

Letter Health Consultation

Data Evaluation

RESIDENTIAL INDOOR AIR CONCERNS

CANAL WINCHESTER, FRANKLIN COUNTY, OHIO

**Prepared by the
Ohio Department of Health**

JULY 29, 2010

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from 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 the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

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OHIO DEPARTMENT OF HEALTH

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Ted Strickland/Governor

Alvin D. Jackson, M.D./Director of Health

July 8, 2010

Sharlene Brengman
355 Mohican Court
Canal Winchester, OH 43110

Dear Mrs. Brengman:

This letter is our evaluation of samples analyzed for volatile organic compounds (VOCs) in your home in Canal Winchester (Franklin County), Ohio. You had expressed a concern about the presence of toluene in your home. The Ohio Department of Health (ODH) and ATSDR want you to have the best information possible to safeguard your health. I reviewed the following information that you provided:

1. Lab results from Advanced Analytics Laboratories, Inc. of three air samples taken in February 2010, one sample of duct work debris taken in March 2010, and two soil samples taken in April 2010,
2. Lab results from EMSL Analytical, Inc of one air sample for VOCs taken in June 2010.

I hope that our conclusions will put your mind at ease regarding chemicals detected in your home.

Background and Statement of Issues

On June 10, 2010 and on July 1, 2010, you contacted ODH's Health Assessment Section (HAS) about your health concerns regarding toluene. You indicated that you were experiencing odors in your home and moved to a motel in February 2010. You are reluctant to return to your home due to the health effects you experience when inside your house. You had previously contacted the Franklin County Health Department and the Ohio EPA about the air quality in your home located in Canal Winchester, a village of 4,478 people (Census 2000). You have hired two independent environmental consultants to test your home for contaminants in air.

Discussion

Exposure Evaluation

The first set of air samples, collected in February 2010 and analyzed by Advanced Analytics Laboratories, Inc., did not show the presence of toluene or any of the other targeted chemicals. The results were reported as "ND" - Not Detected at or above the laboratory's reporting limit. This laboratory's ability to detect and report these chemicals in air was listed as 140 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), which, for toluene, is equal to 37 parts per billion (ppb) toluene in air.

This means if toluene were present below 37 ppb, this particular test would not be able to reliably measure it. Toluene and other VOCs were not detected in the two soil samples (HVAC intake area and north side). In addition, toluene and other VOCs were not detected in the debris inside the duct work of your home.

The air sample analyzed by EMSL on June 24, 2010, appeared to be more sensitive than the first analysis, as indicated by the lab's reporting limit of 0.5 ppb for most chemicals. The following chemicals were detected:

<i>Chemical</i>	<i>Result (ppb)</i>	<i>Comparison Value (ppb)</i>	<i>Type</i>
Freon 12	13	42	EPA RSL
Chloromethane	0.62	50	ATSDR Chronic MRL
Ethanol	46	1,000,000	ACGIH TLV
Isopropyl alcohol	1.3	3,000	EPA RSL
Acetone	14	13,000	ATSDR Chronic MRL
Methylene chloride	24	300	ATSDR Chronic MRL
n-Hexane	3.6	600	ATSDR Chronic MRL
2-Butanone (MEK)	1.5	1,800	EPA RSL
Ethyl acetate	0.58	400,000	ACGIH TLV
n-Heptane	0.79	400,000	ACGIH TLV
Benzene	1.8	3	ATSDR Chronic MRL
Toluene	4.4	80	ATSDR Chronic MRL
Ethylbenzene	0.56	300	ATSDR Chronic MRL
Xylene (para, meta)	1.8	50	ATSDR Chronic MRL
Xylene (ortho)	0.64	50	ATSDR Chronic MRL

ppb – parts per billion

MRL – Minimal Risk Level (ATSDR)

RSL – Regional Screening Level (U.S. EPA)

TLV – Threshold Limit Value [ACGIH (American Conference of Governmental Industrial Hygienists)]

Public Health Implications

Volatile organic compounds (VOCs) are a large group of carbon-based (organic) chemicals that easily evaporate into the air at room temperature. Toluene is one of the VOCs that vaporize and become a gas at normal room temperature. The VOCs detected in your home are below levels of health concern. The table above lists the levels of VOCs detected in your home versus health-based comparison values, such as ATSDR's minimal risk levels (MRLs). MRLs are estimates of daily human exposure to a hazardous substance that are not expected to cause harmful (adverse) health effects (excluding cancer) over a specified period of time. For example, ATSDR established a MRL of 80 ppb for toluene, based on protection from effects associated with long-term (chronic) exposure to toluene in air.

