Professional Analysis and Consulting, Inc.

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File # 1923

PATRICIA A. CAREY and RICHARD GILLIAT FRY v. THE 400 CONDOMINIUM ASSOCIATION, HELEN DRESS and ALL UNKNOWN OCCUPANTS of THE OUTER DRIVE EAST CONDOMINIUM at 400

Report Prepared for:

Timothy R. Rabel
Querrey & Harrow
120 North LaSalle Suite 2600
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And

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Report Prepared by:

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Professional Analysis and Consulting, Inc.

Date of Report: June 28, 2022

1. Background

The Outer Drive East Condominium building (ODE), shown in Figure 1, is located at 400 E. Randolph Street in Chicago, Illinois. Built in 1963, ODE is a 40 story, residential building consisting of 955 residential and 15 commercial units.

Figure 1. The Outer Drive East Condominium building is located at 400 E. Randolph Street in Chicago.

Dr. Michael G. Koehler of Professional Analysis and Consulting Inc (Professional Analysis) was contacted by Mr. Timothy Rabel of Querrey & Harrow and Ms. Sheri A. Mercier of O'Hagan Meyer to participate in an investigation involving allegations of tobacco and/or marijuana smoke infiltrating into Unit 3701 of ODE. Dr. Koehler was asked to provide a scientific analysis of Unit 3701 for evidence of tobacco and/or marijuana infiltration into the unit. Dr. Koehler was asked to opine on evidence of a second hand and third hand smoke in Unit 3701, and the likely source of the second and third hand smoke. Dr. Koehler was asked to provide this report documenting his findings and opinions.

The AirSurvey Analysis thermally desorbs components collected on the sorbents during the sampling period.[5] The Volatile Organic Compounds (VOCs) extracted from the air during the sampling period are then analyzed using gas chromatography-mass spectrometry (GC-MS). The analysis includes the determination of 60 VOCs quantitatively and another 350 VOCs semi quantitatively, plus other materials recognized in the library of known chemical entities in the GC-MS electronic library.

SmokeScan is a proprietary analytical method of Fikes Analytical that uses pattern recognition to quantitatively define the perceived level of stale cigarette smoke in indoor air.[6] SmokeScan can detect not only secondhand tobacco smoke, but also thirdhand "stale" tobacco smoke which was deposited months and years before the smoking ceased. SmokeScan's algorithms assess not only the impact of chemical compounds generated directly from tobacco combustion but also the chemical compounds generated through biological activity in tobacco smoke residue. The odors typically associated with stale tobacco smoke are not all necessarily the result of the presence of chemical compounds given off by the burning tobacco, but many are the products of bacteriological activity in the smoke residue.

3.4 Surface Residue Swab Samples

Seven surface residue samples were also taken using alcohol swabs using the National Institute for Occupational Safety and Health, NIOSH, Standard Method 2551. These surface samples were taken in areas of the unit such as walls and furniture surfaces as shown in Table 2 and Figure 6. Following the inspection, these swabs were submitted to EMSL Analytical for laboratory nicotine and tetrahydrocannabinol (THC) analysis under my direction. Nicotine and THC are two residue markers for thirdhand tobacco and marijuana smoke, respectively. Nicotine analysis was conducted using gas chromatography/ mass spectroscopy. Tetrahydrocannabinol analysis was conducted using liquid chromatography/ mass spectroscopy. Surface residue samples were taken in 6 areas inside Unit 3701 and one area on the external balcony.

Table 2. Location of surface residue swab sampling.

Sample ID	Location	Lab Sample ID
A	Kitchen cabinet, 85" from floor.	282201105-0001
B	Kitchen wall above refrigerator	282201105-0002
C	Foyer wall, 60" from floor.	282201105-0003
D	Bedroom area. North desk side surface.	282201105-0004
E	Corner wall, 56" from floor.	282201105-0005
F	Bookcase, South surface, 36" from floor	282201105-0006
G	Balcony, mid-window frame, 48" from deck.	282201105-0007

[5] Fikes Analytical Technologies, LLC, AirSurvey Analysis. https://fikeanalytical.com/air-quality-testing-services-voc-testing/vocs-air-survey/

[6] Fikes Analytical Technologies, LLC, SmokeScan. https://fikeanalytical.com/air-quality-testing-services-voc-testing/stale-cigarette-smoke/

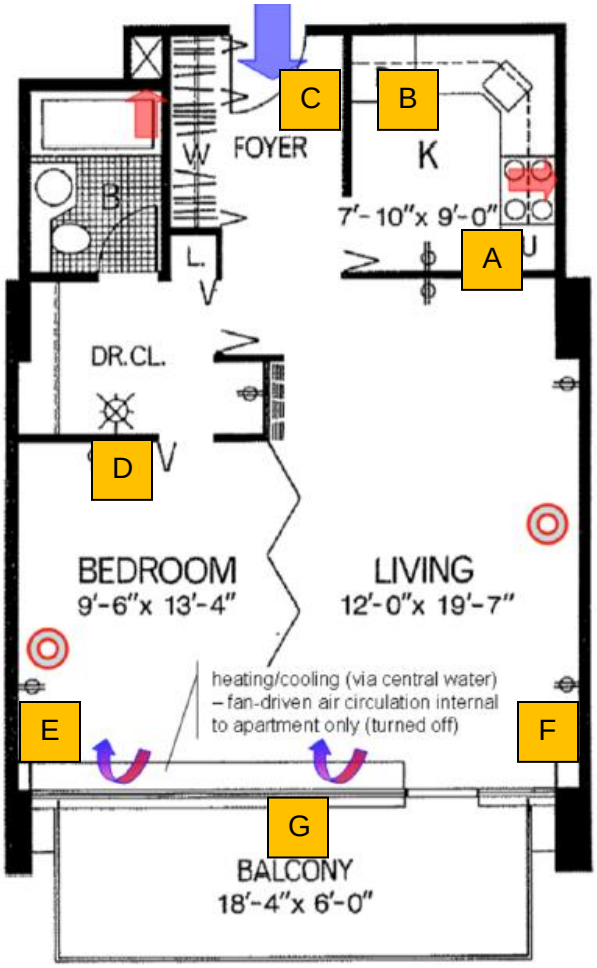

Figure 6. Locations of surface residue sample taken during the inspection of Unit 3701, in the ODE condominium building, on March 21, 2022

4. Results

4.1 Visual Observations

During the inspection on March 21, 2022, I observed the walls paint and carpeting were older, consistent with the co-owner's testimony that no work, such as painting, carpeting, plumbing, or construction, had been done in the unit since 2006.[7] The temperature of the room was recorded at 15 locations throughout the unit. Temperature readings were taken on wall surfaces using a Klein Tools IR1000 infrared thermometer. The temperature readings ranged from 86.2° F above the stove to 79.1° F on the east walls. The average temperature in the room was 82.1° F. These are considered elevated indoor temperatures. At these temperatures, chemicals which are

[7] Deposition testimony of Dr. Patricia Carey, pg 69-70. January 19, 2021.

adsorbed onto surfaces tend to devolve into the air. This may result in elevated measures of airborne chemicals associated with smoking products. However, as the laboratory data will show, there was no detectable VOCs related to smoking, even at the elevated room temperature. The outdoor temperature was recorded at 63.2° F. Surfaces appeared clean with minimal dust. There was no visible haze or secondhand smoke observed in Unit 3701. There was no visible evidence of thirdhand cigarette/marijuana smoke residue on the exposed surfaces in the unit.

There is no visible evidence of tobacco or marijuana smoke contamination or damage visible on the surfaces of walls, furnishings, countertops, and household appliances, and equipment.

4.2 Olfactory Evaluation

During the olfactory evaluation, on entering the space, there was a faint “old house” odor that was perceivable. I did not deem the odor to be offensive, noxious, or strong. These odors were not attributed to a single source. Rather, the “old house” odor was a combination of several other individual odors that were identified during the site assessment. As with all odors, there are specific chemical entities which *can contribute* to “old house odors”, including mold & mildew, cooking residues, tobacco residues, pet related residues, fuels such as natural gas, rodent and pest excrements, and environmental pollutants. The table below identifies unique, individual odors which are contributing to the overall “old house” odor in Unit 3701 of ODE. Tobacco / marijuana smoke related odors were not detected.

Table 3. Individual Odors Perceived

Mate	**Characteristics of Odor**
Older carpeting on floor	Faint musty odor associated with adsorbed odors. Likely some remnant mold and mildew in carpet.
Natural gas (NG)	Natural gas has several aromatic chemicals which include mercaptans and hydrocarbons. This was predominantly in the Kitchen area near the NG-fueled stove.
Sulfur Dioxide	There was a faint odor of sulfur dioxide, predominantly in the kitchen area. Sulfur dioxide is a pungent, match-strike odor usually created by fueling fuels, such as the natural gas stove.
Solvents	There was a faint odor of solvents in the indoor space, such as ketones. Ketones are usually pleasant, fruity smells, often used as odorants in personal care products. Ketones are also found in coatings and solvents. For example, acetone is used in nail polish remover.

