time.					
Propene	EPA TO-15	<.4151	ppbv	0.24	0.78
Interference					
Vinyl chloride	EPA TO-15	ND	ppbv	0.050	0.16
trans-1,2-Dichloroethene	EPA TO-15	ND	ppbv	0.056	0.19
cis-1,2-Dichloroethene	EPA TO-15	0.35	ppbv	0.050	0.17
Trichloroethene	EPA TO-15	0.43	ppbv	0.058	0.19
Tetrachloroethene	EPA TO-15	8.7	ppbv	0.052	0.17



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