The chemicals detected in your home are commonly found in indoor environments at low background levels. Toluene is a common indoor contaminant, averaging 8 ppb in the indoor air

(indoor air concentrations are often several times higher than outside air). This is likely due to the release of toluene from common household products (paints, paint thinners, adhesives, and nail polish in which it is used as a solvent) and from cigarette smoke (ATSDR 2000). The toluene level in your home was below the average background level for toluene in indoor air. It is below ATSDR's MRL of 80 ppb and below the odor threshold of 8,000 ppb.

Large amounts of toluene enter the environment each year, almost entirely as direct releases to the atmosphere. The largest source of toluene release is during the production, transport, and use of gasoline, which contains about 5% to 7% toluene by weight. Significant quantities are also released in association with the production, use, and disposal of industrial and consumer products that contain toluene (ATSDR 2000a).

TS Trim, a facility located in Canal Winchester that produces automotive interior trim and other motor vehicle parts and accessories, releases toluene into the air - 29,284 pounds were reported released from stack air in 2008 (EPA TRI). Toluene emissions have increased significantly in recent years compared to years past, where approximately 6,500 pounds were released per year on average between 1989 and 2006.

The Ohio EPA has predicted the worst case concentration for toluene, based on air modeling for toluene and a maximum hourly emission rate of 2.24 pounds per hour released by TS Trim Industries, Inc. The 1-hour maximum ground-level concentration for this worst case scenario was determined to be 14.09 $\mu\text{g}/\text{m}^3$ (equivalent to 3.7 ppb) of toluene in air (Ohio EPA 2009). This concentration of toluene in ambient air at ground level is slightly below the concentration found in your home and is below health-based guideline values. Therefore, high levels of toluene are not expected to be present in the area around your home, especially since it is located some distance away - about $\frac{3}{4}$ to 1 mile from TS Trim Industries, Inc.

Methylene chloride was detected at 24 ppb in the indoor air. Background levels in air are usually at less than 1 ppb. Methylene chloride has been found in some urban air and at some hazardous waste sites at average concentrations of 11 ppb of air. Contact with consumer products such as paint strippers or aerosol cans that contain methylene chloride is another frequent source of exposure (ATSDR 2000b). Although the concentration of methylene chloride was higher than background, it is below ATSDR's MRL of 300 ppb for long-term (chronic) exposure to this compound. Methylene chloride is a common laboratory contaminant detected in the analysis for volatile organic compounds. A laboratory blank is typically analyzed along with the sample for quality control/quality assurance purposes; however, I do not know if there was contamination in the lab blank, which would indicate that methylene chloride was indeed a laboratory artifact.

Conclusions

The results of air sampling show very low levels or no detections of volatile organic compounds (VOCs) in the indoor air. The Health Assessment Section concludes that breathing low levels of VOCs in your home is not expected to harm your health. The levels measured in the air in your home were lower than levels of health concern and/or were similar to concentrations commonly found in the indoor air.

Recommendations

Your home would be considered safe to occupy in regard to volatile organic compounds and we can suggest no further action at this time. If you have any other indoor air quality issues in the future, you may want to consider hiring an independent and qualified HVAC specialist to check the ventilation system in your home.

The Health Assessment Section of ODH will be glad to evaluate any additional environmental sampling data when it becomes available.

Sincerely,

A handwritten signature in dark ink that reads "John Kollman". The signature is written in a cursive style with a prominent initial "J".

John Kollman, MS, CIH, RS
Ohio Department of Health

cc: Kelly Toth, Ohio EPA, DAPC
Paul Wenning, Franklin County Board of Health

References

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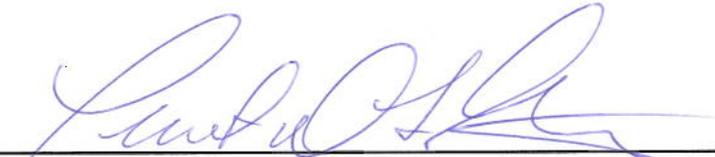
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Certification

The Residential Indoor Air Concerns Letter Health Consultation was prepared by the Ohio Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun. Editorial review was completed by the Cooperative Agreement Partner.



Technical Project Officer, CAT, CAPEB, DHAC, ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.



Team Lead, Cooperative Agreement Team, CAPEB, DHAC, ATSDR