

Update on Detection of n-Dodecyl Mercaptan and n-Octyl Mercaptan Using Battelle's AirAlert

Greif has identified n-dodecyl mercaptan (also known as 1-decanethiol) as one of a group of chemicals of concern with respect to potential worker exposure. This determination was made on the basis of the large volume of this chemical handled at Greif's facilities and the low airborne exposure limit of 0.1 parts per million (ppm) by volume, the ACGIH Threshold Limit Value (TLV), which is an 8-hr time-weighted average (TWA).

In a recent applications note, "Detection of n-Dodecyl Mercaptan Using Battelle's AirAlert," October 2014, a method was described and analytical results were given for this compound.



Figure 1. Battelle's AirAlert—an automated air monitoring system.

In addition, Greif has identified n-octyl mercaptan [$\text{CH}_3(\text{CH}_2)_7\text{SH}$], also known as 1-octanethiol, as another chemical handled in high volume with "sensitive exposure limits." Note that there is no published TLV for this compound, but it has a NIOSH ceiling recommended exposure limit (REL-C) of 0.5 ppm.

The purpose of this note is to present a brief summary of preliminary data generated for n-octyl mercaptan using the same method as previously developed for n-dodecyl mercaptan. The

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chromatogram in Figure 2 illustrates the detection of 30 ng of n-octyl mercaptan and 60 ng of n-dodecyl mercaptan, which correspond to 0.011 and 0.016 ppm, respectively, for the sampling conditions used (0.45 L/min for 1 min). Figure 3 shows the found (reported) concentration versus target (challenge) concentration for low levels of n-octyl mercaptan. Based on these preliminary results and those presented in the applications note referenced previously, the AirAlert is capable of the simultaneous detection of both of the mercaptans of interest at very low concentrations.

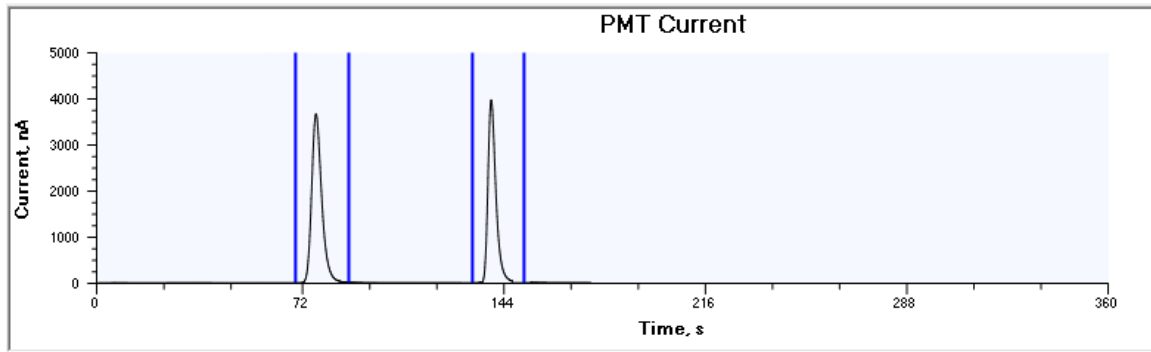


Figure 2. Chromatogram illustrating the detection of n-octyl mercaptan (first peak) and n-dodecyl mercaptan (second peak).

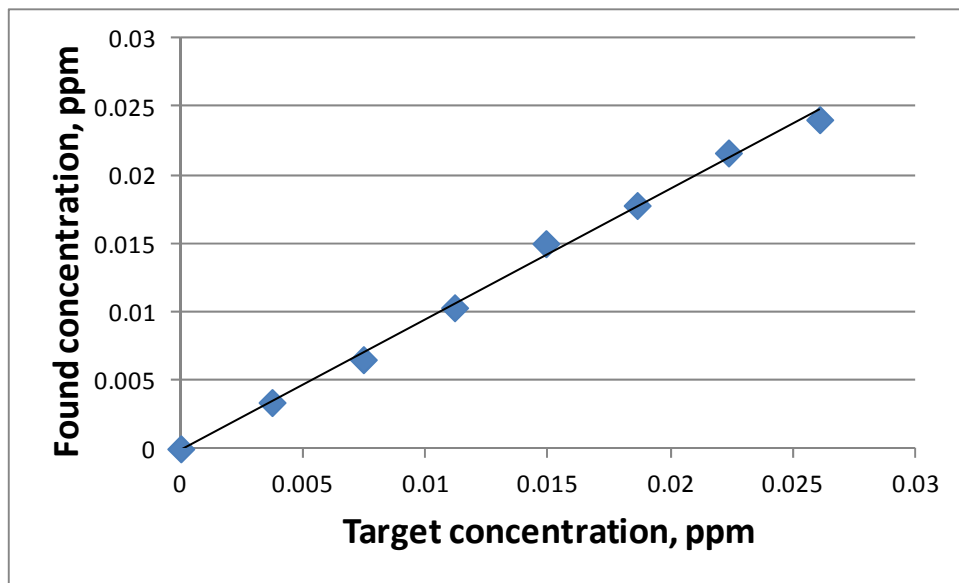


Figure 3. Found (reported) versus target (challenge) concentration for n-octyl mercaptan.