While odor preferences are an acquired sensory perception, meaning that one learns to like or dislike odors. In this inspection, none of the odors detected by smell were obnoxious or overwhelming to this investigator.

As detected by smell, odors associated with natural gas and natural gas byproducts were the predominate odor in the unit. However, these odors were faint and not determined to be at a level which was obnoxious or unpleasant.

“Old carpet smell” was detected in the Unit. Generally, odors associated with “old carpet smell” are associated with five common sources: 1) moisture, mold, mildew, 2) organic materials from pets, food, drinks, or contaminants 3) air pollutants, smoke, fires, 4) cleaning products and deodorizers, and 5) degradation products of the carpet materials. The “old carpet smell” in Unit 3701 was predominantly the musty odor associated with moisture, mold, mildew. The carpet did not reveal evidence of smoke, tobacco, marijuana, cleaning products, or deodorizers.

As detected by smell, this investigator did not detect any odors associated with either tobacco or marijuana smoking products in Unit 3701.

4.3 Air Samples

Under our direction, an AirSurvey analysis was performed for the four air samples collected during the inspection of Unit 3701. An AirSurvey analysis identifies the volatile organic compounds in the air sample, and the Total Volatile Organic Compounds (TVOC). The samples were also analyzed using the SmokeScan algorithm to identify the trace airborne chemicals associated with smoke residues deposited from secondhand smoke.

4.3.1 TVOC Readings

The table below lists the TVOC obtained from the adsorption tubes. It should be noted that the primary VOC in these samples was isopropyl alcohol which has three likely sources, 1) personal care products, 2) surface cleaning products, or 3) introduced from surface sample collection procedure. It should be noted that indoor isopropyl alcohol is common due to increased use of isopropyl alcohol as a COVID-19 surface and hand disinfectant. Isopropyl alcohol is not a constituent of tobacco or marijuana smoke. For purposes of this investigation, the isopropyl alcohol was subtracted from the Total VOC (TVOC) and reports in Table 4 as TVOC-IPA.

Table 4. Total Volatile Organic Compounds (TVOC) Readings

Location	TVOC reading (ng/L)	Isopropyl Alcohol (IPA) (ng/L)	TVOC – IPA (ng/L)	Notes
1 - Kitchen	820	160-660	160	Ideal Level
2 - Bedroom	820	140-660	160	Ideal Level
3 - Outdoor Balcony	80	3-14	66	Ideal Level
4 - Living Room	890	150-600	290	Good Level

All levels of VOCs are rated at Ideal or Good. No chemical found in the unit was at a level of concern. The full analytical results are included in the Attachment C of this report, as *Fikes Analytical Technology AirSurvey Reports*.

The Living Room sample (Sample 4) was collected from an area which had several medicines and personal care products on the table. Medicines and personal care products contain components such as acetophenone, ethanol, and acetone, which were detected at slightly higher levels in this area than other areas of the unit.

There were no VOCs or evidence identified in the AirSurvey that are associated with tobacco or marijuana smoke or smoke biproducts.

Patricia Caray stated that she had cleaned the unit. This evidence is consistent with a unit that has maintained to general household standards of care, but not sanitized to remove all trace contaminants.

4.3.2 SmokeScan Report

The SmokeScan analysis uses a pattern recognition algorithm to identify patterns of chemical substances associated with stale tobacco residues. The quantity and quality of those marker patterns are combined to generate a value for the probability that residual or stale cigarette smoke will be perceived in the area sampled. The reporting scale is shown in Table 5 as a continuous scale from 0% to 100%. This scale is interpreted as the perception level of stale smoke by the general population. Any value greater than 20% is a positive indication that tobacco smoke is present. However, for values less than 20%, most persons would not perceive the odors. Any values between 20% and 40% indicate that cigarette smoke was present but may only be detected by persons sensitive to the smell.

Table 5. Reporting scale for the SmokeScan Analysis is a continuous scale fro 0%-100% and is interpreted as the perception level in the general population.

Probability Reported	Interpretation
< 20%	The odor of residual or stale cigarette smoke may be present but is at a level that is imperceptible to most people.
20 - 40%	The odor of residual or stale cigarette smoke is present at levels that may only be perceptible to persons sensitive to the smell.
40 - 60%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to many people.
60 - 80%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to most people.
80 - 100%	The odor of residual or stale cigarette smoke is present at a level that is perceptible to nearly all people.
> 100%	These levels of residual or stale cigarette smoke odors are “off scale” and may be found in places such as homes of active, heavy smokers, in automobiles belonging to active, heavy smokers, in smoke shops, etc. or in the immediate vicinity of where smoking is actively taking place.

The SmokeScan analytical data from Unit 3701 of the ODE condominium building is shown in Table 6. As shown in this data, the probability that stale smoke residue is present in Unit 3701 is well below the 20% perception level, indicating that the evidence of stale tobacco residue is not present or extremely low. Therefore, there is no substantiating evidence that thirdhand smoke is present in Unit 3701 as a result of secondhand tobacco smoke infiltrating into Unit 3701.

Table 6. SmokeScan results from the air samples taken in Unit 3701 of the ODE condominium building, on March 21, 2022.

Location	Probability that residual or stale smoke will be perceived	Notes
1 - Kitchen	3%	Odor of residual cigarette smoke may be present but is at a level that is imperceptible to most people.
2 - Bedroom	3 %	Odor of residual cigarette smoke may be present but is at a level that is imperceptible to most people.
3 - Outdoor Balcony	6%	Odor of residual cigarette smoke may be present but is at a level that is imperceptible to most people.
4 - Living Room	7%	Odor of residual cigarette smoke may be present but is at a level that is imperceptible to most people.

The full analytical results are included in the Attachment C of this report, as *Fikes Analytical Technology SmokeScan Reports*.

4.4 Surface Residue Analysis

During the inspection, evidence of thirdhand smoke was obtained through surface residue sampling using the National Institute of Occupational Safety and Health, NIOSH, Standard Method 2551. Surface residue samples were obtained using an isopropyl alcohol wipe to extract the surface residues. For all surface residue samples, a 100 cm^2 area was sampled on each surface. The wipes were then submitted for analysis of nicotine and tetrahydrocannabinol (THC).

4.4.1. Nicotine Residue Analysis

Nicotine is a chemical marker of tobacco smoke. As mentioned previously, residues of thirdhand smoke are deposited on surfaces by secondhand smoke. These residues linger on the surfaces for years after deposit and are an indication of smoking years prior to the sampling. The analysis for nicotine presence on the seven surfaces sampled are shown in Table 7. All samples showed no evidence for presence of nicotine, an indicator of secondhand smoke from tobacco. Based on this analysis, there is no evidence to support the presence of or damage from secondhand smoke from tobacco in Unit 3701.

Table 7. Surface residue analysis for the presence of nicotine on the various surfaces in Unit 3701 of the ODE condominium building.

Wipe analysis for Nicotine residue by GC/MS using modified NIOSH 2551

Sample Area	Identification	Area(cm2)	Reporting Limit (µg/wipe)	Sample Amount (µg/wipe)
Kitchen Wall, 85 inch above floor, South wall, east end.	SC22-1923-005-SR	100	5.0	<5.0
Kitchen Wall, 85 inches above floor, West wall, north end.	SC22-1923-006-SR	100	5.0	<5.0
Foyer Wall, 60 inches from floor, East wall, north end.	SC22-1923-007-SR	100	5.0	<5.0
Bedroom Desk, right side panel, 24 inches from floor, east end.	SC22-1923-008-SR	100	5.0	<5.0
Bedroom, 56 inches above South wall, corner.	SC22-1923-009-SR	100	5.0	<5.0
Bookcase on east wall, 36 inches above floor, south facing surface.	SC22-1923-010-SR	100	5.0	<5.0
Outside Balcony, 48 inches from deck, center window frame.	SC22-1923-011-SR	100	5.0	<5.0

4.4.2 Tetrahydrocannabinoid (THC) Analysis

Tetrahydrocannabinol (THC) is a chemical marker for marijuana. Residues of thirdhand smoke from marijuana are deposited on surfaces by secondhand smoke. These residues linger on the surfaces for years after deposit and are an indication of smoking years prior to the sampling. The analysis for THC presence on the seven surfaces sampled are shown in Table 8. Of the seven samples, six surfaces sampled showed no evidence for presence of THC present on the surfaces, above the detection limits of the analysis. One sample taken from the side of the bookcase on the east wall indicated THC presence at a level near the lower borderline of the analysis detection limits. More likely than not, the single positive result is the consequence of a surface contact deposit. Since smoke spreads and distributes throughout an open room, one would expect the thirdhand smoke from marijuana to be distributed on multiple surfaces throughout the unit. The single location deposit indicates the smoke from marijuana was either very limited to this corner of the unit for a short period of time, or the THC was deposited through surface contact and not from secondhand smoke. The only open source for smoke infiltration in the vicinity of the bookcase is the balcony door. However, there was no evidence of THC from the surface sample from the balcony. Therefore, the most likely source of the THC on the bookcase surface is a contact deposit. Since thirdhand smoke residues can persist for years on a surface, the source and timing of this contaminant deposit by contact is unknown.

