

# Project Report

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## Comparison of 2016 and 2018 Volatile Organic Compound Measurements Upwind and Downwind of Alpine Cabinet Company, Timnath, CO

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Whole air sampling was conducted using stainless steel canisters to evaluate air quality impacts of VOC emissions from the Alpine Cabinet Company in Timnath, CO. CSU personnel collected canisters on several days in March and April 2016 and Timnath staff collected canisters during a period of five days (10/29 to 11/02) in 2018. Each day canisters were collected upwind and downwind of the Alpine Cabinet Company. Previous reports have summarized the measurement locations, sampling and analysis methodologies, and measured concentrations. Here we compare the concentration enhancements observed during the two studies.

Concentration enhancements of all sampled VOCs were modest during both study years, relative to established health-protective criteria levels for short-term (acute) and long-term (chronic) exposures. Concentration enhancements observed in the 2018 samples were less than observed in 2016 for acetone, isopropanol, methylethylketone (MEK), ethylbenzene, xylenes, and toluene. A very small maximum downwind increase was observed in benzene in 2018. This value is small enough that it may lie within the uncertainty of the measurements and no enhancement in downwind benzene concentrations was observed in 2 of the 5 2018 measurements periods. No downwind benzene concentration increase was reported in the 2016 samples.

Because the increase in downwind concentration of an emitted VOC depends on sampling location, distance from the source, and meteorological conditions, it is somewhat challenging to directly compare individual concentrations measured at different times and locations. It is, however, encouraging that downwind concentrations of several VOCs with clearly observed enhancements in the 2016 measurements are not so strongly enhanced in the 2018 measurements.

**Table 1:** Concentration enhancements of select VOCs measured downwind of the Alpine Cabinet Company along with health-protective criteria levels and typical concentration levels of these VOCs observed in other published studies.

	<b>2016 Timnath Downwind Concentration Enhancement Range (ppbv)</b>	<b>2018 Timnath Downwind Concentration Enhancement Range (ppbv)</b>	<b>Difference in maximum VOC concentrations enhancement (2018-2016, ppbv)</b>	<b>Health-protective criteria values</b>	<b>Typical Published Conc. (ppbv)</b>
<b>Acetone</b>	24.4-98.7	0-1.06	-97.6	26000 acute <sup>7</sup> 13000 chronic <sup>7</sup>	1-17 (forested-urban) <sup>1,2</sup>
<b>Isopropanol</b>	10.7-89.3	No enhancement	-89.3	1312 acute <sup>8</sup> 2870 chronic <sup>8</sup>	7-44 Urban <sup>3</sup>
<b>MEK</b>	0.04-0.86	0-0.20	-0.66	20000 acute <sup>7</sup> 1695 chronic <sup>7</sup>	0.1-2900 <sup>4,5</sup>
<b>Ethylbenzene</b>	0.65-6.96	0-0.02	-6.94	20000 acute <sup>7</sup> 230 chronic <sup>7</sup>	1-20 <sup>4</sup>
<b>Xylenes</b>	3.86-40.3	0-0.13	-40.17	1700 acute <sup>7</sup> 23 chronic <sup>7</sup>	0.1-1000 <sup>4,6</sup>
<b>Toluene</b>	0.02-2.71	0-2.11	-0.60	2000 acute <sup>7</sup> 1327 chronic <sup>7</sup>	0.4-1600 <sup>4,6</sup>
<b>Benzene</b>	No enhancement	0-0.05	0.05	180 acute <sup>7</sup> 9.39 chronic <sup>7</sup>	0.4-4.5 <sup>9</sup>

## References:

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