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## Volatile Organic Compound (VOC) Data Review Report

**April 16, 2019**

### Prepared For:

Medford School District  
RE: Griffin Creek School  
2430 Griffin Creek Rd.  
Medford, OR 97501

**Project ID: 20190415**

### Data Reviewed By:

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***Certified Indoor Environmentalist***

*(Board-Awarded by the American Council for Accredited Certification)*

*(Accredited by the Council of Engineering and Scientific specialty Boards)*



### Laboratory Data Analyzed By:

Advanced Chemical Sensors  
Boca Raton, FL



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## **Review of Laboratory Qualifications and Methods**

American Chemical Sensors (ACS) is an American Industrial Hygiene Association (AIHA) accredited laboratory. In addition to performing the sample analyses, ACS produced the sampling media that was used to collect the samples. The methods of analysis used for the full scan VOC badge analysis were the following: OSHA Methods 7, 12, 37, 84, 94 and NIOSH methods 89, 1003, 1550. Method for formaldehyde analysis was NIOSH Method 2016. ACS participates in the AIHA PAT (Proficiency Analysis Testing) program. For more information about ACS's accreditations, please visit [www.aiha.org](http://www.aiha.org).

## **Federal Guidelines and Regulations for VOCs in Indoor Environments**

The purpose of this data review is to assess whether the sample results from sampling performed at the **Griffin Creek School** project exceed federal guidelines. The federal guidelines used to assess the sample results are the National Institute for Occupational Safety and Health (NIOSH) RELs (recommended exposure limits). NIOSH is part of the CDC and as such, uses current scientific research and medical studies to inform its recommendations regarding human exposure to toxic substances. Although there is no federal guideline or recommendation regarding TVOC levels (Total Volatile Organic Compound levels), ASHRAE (American Society for Heating Refrigeration and Air Conditioning Engineers) recommends a level of less than 1.0 mg per cubic meter of air.

**Table 1. VOC sample results for individual compounds (in parts per million)**

<b>Sample Location</b>	<b>Identified Contaminant</b>	<b>Lab Result (ppm)</b>	<b>NIOSH REL (ppm)</b>
<b>Location</b>	Formaldehyde	0.003	0.016
	Ethyl alcohol	0.051**	120
	Isopropyl alcohol	0.005**	400
	2-Methylpentane	0.003**	100

**Table 2. TVOC results (in milligrams per cubic meter of air)**

<b>Sample Location</b>	<b>TVOC lab result (mg/ m<sup>3</sup>)</b>	<b>ASHRAE recommended limit (mg/ m<sup>3</sup>)</b>
<b>Classroom</b>	0.119**	1.0

*\*Converted from PPB and rounded*

*\*\*Converted from micrograms per cubic meter*

## Discussion and Summary

1. The formaldehyde level detected in the classroom was **0.003 ppm**. This level is **approximately 5 times lower** than the NIOSH Recommended Exposure Limit of 0.016 ppm.
2. The following compounds were detected at extremely low levels that were thousands of times lower than the NIOSH RELs for those compounds: Ethyl Alcohol, Isopropyl Alcohol, and 2-Methylpentane
3. The TVOC level detected was **0.119 mg/m<sup>3</sup>**. This level is approximately **eight times lower** than the ASHRAE recommended limit of 1.0 mg/m<sup>3</sup>.

## Conclusion

The sample results from the samples collected in the classroom at Griffin Creek School indicate that at the time of sampling, the level of formaldehyde detected was **lower** than the NIOSH REL. The levels of other VOCs detected **did not** exceed federal guidelines. TVOC levels can be thought of as a way to assess the total load of VOCs in the air at the time of sampling. The level of TVOCs in the air at the time of sampling **did not** exceed the level recommended by ASHRAE.

## References

1. NIOSH POCKET GUIDE TO CHEMICAL HAZARDS, Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, September 2007, DHHS (NIOSH) Publication No. 2005-149
2. ORGANIC INDOOR AIR POLLUTANTS, Published Online: 15 Dec 2007, Editor(s): Dr. Tunga Salthammer, Print ISBN: 9783527296224 Online ISBN: 9783527613663 DOI: 10.1002/9783527613663 Copyright © 1999 WILEY-VCH Verlag GmbH Chapter 22: The TVOC Concept (p 305-318) Lars Mølhave