Based on this analysis, there is no evidence to support the presence of or damage from secondhand marijuana smoke in Unit 3701.

Table 8. Surface residue analysis for the presence of tetrahydrocannabinol (THC) on the various surfaces in Unit 3701 of the ODE condominium building.

Wipe analysis for THC residue by HPLC/MS using modified NIOSH 9111

Sample ID	Customer ID	Area (cm2)	Reporting Limit (µg/wipe)	Sample Amount (µg/wipe)
Kitchen Wall, 85 inch above floor, South wall, east end.	SC22-1923-005-SR	100	0.10	<0.10
Kitchen Wall, 85 inches above floor, West wall, north end.	SC22-1923-006-SR	100	0.10	<0.10
Foyer Wall, 60 inches from floor, East wall, north end.	SC22-1923-007-SR	100	0.10	<0.10
Bedroom Desk, right side panel, 24 inches from floor, east end.	SC22-1923-008-SR	100	0.10	<0.10
Bedroom, 56 inches above South wall, corner.	SC22-1923-009-SR	100	0.10	<0.10
Bookcase on east wall, 36 inches above floor, south facing surface.	SC22-1923-010-SR	100	0.10	**0.13**
Outside Balcony, 48 inches from deck, center window frame.	SC22-1923-011-SR	100	0.10	<0.10

Based on these results, no nicotine was detected on the sampled surfaces within the detection levels of the analysis. THC was detected on a single surface, the bookcase surface on the east side of the living space. The level of THC detected was barely above the detection limits of the analysis. Although the source of the THC cannot be established, the location is not near any visible ventilation or openings in the east wall. Although this surface is near the balcony wall, there was no THC detected on the surface sample from the balcony. More likely than not, this single point of THC residue was the result of a surface contact deposit and not from secondhand marijuana smoke that infiltrated Unit 3701.

The full analytical results for Nicotine and THC analysis are included in the Attachment C of this report, as *EMSL Analytical, Wipe Analysis for Nicotine Residue and Wipe Analysis for THC Residue.*

5. Discussion

The analysis of all evidence collected and observed during the inspection of Unit 3701 in the ODE condominium building does not support the presence or infiltration of secondhand or thirdhand tobacco or marijuana smoke. As previously discussed in this report, secondhand smoke is the combination of the smoke from the burning of cigarette and/or marijuana and the smoke exhaled by an active smoker. Secondhand smoke is airborne and contains both particulates, vapors, and chemical components from the burning tobacco/marijuana products. These particulates, vapors, and chemical components deposit on surfaces as thirdhand smoke. Research shows that thirdhand smoke residues persist on surfaces for extended period of time and can be detected through chemical analysis. Thirdhand smoke is latent chemical evidence, that is, evidence that lies dormant and hidden until it is recovered using scientific methods, often long after the incident under investigation occurred. This latent chemical evidence will also desorb from the surfaces and can also convert to biproducts through the biological degradation of the chemical components. These desorbed chemicals and degradation products will be present in air samples which can be collected long after the smoking has ceased. Surface samples will also contain the evidence of nicotine and THC deposits on surfaces. Nicotine and THC residues on surfaces is also latent evidence indicating secondhand smoke infiltrated an area.

The evidence does not support the infiltration of tobacco or marijuana smoke into Unit 3701. Air samples were analyzed for both VOCs and components associated with stale smoke. Both analyses showed no chemical evidence of thirdhand tobacco smoke in Unit 3701. The evidence of smoke infiltration from marijuana was also lacking. The singular point of THC detection was at extremely low levels, near the lower detection limit of the test. The singular point of detection in the room also indicates the deposit did not result from secondhand smoke infiltration. Smoke is a pervasive environmental entity and casts a broad zone of evidence. The detection of THC was in one small area on the surface of a bookshelf. This indicates the THC residue was more

likely than not the result of a surface contact deposit. It is not the result of a smoke infiltration which would cast a broader range of deposits on other surfaces.

6. Findings and Opinions

This investigation was based on review of the documents produced, inspections conducted, work performed to date, the information available at this time, witness statements relayed to the investigator, as well as related engineering and scientific literature, and the knowledge and expertise of the investigator. Findings and opinions are based on evidence collected and analyzed and documents identified in the footnotes of this report. In addition, they are also based on scientific and engineering education, knowledge, skill, training, and experience. All opinions are considered to be more likely than not to a reasonable degree of scientific, engineering, and/or technical certainty. This report will be supplemented as required based upon new information.

Based on the evidence, materials reviewed, and artifacts inspected, we find:

1. The visual inspection of Unit 3701 indicated a clean area with no visible indication of tobacco or marijuana residues or damage from smoking related products.
2. The indoor air quality in Unit 3701, as detected by smell, did not present evidence of any odors associated with either tobacco or marijuana smoking products.
3. As detected in the olfactory evaluation, the odors associated with natural gas and natural gas byproducts were the predominate odor in the unit. However, these odors were faint and not determined to be at a level which was obnoxious or unpleasant.
4. The “old house” odors present in Unit 3701 were sourced to the older carpet. These odors are typical in older carpets and were not obnoxious or unpleasant.
5. The air samples taken from Unit 3701 do not present evidence of secondhand of thirdhand smoke infiltrating Unit 3701. The AirSurvey analysis presented no volatile organic compounds (VOCs) associated with tobacco or marijuana smoking. All VOC identified air samples are associated with other sources not related to smoking.
6. The SmokeScan analysis provides no latent evidence of secondhand or thirdhand smoke infiltration into Unit 3701. There is no smoking related deposits in or damage to Unit 3701.
7. Surface samples presented no evidence for nicotine on the surfaces in Unit 3701. Nicotine in surface residues would be latent evidence for the presence of secondhand tobacco smoke infiltration. The surface samples resent no evidence of secondhand tobacco smoke infiltrating into or damaging Unit 3701.
8. Surface samples for six of the seven surfaces presented no evidence for tetrahydrocannabinoid (THC) on these surfaces in Unit 3701. THC in surface residues would be latent evidence for the presence of secondhand marijuana smoke infiltration. The surface samples present no evidence of secondhand marijuana smoke infiltrating into or damaging Unit 3701.
9. Surface samples for one of the seven surfaces presented borderline evidence for tetrahydrocannabinoid (THC) on a bookcase surface in Unit 3701. THC on a single

surface was more likely than not the result of a contact surface deposit, not smoke infiltration. This single surface sample is not evidence of secondhand marijuana smoke infiltrating into or damaging Unit 3701.

10. The total evidence from olfactory evaluation, air samples, and surface samples indicates Unit 3701 did not experience infiltration from tobacco or marijuana related smoke.
11. I am aware of Dr. Carey and Mr. Fry's testimony on the alleged infiltration of smoking related contaminants and odors. These allegations are not consistent with the objective scientifically obtained data obtained from Unit 3701 of ODE.

7. Materials Reviewed and Materials Relied Upon

Attachment B outlines the materials reviewed by Professional Analysis with respect to this matter. This list includes materials compiled through Professional Analysis' own research. Materials relied on for opinions are the data and observations obtained during the inspection of Unit 3701 of ODE, and the documents cited in the footnotes of this report.

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Principal Scientist

Review and concurrence by:

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Principal Engineer
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Expires 11/30/2023

Attachment A

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Principal Scientist

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331-229-3318

2011 – Present **Professional Analysis and Consulting, Inc., Lisle, IL**

Principal Scientist and Managing Partner

Performs litigation related investigations involving materials, chemicals, and chemical health & safety. Investigations include materials failure analyses and consequences involving hazardous chemicals, metals, polymers, rubber & plastics, composites, coatings, aerosol systems and propellants, air quality. Program experiences have included product liability, building carbon monoxide/indoor air quality, toxic tort, intellectual property, transport regulations, product warnings and labels, and regulations related to the chemistry and materials enterprise.

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2008 - 2010 **Packer Engineering, Inc., Naperville, IL**

Chief Executive Officer

Strategic leadership for this engineering consulting firm which provides technical solutions to problems in product design and manufacturing processes. Technical investigations focused on critical issues involving polymers, rubbers, plastics, air quality, construction materials, as well as industrial materials and chemistries. Technical investigations included failure analysis, intellectual property, the insurance and legal communities, government, and academic organizations.

2005 - 2008 **Honeywell Aerospace, Des Plaines, IL**

Director, Advanced Materials and Processes

Responsibilities included strategic leadership of the Aerospace Materials and Process Research and Technology teams in Morristown, NJ, and Des Plaines, IL. Aerospace Advanced Materials and Process technology development program included innovations for polymers and plastics, elastomers and rubber, composites, membranes, fuels and fuel systems, cabin/building air management systems, chemical separations, advanced coatings, alloys & catalysts. This also included oversight of Black Belt and Green Belt scientist and engineers for Design for Six Sigma, Design for the Environment, Design for Manufacturing programs, and Lean Six Sigma.

1998 – 2005 **Center for Catalysis and Separations Technologies, Honeywell Aerospace, Engines and Systems, Des Plaines, IL**

Senior Technical Manager

Responsibilities included research and leadership in aerospace environmental control systems, space life support systems, air quality technology, water treatment technologies, fuel cell technologies, chemical demilitarization, chem/bio protection, process chemistry and engineering, polymerization catalyst, catalytic oxidation processes, adsorptive separations, membrane separations.

1996 – 1998 **Chemical Process Technologies, AlliedSignal (Honeywell predecessor company), Research and Technology, Des Plaines, IL**

Skill Center Leader

Responsibilities included research and technical leadership in aerospace environmental control systems, space life support systems, air quality technology, water treatment technologies, fuel cell technologies, chemical demilitarization, chem/bio protection, process chemistry and engineering, polymerization catalyst, catalytic oxidation processes, adsorptive separations, membrane separations.

1995 – 1996 **Modeling and Simulations Technologies, AlliedSignal (Honeywell predecessor company), Research and Technology, Des Plaines, IL**

Skill Center Leader

Responsibilities included research and technical leadership in process and chemical modeling and simulations, statistical process controls, Six Sigma Continuous Process Improvement strategies, molecular modeling and quantum chemistry simulations, advanced process controls and process optimization.

1994 - 1995 **Thermosets and Composites, AlliedSignal, Research and Technology, Des Plaines, IL and Morristown, NJ**

Skill Center Leader

Responsibilities included research and leadership in printed circuit board laminate composites, thermoset resins formulations, rubber composites, engineered plastics composites, advanced polymeric fibers, ballistic materials composites.

1992 - 1996 **AlliedSignal, Research and Technology, Des Plaines, IL and Morristown, NJ**

Total Quality Master Trainer (Master Black Belt)

Coordinator and trainer for the deployment of the R&D Total Quality Program with emphasis on Six Sigma statistical modeling and process/product analysis. This included the training and certification of Six Sigma Green Belts and Black Belts.

1991 - 1994 AlliedSignal, Research and Technology, Des Plaines, IL
Senior Research Chemist
Responsibilities included research and leadership in modeling applications for new product development (thermoplastics, thermosets, coatings, fiber finishes, radiation-cured polymers), CFC (refrigerants and solvents) alternatives, new technology tools development (toxicology estimations, advanced polymer theories, Materials by Design, Polymers by Design, Advanced Fuels Properties), software maintenance and management.

1987 - 1991 AlliedSignal, Research and Technology, Des Plaines, IL
Research Chemist
Responsibilities included research and applications in: molecular modeling and design, new product development, engineering analysis, database development, statistical analysis.

1984 – 1987 G. D. Searle Research and Development; Drug Design Section, Department of Medicinal Chemistry

Programming and Applications Consultant
Programming and applications in Drug Design, DEC VAX systems, Evans and Sutherland PS300, CHEMLAB-II, MOGLI, Gaussian-80, PRDDO, MM2, MACCS, REACCS, VAX program conversions, program parameterization.

1985 - 1987 Intersoft Incorporated, Lake Forest, IL and CHEMLAB Incorporated, Lake Forest, IL.
Programming and Applications Consultant
Programming and applications in DEC VAX systems, Macintosh software development, graphics development, program conversions, parameterization. Program development on the CHEMLAB-II molecular modeling software.

1986 – 1987 University of Illinois, Department of Medicinal Chemistry
Post-Doctoral Research Associate
Research applications in polymer modeling and drug design, Monte Carlo molecular simulations, Quantitative Structure Property Relationships/ Quantitative Structure Activity Relationships (QSPR/QSAR).

1982 – 1986 University of Illinois, Department of Medicinal Chemistry
Research Assistant/Teaching Assistant
Programming and applications in VAX Systems, Evans and Sutherland PS300, IBM Systems, PC Systems, CHEMLAB-II, MM2, database development, and various molecular modeling programs, Organic synthesis and testing of cannabinoid based analgesics. Courses Assisted: Physics, Organic Chemistry, Analytical Chemistry, Biochemistry, Physical Chemistry, and Medicinal Chemistry.

ACADEMIC

Ph.D. in Chemistry, University of Illinois, 1986.

B.S. in Chemistry, B.S. Mathematics, and B.S. Computer Science, Loyola University of Chicago, 1982.

AFFILIATIONS and HONORS

Fellow of the American Chemical Society (ACS) – **Contributions to the Science / Profession:** For corporate leadership as Director of Advanced Materials at Honeywell Aerospace and development of the Koehler-Hopfinger molecular modeling theories for predictions of material properties. **Contributions to the ACS Community:** For service to the ACS Committee on Chemical Safety, the Chicago Section as Chair, Councilor and Director, and leadership in Illinois for Public Policy advocacy.

- Committee on Chemical Safety
- Chemistry and the Law Division
- Division of Chemical Health and Safety
- 2013 Chair of the Chicago Section of the ACS
- 2021 Vice Chair of the Chicago Section of the ACS
- 2022 Chair Science Division of the Chicago Section ACS
- Public Affairs Committee - Chicago Section Chair

American Association for the Advancement of Science (AAAS)

Society for Plastics Engineers (SPE)

ASM International (ASM)

SAE International (SAE)

OTHER ACTIVITIES

Chair (2013) – Chicago Section of the American Chemical Society – The American Chemical Society (ACS) is the world's largest scientific society and the leading professional society for chemistry worldwide. The Chair of the Chicago Section provides leadership to 5000 member local chapter through workshops, lectures, scholarships, academic advisers and public relations.

National Science Advisory Board – Loyola University of Chicago – The National Science Advisory Board is a 12 member panel that serves at the request of the University President and provides advice on the scientific curriculum and development programs of the University. 2003-2007

SECURITY CLEARANCE LEVEL

SECRET as issued by DISCO

PATENTS

1. Koehler, M.G. with Bedwell, W.B., Calcaterra, L.T., Farishta, Q., Green, G.D., Hangey, D.A., and Koljack, M.P., Method to Impart Coffee Stain Resistance to Polyamide Textile Substrates, U.S. Patent # 5,118,551, June 2, 1992.

2. Koehler, M.G. with Calcaterra, L.T., Koljack, M.P., Bedwell, W.B., Farishta, Q., Green, G.D., and Hangey, D.A., Method to Impart Coffee Stain Resistance to Polyamide Fibers. U.S. Patent #5,135,774, August 4, 1992.

3. Koehler, MG., with Calcaterra, L.T., Koljack, M.P., Farishta, Q., Bedwell, W.B., Hangey, D.A., and Green, G.D., Method to Impart Coffee Stain Resistance to Polyamide Textile Substrates, U.S. Patent #5,359,010, October 25, 1994.

PUBLICATIONS

1. Koehler, M.G., with Dunn, W.J., and Wold, S.: Applications of SIMCA Pattern Recognition to Complex Chemical Data. In Proceedings; National Symposium on Recent Advances in Pollutant Monitoring, ed. T. Hauser, pp. 131-139. Research Triangle Park, NC., U.S. EPA., 1984.

2. Koehler, M.G., with Pearlstein, R.A., Malhotra, D., Orchard, B.J., Tripathy, S., Potenzone, R., Mabilia, M., Grigoras, S., Doherty, D., Harr, R., Hopfinger, A.J.: Three Dimensional Structure Modeling and Quantitative Molecular Design Using CHEMLAB-II, in Proceedings of 2nd Cyprus Conference on New Methods in Drug Research, ed. A. Makriyannis, Barcelona, J. Prous Internat., Press, 1985.

3. Koehler, M.G., with Dunn, W.J., and Stalling, D.: Relationship between Molecular Size and Retention Times Using Capillary Gas Chromatography, Anal. Chem., 5: 1835-1838, 1986.

4. Koehler, M.G., with Dunn, W.J., Emery, S.L., Scott, D.R.: Application of Pattern Recognition to Mass Spectral Data of Toxic Organic Compounds in Ambient Air, Chemomet, Intell., Lab. Systems, 1987.

5. Koehler, M.G., with Dunn, W.J., Grigoras, S.: The Role of Solvent Accessible Surface Area in Determining Partition Coefficients. J. Med. Chem., 30: 1987.

6. Koehler, M.G., with Mabilia, M., Perlstein, R.A., Hopfinger, A.J.; Computer-Aided Molecular Modeling of Polymers; III. Enthalpy of Polymerization as a Measure of Stability. J. Macromol. Sci.-Phys., Ed.: B26, 463-506, 1987.

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9. Koehler, M.G., with Hopfinger, A.J., Seydel, J.K.; A Comparison of QSARs Proposed for the Inhibition of Dihydropteroate Synthase by Substituted 4-Aminodiphdnylsulfones. J. Mol. Sturct. (Theochem)., 179, 319-332, 1988.

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11. Koehler, M.G., with Rowberg-Schaefr, K., Hopfinger, A.J.: A Molecular Shape Analysis and QSAR Investigation of Some Triazine - Antifolate Inhibitors of Leishmania Dihydrofolate Reductase. Arch. Biochem and Biophys., 266, 152-161, 1988.

12. Koehler, M.G., with Pearlstein, R.A., Malhotra, D., Orchard, B.J., Tripathy, S.K., Potenzone, R., Grigoras, S., Mabilia, M., Walters, D.E., Doherty, D., Harr, R., Hopfinger, A.J.: Three-dimensional structure modeling and quantitative molecular design using CHEMLAB-II: in New Methods in Drug Research. Vol 2., Alexandros Makriyannis, Ed., J.R. Prous Science Publishers, Barcelona, Spain, 1988.

13. Koehler, M.G., with Hopfinger, A.J.: Molecular Modeling of Polymers. 5. Inclusion of Intermolecular Energetics in Estimating Glass and Crystal Melt Transition Temperatures. Polymer, 30, 116-126, 1989.

14. Koehler, M.G., with Ryther, J.J.: New Graphy Theory Methods for Predicting Fuel Properties, PREPRINTS (Division of Petroleum Chemistry, A.C.S.), 34 (4), 856-857, 1989.

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16. Koehler, M.G., with Hammond, W.B.: Simulation of Structures and Properties of Polyamides, Polymer Preprints, 30 (2), 51-52, 1989.

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18. Koehler, M.G. with Hopfinger, A.J., Estimation of the Phase Behavior of Binary Polymer Mixtures Using TAU Theory, Proceedings: Polymeric Materials: Science and Engineering, American Chemical Society, Washington, D.C., August 1993.

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21. Koehler, M.G., with Hopfinger, A.J., and Rogers, David: Molecular Modeling of Polymers 14, QSPR Analysis of Multicomponent Systems Containing Polymers, Macromolecular Symposia, 98, 1087-1100, 1995.

22. Koehler, M.G. with, Yates, S.F., Tonev, T., and Lupton, F.S.: Photocatalytic Oxidation for Aircraft Cabin and Indoor Pollutant Control, Indoor Air, 15, 157-190, 2005.

23. Koehler, M.G. with Shipley, R. and Hicks, T.: Timely Involvement of Technical Experts, Chicago Lawyer, Vol 37, No 10, Oct. 2014.

24. Koehler, M.G. with Tator, K.: Alkyd Resins, ASM Handbook, Volume 5B-Protective Organic Coatings, 39 – 47, 2015.

25. Koehler, M.G. with McFarland, N. et al. Ames for Space, International Space Station Research Report, Center for the Advancement of Science in Space (CASIS), 2017.

26. Koehler, M.G. Guidelines for Writing a Case Study, ACS Chem. Health Saf. 2020, 27, 3-7.

RECENT PRESENTATIONS

Koehler, M.G.: Investigating Chemistry-Related Incidents: A Structured Approach to Incident Evidence and Analysis. Seminar, University of Wisconsin, 2019.

Koehler, M.G. with Elston, H.: Why it went wrong: Blame-free Investigations of Lab-Scale Incidents. Chemical Health and Safety Workshop, American Chemical Society, Annual Workshop: 2019-2022.

Koehler, M.G. with Shipley, R.J. and Hicks, T.M.: Testing: Techniques and Examples, Making Evidence-Based Decisions, American Society for Quality Seminar, 2019.

Koehler, M.G. Plastics Failure Analysis: Analytical Techniques and Tools, American Chemical Society, 2015.

Koehler, M.G. Chemists in the Courtroom. American Chemical Society, 2014.

Koehler, M.G. Chemistry and the Law: Applications of Science in Litigation. Invited Speaker, Chicago Section of the American Chemical Society, 2010.

Koehler, M.G., et al.: Lasers for Scene Documentation, Defense Research Institute, 2009.

Attachment B

Professional Analysis and Consulting, Inc.

Carey v. The 400 Condominium Association, et al

Project No.: 1923

	Classification	Description
1.	Background Compiled	02/21/2018 “Smoking” Board Meeting Minutes and Unit Owners Forum
2.	Background Compiled	2007 - 2017 Board Mtg Notes on smoking
3.	Background Compiled	ANSI/ASHRAE Standard 62.2-2010; Ventilation and Acceptable Indoor Qir Quality in Low-Rice Residential Buildings
4.	Background Compiled	Apelberg, Benjamin J, et al. “Environmental Monitoring of Secondhand Smoke Exposure.” Tobacco Control, vol. 22, no. 3, 2012, pp. 147–155., doi:10.1136/tobaccocontrol-2011-050301.
5.	Background Compiled	Corridor Ventilation Strategy, 400 East Randolph Street
6.	Background Compiled	Grange, Andrew H., and G. Wayne Sovocool. “Detection of Illicit Drugs on Surfaces Using Direct Analysis in Real Time (DART) Time-of-Flight Mass Spectrometry.” Rapid Communications in Mass Spectrometry, vol. 25, no. 9, 2011, pp. 1271–1281., doi:10.1002/rcm.5009.
7.	Background Compiled	Jacob, Peyton, et al. “Thirdhand Smoke: New Evidence, Challenges, and Future Directions.” *Chemical Research in Toxicology*, vol. 30, no. 1, 2016, pp. 270–294., doi:10.1021/acs.chemrestox.6b00343.
8.	Background Compiled	Jacob, Peyton, et al. “Thirdhand Smoke: New Evidence, Challenges, and Future Directions.” Chemical Research in Toxicology, vol. 30, no. 1, 2016, pp. 270–294., doi:10.1021/acs.chemrestox.6b00343
9.	Background Compiled	NIOSH 2551 – Nicotine https://www.cdc.gov/niosh/docs/2003-154/pdfs/2551.pdf
10.	Background Compiled	NIOSH 911 - METHAMPHETAMINE on Wipes by Liquid Chromatography/Mass Spectrometry https://www.cdc.gov/niosh/docs/2003-154/pdfs/9111.pdf
11.	Background Compiled	Polzin, Gregory M., et al. “Analysis of Volatile Organic Compounds in Mainstream Cigarette Smoke.” Environmental Science & Technology, vol. 41, no. 4, 2007, pp. 1297–1302., doi:10.1021/es060609l.
12.	Background Compiled	Purple Air Data
13.	Background Compiled	Test results from EMSL Analytical, Inc., and FIKE Analytical Technologies, LLC

	Classification	Description
14.	Background Compiled	What you need to know about Thirdhand Smoke, Respiratory Health Association https://resphealth.org/wp-content/uploads/2017/09/Thirdhand-Smoke.pdf
15.	Background from Client	List of dates stayed in Condo (2016, 2017, 2018, and 2019)
16.	Background from Client	Purple Air Production (PA000001-PA000280) (PADATA000001-000016)
17.	Background from Client	Report of James L. Repace, Repace Associates, Inc., dated 02/01/2017
18.	Background from Client	Note from Victor Ovsey and Nicholas Peneff, Public Health & Safety, Inc., dated 03/30/2015
19.	Deposition reviewed and relied on	Deposition of Helen Dress taken 07/22/2021
20.	Deposition reviewed and relied on	Deposition of Phil Pritzker taken 11/20/2021 with exhibits
21.	Deposition reviewed and relied on	Deposition of Rev. Patricia Carey taken 07/19/2021 with exhibits
22.	Deposition reviewed and relied on	Deposition of Richard Fry taken 07/19/2021 with exhibits
23.	Legal	Defendant Helen Dress' Answers and Objections to Plaintiffs' First Set of Interrogatories (4/15/2019)
24.	Legal	Defendant Helen Dress' Answers and Objections to Plaintiffs' Requests for Admission (Verified)(4/20/2021)
25.	Legal	Defendant, Helen Dress', Motion for Summary Judgement (6/17/2022)
26.	Legal	Plaintiff's (Carey) Objections and Responses to Defendant Helen Dress' First Set of Interrogatories
27.	Legal	Plaintiff's (Carey) Supplemental Objections and Responses to Defendant Helen Dress' First Set of Interrogatories (2/3/2021)
28.	Legal	Plaintiff's (Fry) Objections and Responses to Defendant Helen Dress' First Set of Interrogatories
29.	Legal	Plaintiff's (Fry) Supplemental Objections and Responses to Defendant Helen Dress' First Set of Interrogatories (2/3/2021)
30.	Legal	Plaintiffs' Memorandum in Support of Their Motion for Summary Judgement (6/17/2022)
31.	Legal	Plaintiffs' Objections and Responses to Defendant's First Set of Interrogatories (12/11/2020)
32.	Legal	Plaintiffs' Supplemental Objections and Responses to Defendants' First Set of Interrogatories (4/9/2021)
33.	Legal	Second Amended Complaint for Injunctive and Other Relief
34.	Legal	The 400 Condominium Association's Answers to Plaintiffs' First Set of Interrogatories to Defendant (12/11/2020)

	Classification	Description
35.	Legal	The 400 Condominium Association's Answers to Plaintiffs' Interrogatories (4/19/2019)
36.	Legal	The 400 Condominium Association's Motion for Summary Judgement (6/17/2022)
37.	Photographs	M. Koehler inspection photographs

Attachment C

Fike
Analytical Technologies, L.L.C.

Analytical Report

Client: Pofessional Analysis & Cons., Inc.
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

NIOSH 2549 AirSurvey Analysis All results are reported in ng/L

A scan was made for all compounds contained in the attached AirSurvey List of Compounds Quantitative List and Semiquantitative List. All compounds detected are listed below:

Client Sample ID: SC22-1923-001-AR
Laboratory ID: 6257 -1
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 41.79 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments
Total VOCs		820	Total volatile organic compounds calculated based on internal standard ratio; does not include C1, C2, or methanol
C 5		7.0	Pentane ppb 2.3 MW 72 CAS 109-66-0
C 6		0.7	Hexane ppb 0.2 MW 86 CAS 110-54-3
Benzene		0.9	Cyclohexatriene ppb 0.3 MW 78 CAS 71-43-2
C 7		0.6	Heptane ppb 0.1 MW 100 CAS 142-82-5
4-Methyl-2-pentanone		0.8	MIBK; methyl isobutyl ketone ppb 0.2 MW 100 CAS 108-10-1
Toluene		2.2	Methyl benzene ppb 0.6 MW 92 CAS 108-88-3
C 8		0.9	Octane ppb 0.2 MW 114 CAS 111-65-9
Ethylbenzene		0.8	 ppb 0.2 MW 106 CAS 100-41-4
m,p-Xylene		3.7	m,p-Dimethylbenzene; CAS number is for the para isomer ppb 0.8 MW 106 CAS 106-42-3
Bromoform		1.2	Tribromomethane ppb 0.1 MW 253 CAS 75-25-2
C 9		0.6	Nonane ppb 0.1 MW 128 CAS 111-84-2
o-Xylene		1.2	o-Dimethylbenzene ppb 0.3 MW 106 CAS 95-47-6
C10		1.4	Decane ppb 0.2 MW 142 CAS 124-18-5

Client Sample ID: SC22-1923-001-AR
Laboratory ID: 6257 -1
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 41.79 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments
1,2,4-Trimethylbenzene		1.0	1,2,4-TMB ppb 0.2 MW 120 CAS 95-63-6
C11		1.0	Undecane ppb 0.2 MW 156 CAS 1120-21-4
C14		0.5	Tetradecane ppb 0.06 MW 198 CAS 629-59-4
Sulfur dioxide	18	9-36	SO2; Retention and recoveries of this compound are inconsistent using thermal desorption tubes. The identification is accurate, however, use caution in evaluating the reported concentration range. ppb 6.7 MW 64 CAS 7446-09-5
Isobutane	3	1-6	2-Methyl propane ppb 1.2 MW 58 CAS 75-28-5
2-Methylbutane	3	1-6	Isopentane ppb 1.1 MW 72 CAS 78-78-4
Ethanol	21	10-42	Ethyl alcohol ppb 11 MW 46 CAS 64-17-5
Acetone	81	40-170	2-Propanone ppb 33 MW 58 CAS 67-64-1
Isopropanol	330	160-660	Isopropyl alcohol; 2-propanol; detector saturation occurred; actual concentraation is significantly higher than the value reported ppb 130 MW 60 CAS 67-63-0
Acetic acid	8	4-16	Vinegar acid ppb 3.3 MW 60 CAS 64-19-7
Hexamethylcyclotrisiloxane	2	1-4	 ppb 0.3 MW 222 CAS 541-05-9
a-Pinene	3	1-6	2-Pinene ppb 0.5 MW 136 CAS 80-56-8
Eucalyptol	4	2-8	 ppb 0.6 MW 154 CAS 470-82-6

These results have been reviewed and approved by the Technical Director

Randall S. Fike, Ph.D.

Fike Analytical Technologies, L.L.C.
9800 Reese Rd.
Clarkston, MI 48348
248-241-6713

Fike
Analytical Technologies, L.L.C.

SmokeScan Report

Client: Pofessional Analysis & Cons.,
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

Client Sample ID: SC22-1923-001-AR
Laboratory ID: 6257 -1
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 1.79 L

Thank you for choosing

Pofessional Analysis & Cons., Inc.
4951 Indiana Ave., #600
Lisle, IL 60532
331 229-3318

SmokeScan is a very sensitive air test to check for odors commonly referred to as "stale cigarette smoke" or "third hand smoke." It is also able to detect "fresh" cigarette smoke commonly referred to as "first" or "second hand" cigarette smoke. People have a very wide difference in their perception of the odor of residual or stale cigarette smoke.

Fike Analytical Technologies, L.L.C., uses a number of proprietary chemical "marker" patterns to determine the presence of residual or stale cigarette smoke. The quantity and quality of those marker patterns are combined to generate a value for the probability that residual or stale cigarette smoke will be perceived in the area sampled. Any value greater than 20% is a positive indication that tobacco smoke is present. The reporting scale is a continuum from 0% to >100% with 100% being defined as the level nearly all persons will be able to smell the odor. If active smoking is taking place during sampling, the results will be skewed toward the high end.

Probability that residual or stale cigarette smoke will be perceived: 3%

Probability Reported	Interpretation
< 20%	The odor of residual or stale cigarette smoke may be present but is at a level that is imperceptible to most people.
20 - 40%	The odor of residual or stale cigarette smoke is present at levels that may only be perceptible to persons sensitive to the smell.
40 - 60%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to many people.
60 - 80%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to most people.
80 - 100%	The odor of residual or stale cigarette smoke is present at a level that is perceptible to nearly all people.
> 100%	These levels of residual or stale cigarette smoke odors are “off scale” and may be found in places such as homes of active, heavy smokers, in automobiles belonging to active, heavy smokers, in smoke shops, etc. or in the immediate vicinity of where smoking is actively taking place.

Note: Trying to cover up the smell of residual or stale cigarette smoke using odorants is not effective. Reducing the odors can only be accomplished by cleansing the area.

Fike
Analytical Technologies, L.L.C.

Analytical Report

Client: Pofessional Analysis & Cons., Inc.
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

NIOSH 2549 AirSurvey Analysis All results are reported in ng/L

A scan was made for all compounds contained in the attached AirSurvey List of Compounds Quantitative List and Semiquantitative List. All compounds detected are listed below:

Client Sample ID: SC22-1923-002-AR
Laboratory ID: 6257 -2
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 43.26 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments
Total VOCs		820	Total volatile organic compounds calculated based on internal standard ratio; does not include C1, C2, or methanol
C 5		6.7	Pentane ppb 2.2 MW 72 CAS 109-66-0
C 6		0.7	Hexane ppb 0.2 MW 86 CAS 110-54-3
Benzene		1.1	Cyclohexatriene ppb 0.3 MW 78 CAS 71-43-2
C 7		0.5	Heptane ppb 0.1 MW 100 CAS 142-82-5
4-Methyl-2-pentanone		0.9	MIBK; methyl isobutyl ketone ppb 0.2 MW 100 CAS 108-10-1
Toluene		2.4	Methyl benzene ppb 0.6 MW 92 CAS 108-88-3
C 8		0.7	Octane ppb 0.1 MW 114 CAS 111-65-9
Ethylbenzene		0.9	 ppb 0.2 MW 106 CAS 100-41-4
m,p-Xylene		3.9	m,p-Dimethylbenzene; CAS number is for the para isomer ppb 0.9 MW 106 CAS 106-42-3
Bromoform		1.3	Tribromomethane ppb 0.1 MW 253 CAS 75-25-2
C 9		0.6	Nonane ppb 0.1 MW 128 CAS 111-84-2
o-Xylene		1.3	o-Dimethylbenzene ppb 0.3 MW 106 CAS 95-47-6
C10		1.4	Decane ppb 0.2 MW 142 CAS 124-18-5

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Laboratory ID: 6257 -2
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 43.26 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments
1,2,4-Trimethylbenzene		1.0	1,2,4-TMB ppb 0.2 MW 120 CAS 95-63-6
C11		1.0	Undecane ppb 0.2 MW 156 CAS 1120-21-4
C14		0.6	Tetradecane ppb 0.07 MW 198 CAS 629-59-4
Sulfur dioxide	42	21-84	SO2; Retention and recoveries of this compound are inconsistent using thermal desorption tubes. The identification is accurate, however, use caution in evaluating the reported concentration range. ppb 16 MW 64 CAS 7446-09-5
Isobutane	3	1-6	2-Methyl propane ppb 1.3 MW 58 CAS 75-28-5
2-Methylbutane	3	1-6	Isopentane ppb 1.1 MW 72 CAS 78-78-4
Ethanol	18	9-36	Ethyl alcohol ppb 9.2 MW 46 CAS 64-17-5
Acetone	66	33-140	2-Propanone ppb 27 MW 58 CAS 67-64-1
Isopropanol	280	140-560	Isopropyl alcohol; 2-propanol; detector saturation occurred; actual concentraation is significantly higher than the value reported ppb 110 MW 60 CAS 67-63-0
Acetic acid	11	5-22	Vinegar acid ppb 4.5 MW 60 CAS 64-19-7
Hexamethylcyclotrisiloxane	4	2-8	 ppb 0.4 MW 222 CAS 541-05-9
a-Pinene	3	1-6	2-Pinene ppb 0.6 MW 136 CAS 80-56-8
Eucalyptol	4	2-8	 ppb 0.6 MW 154 CAS 470-82-6

These results have been reviewed and approved by the Technical Director

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Fike
Analytical Technologies, L.L.C.

SmokeScan Report

Client: Pofessional Analysis & Cons.,
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

Client Sample ID: SC22-1923-002-AR
Laboratory ID: 6257 -2
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 3.26 L

Thank you for choosing

Pofessional Analysis & Cons., Inc.
4951 Indiana Ave., #600
Lisle, IL 60532
331 229-3318

SmokeScan is a very sensitive air test to check for odors commonly referred to as "stale cigarette smoke" or "third hand smoke." It is also able to detect "fresh" cigarette smoke commonly referred to as "first" or "second hand" cigarette smoke. People have a very wide difference in their perception of the odor of residual or stale cigarette smoke.

Fike Analytical Technologies, L.L.C., uses a number of proprietary chemical "marker" patterns to determine the presence of residual or stale cigarette smoke. The quantity and quality of those marker patterns are combined to generate a value for the probability that residual or stale cigarette smoke will be perceived in the area sampled. Any value greater than 20% is a positive indication that tobacco smoke is present. The reporting scale is a continuum from 0% to >100% with 100% being defined as the level nearly all persons will be able to smell the odor. If active smoking is taking place during sampling, the results will be skewed toward the high end.

Probability that residual or stale cigarette smoke will be perceived: 3%

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< 20%	The odor of residual or stale cigarette smoke may be present but is at a level that is imperceptible to most people.
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60 - 80%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to most people.
80 - 100%	The odor of residual or stale cigarette smoke is present at a level that is perceptible to nearly all people.
> 100%	These levels of residual or stale cigarette smoke odors are “off scale” and may be found in places such as homes of active, heavy smokers, in automobiles belonging to active, heavy smokers, in smoke shops, etc. or in the immediate vicinity of where smoking is actively taking place.

Note: Trying to cover up the smell of residual or stale cigarette smoke using odorants is not effective. Reducing the odors can only be accomplished by cleansing the area.

Fike
Analytical Technologies, L.L.C.

Analytical Report

Client: Pofessional Analysis & Cons., Inc.
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

NIOSH 2549 AirSurvey Analysis All results are reported in ng/L

A scan was made for all compounds contained in the attached AirSurvey List of Compounds Quantitative List and Semiquantitative List. All compounds detected are listed below:

Client Sample ID: SC22-1923-003-AR
Laboratory ID: 6257 -3
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 41.58 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments
Total VOCs		80	Total volatile organic compounds calculated based on internal standard ratio; does not include C1, C2, or methanol
Trichlorofluoromethane		1.1	Freon 11 ppb 0.2 MW 136 CAS 75-69-4
C 5		1.3	Pentane ppb 0.4 MW 72 CAS 109-66-0
Benzene		0.6	Cyclohexatriene ppb 0.2 MW 78 CAS 71-43-2
m,p-Xylene		0.6	m,p-Dimethylbenzene; CAS number is for the para isomer ppb 0.1 MW 106 CAS 106-42-3
Sulfur dioxide	26	13-52	SO2; Retention and recoveries of this compound are inconsistent using thermal desorption tubes. The identification is accurate, however, use caution in evaluating the reported concentration range. ppb 9.7 MW 64 CAS 7446-09-5
Ethanol	3	1-6	Ethyl alcohol ppb 1.5 MW 46 CAS 64-17-5
Acetone	5	2-10	2-Propanone ppb 1.9 MW 58 CAS 67-64-1
Isopropanol	7	3-14	Isopropyl alcohol; 2-propanol ppb 3.0 MW 60 CAS 67-63-0

These results have been reviewed and approved by the Technical Director

Randall S. Fike, Ph.D.

Fike Analytical Technologies, L.L.C.
9800 Reese Rd.
Clarkston, MI 48348
248-241-6713

Client Sample ID: SC22-1923-003-AR
Laboratory ID: 6257 -3
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 41.58 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments

Fike
Analytical Technologies, L.L.C.

SmokeScan Report

Client: Pofessional Analysis & Cons.,
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

Client Sample ID: SC22-1923-003-AR
Laboratory ID: 6257 -3
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 1.58 L

Thank you for choosing

Pofessional Analysis & Cons., Inc.
4951 Indiana Ave., #600
Lisle, IL 60532
331 229-3318

SmokeScan is a very sensitive air test to check for odors commonly referred to as "stale cigarette smoke" or "third hand smoke." It is also able to detect "fresh" cigarette smoke commonly referred to as "first" or "second hand" cigarette smoke. People have a very wide difference in their perception of the odor of residual or stale cigarette smoke.

Fike Analytical Technologies, L.L.C., uses a number of proprietary chemical "marker" patterns to determine the presence of residual or stale cigarette smoke. The quantity and quality of those marker patterns are combined to generate a value for the probability that residual or stale cigarette smoke will be perceived in the area sampled. Any value greater than 20% is a positive indication that tobacco smoke is present. The reporting scale is a continuum from 0% to >100% with 100% being defined as the level nearly all persons will be able to smell the odor. If active smoking is taking place during sampling, the results will be skewed toward the high end.

Probability that residual or stale cigarette smoke will be perceived: 6%

Probability Reported	Interpretation
< 20%	The odor of residual or stale cigarette smoke may be present but is at a level that is imperceptible to most people.
20 - 40%	The odor of residual or stale cigarette smoke is present at levels that may only be perceptible to persons sensitive to the smell.
40 - 60%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to many people.
60 - 80%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to most people.
80 - 100%	The odor of residual or stale cigarette smoke is present at a level that is perceptible to nearly all people.
> 100%	These levels of residual or stale cigarette smoke odors are “off scale” and may be found in places such as homes of active, heavy smokers, in automobiles belonging to active, heavy smokers, in smoke shops, etc. or in the immediate vicinity of where smoking is actively taking place.

Note: Trying to cover up the smell of residual or stale cigarette smoke using odorants is not effective. Reducing the odors can only be accomplished by cleansing the area.

Fike
Analytical Technologies, L.L.C.

Analytical Report

Client: Pofessional Analysis & Cons., Inc.
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

NIOSH 2549 AirSurvey Analysis All results are reported in ng/L

A scan was made for all compounds contained in the attached AirSurvey List of Compounds Quantitative List and Semiquantitative List. All compounds detected are listed below:

Client Sample ID: SC22-1923-003-AR
Laboratory ID: 6257 -4
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 42.84 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments
Total VOCs		890	Total volatile organic compounds calculated based on internal standard ratio; does not include C1, C2, or methanol
Trichlorofluoromethane		1.0	Freon 11 ppb 0.2 MW 136 CAS 75-69-4
C 6		0.7	Hexane ppb 0.2 MW 86 CAS 110-54-3
Benzene		1.1	Cyclohexatriene ppb 0.3 MW 78 CAS 71-43-2
4-Methyl-2-pentanone		0.8	MIBK; methyl isobutyl ketone ppb 0.2 MW 100 CAS 108-10-1
Toluene		2.5	Methyl benzene ppb 0.7 MW 92 CAS 108-88-3
C 8		0.7	Octane ppb 0.1 MW 114 CAS 111-65-9
Ethylbenzene		0.8	 ppb 0.2 MW 106 CAS 100-41-4
m,p-Xylene		3.8	m,p-Dimethylbenzene; CAS number is for the para isomer ppb 0.9 MW 106 CAS 106-42-3
Bromoform		1.5	Tribromomethane ppb 0.1 MW 253 CAS 75-25-2
C 9		0.6	Nonane ppb 0.1 MW 128 CAS 111-84-2
o-Xylene		1.3	o-Dimethylbenzene ppb 0.3 MW 106 CAS 95-47-6
C10		1.4	Decane ppb 0.2 MW 142 CAS 124-18-5
1,2,4-Trimethylbenzene		0.9	1,2,4-TMB ppb 0.2 MW 120 CAS 95-63-6

Client Sample ID: SC22-1923-003-AR
Laboratory ID: 6257 -4
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 42.84 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments
p-Isopropyltoluene		0.7	4-Methyl isopropyl benzene ppb 0.1 MW 134 CAS 99-87-6
C11		1.0	Undecane ppb 0.2 MW 156 CAS 1120-21-4
C14		0.5	Tetradecane ppb 0.06 MW 198 CAS 629-59-4
Sulfur dioxide	37	18-74	SO2; Retention and recoveries of this compound are inconsistent using thermal desorption tubes. The identification is accurate, however, use caution in evaluating the reported concentration range. ppb 14 MW 64 CAS 7446-09-5
Isobutane	7	3-14	2-Methyl propane ppb 2.9 MW 58 CAS 75-28-5
2-Methylbutane	3	1-6	Isopentane ppb 1.1 MW 72 CAS 78-78-4
Ethanol	37	18-74	Ethyl alcohol ppb 19 MW 46 CAS 64-17-5
Acetone	76	38-160	2-Propanone ppb 31 MW 58 CAS 67-64-1
Isopropanol	300	150-600.	Isopropyl alcohol; 2-propanol; detector saturation occurred; actual concentraation is significantly higher than the value reported ppb 120 MW 60 CAS 67-63-0
Acetic acid	14	7-28	Vinegar acid ppb 5.8 MW 60 CAS 64-19-7
Hexamethylcyclotrisiloxane	3	1-6	 ppb 0.3 MW 222 CAS 541-05-9
a-Pinene	3	1-6	2-Pinene ppb 0.6 MW 136 CAS 80-56-8
Eucalyptol	3	1-6	 ppb 0.5 MW 154 CAS 470-82-6
Acetophenone	4	2-8	Phenyl methyl ketone ppb 0.9 MW 120 CAS 98-86-2

These results have been reviewed and approved by the Technical Director

Randall S. Fike, Ph.D.

Fike Analytical Technologies, L.L.C.
9800 Reese Rd.
Clarkston, MI 48348
248-241-6713

Client Sample ID: SC22-1923-003-AR
Laboratory ID: 6257 -4
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 42.84 L

Reporting Limits	
Quantitative List:	0.5 ng/L
Semiquantitative List:	2 ng/L

Compound	Calculated Result	Actual Result	Comments

Fike
Analytical Technologies, L.L.C.

SmokeScan Report

Client: Pofessional Analysis & Cons.,
Project: 1923
Location: 400 E Randolph, Chicago
Sampled By: MGKoehler

C.O.C. No.: 6257
Order Date: 03/23/2022
Report Date: 04/13/2022

Client Sample ID: SC22-1923-003-AR
Laboratory ID: 6257 -4
Date Sampled: 03/21/2022
Date Analyzed: 03/24 Volume: 2.84 L

Thank you for choosing

Pofessional Analysis & Cons., Inc.
4951 Indiana Ave., #600
Lisle, IL 60532
331 229-3318

SmokeScan is a very sensitive air test to check for odors commonly referred to as "stale cigarette smoke" or "third hand smoke." It is also able to detect "fresh" cigarette smoke commonly referred to as "first" or "second hand" cigarette smoke. People have a very wide difference in their perception of the odor of residual or stale cigarette smoke.

Fike Analytical Technologies, L.L.C., uses a number of proprietary chemical "marker" patterns to determine the presence of residual or stale cigarette smoke. The quantity and quality of those marker patterns are combined to generate a value for the probability that residual or stale cigarette smoke will be perceived in the area sampled. Any value greater than 20% is a positive indication that tobacco smoke is present. The reporting scale is a continuum from 0% to >100% with 100% being defined as the level nearly all persons will be able to smell the odor. If active smoking is taking place during sampling, the results will be skewed toward the high end.

Probability that residual or stale cigarette smoke will be perceived: 7%

Probability Reported	Interpretation
< 20%	The odor of residual or stale cigarette smoke may be present but is at a level that is imperceptible to most people.
20 - 40%	The odor of residual or stale cigarette smoke is present at levels that may only be perceptible to persons sensitive to the smell.
40 - 60%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to many people.
60 - 80%	The odor of residual or stale cigarette smoke is present at a level that may be perceptible to most people.
80 - 100%	The odor of residual or stale cigarette smoke is present at a level that is perceptible to nearly all people.
> 100%	These levels of residual or stale cigarette smoke odors are “off scale” and may be found in places such as homes of active, heavy smokers, in automobiles belonging to active, heavy smokers, in smoke shops, etc. or in the immediate vicinity of where smoking is actively taking place.

Note: Trying to cover up the smell of residual or stale cigarette smoke using odorants is not effective. Reducing the odors can only be accomplished by cleansing the area.

EMSL Analytical, Inc. 200 Route 130 North, Cinnaminson, NJ 08077

Order ID: 282201067

Attn:	Professional Analysis & Consulting, Inc. Amazon Misc Orders 4951 Indiana Avenue, Suite 600 Lisle, IL 60532	Customer ID: Customer PO: Date Received:	MISC-AMZ 1923 03/23/22
Project:	**1923 – Carey v. 400 Condo Assoc. – 400 E. Randolph, Chicago, IL**	Report Date: Date Analyzed:	03/25/22 03/24/22

Wipe analysis for Nicotine residue by GC/MS using modified NIOSH 2551

Sample ID	Identification	Area(cm^2)	Reporting Limit (µg/wipe)	Sample Amount (µg/wipe)
282201067-0001	SC22-1923-005-SR	-	5.0	<5.0
282201067-0002	SC22-1923-006-SR	-	5.0	<5.0
282201067-0003	SC22-1923-007-SR	-	5.0	<5.0
282201067-0004	SC22-1923-008-SR	-	5.0	<5.0
282201067-0005	SC22-1923-009-SR	-	5.0	<5.0
282201067-0006	SC22-1923-010-SR	-	5.0	<5.0
282201067-0007	SC22-1923-011-SR	-	5.0	<5.0

**EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.*

BJ/NK
Analyst

Scott VanEtten CIH- Lab Manager
Or other approved signatory

EMSL Analytical, Inc. 200 Route 130 North, Cinnaminson, NJ 08077

Order ID: 282201105

Attn:	Professional Analysis & Consulting, Inc. Amazon Misc Orders 4951 Indiana Avenue, Suite 600 Lisle, IL 60532	Customer ID: Customer PO: Date Received:	MISC-AMZ 03/25/22
Project:	**1923 – Carey v. 400 Condo Assoc. – 400 E. Randolph, Chicago, IL**		
Report Date:	03/25/22	Date Analyzed:	03/25/22

Wipe analysis for THC residue by HPLC/MS using modified NIOSH 9111

Sample ID	Customer ID	Area (cm^2)	Reporting Limit (µg/wipe)	Sample Amount (µg/wipe)
282201105-0001	SC22-1923-005-SR	-	0.10	<0.10
282201105-0002	SC22-1923-006-SR	-	0.10	<0.10
282201105-0003	SC22-1923-007-SR	-	0.10	<0.10
282201105-0004	SC22-1923-008-SR	-	0.10	<0.10
282201105-0005	SC22-1923-009-SR	-	0.10	<0.10
282201105-0006	SC22-1923-010-SR	-	0.10	**0.13**
282201105-0007	SC22-1923-011-SR	-	0.10	<0.10
Desorption Blank	-	-	0.10	<0.10

** EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.*

Notes:
1. Samples were received in acceptable condition unless otherwise noted.
2. These results relate only to the samples tested.
3. A discernable field blank was submitted with these samples if listed.
4. Samples are not blank subtracted.

BJ/NK
Analyst

Scott VanEtten CIH- Lab Manager
Or other approved signatory