

Sensing Formaldehyde with TVOC

SUMMARY

- Formaldehyde is a very volatile organic compound (VOC). Formaldehyde is not more prevalent nor more dangerous than the other VOC's found in occupied spaces.
- Senva's Totalsense is sensitive to Formaldehyde from 50-1000 PPB; and is capable of detecting Formaldehyde limits set by OSHA, NIOSH, CAL DIR, and WHO.
- TVOC (Total volatile Organic Compound) technology accounts for all common IAQ toxins and is a **more comprehensive solution** than sensing any single toxin, such as Formaldehyde.

SENAVA'S TVOC SOLUTION

Senva's TotalSense with TVOC responds to Formaldehyde from 50-1000 PPB. In an otherwise empty room, it can sense very low levels of Formaldehyde. However, because TVOC is sensitive to so many other compounds, in a real world application it would be unable to distinguish between Formaldehyde and many other less volatile gases at lower PPB levels.

In a typical installation, minimum TVOC levels hold around 300 PPB of Ethanol equivalent (Ethanol is a standard benchmark measurement for a TVOC sensor), which would produce an equivalent response as the sensor exposed to about 60 PPB of Formaldehyde. Consider this 60 PPB "baseline TVOC" as the lower detection limit for Formaldehyde.

Figure 1 shows the baseline detection limit of Formaldehyde as well as the exposure limits set by World Health Organization (WHO), National Institute for Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), and California's Department of Industrial Relations (CAL DIR).

Each organization's established concentration limit can be detected by Senva's TVOC solution.

WHY SENSE FORMALDEHYDE?

As the world's post-COVID spotlight shines on indoor air quality (IAQ), Formaldehyde (CH₂O) has made its way into a lot of specifications and products. But, is it worth sensing?

Yes. Formaldehyde is a very toxic and flammable gas and is categorized as a very volatile organic compound (VOC). Its volatility and appearance in common products containing fiberboard, resins, plywood paneling, particle board, paper products, and fiberglass products makes it a concern to occupants and a logical contributor to overall air quality.

So, why sense Formaldehyde? Because it's commonplace and dangerous in low concentrations.

TVOC sensor's response to Formaldehyde

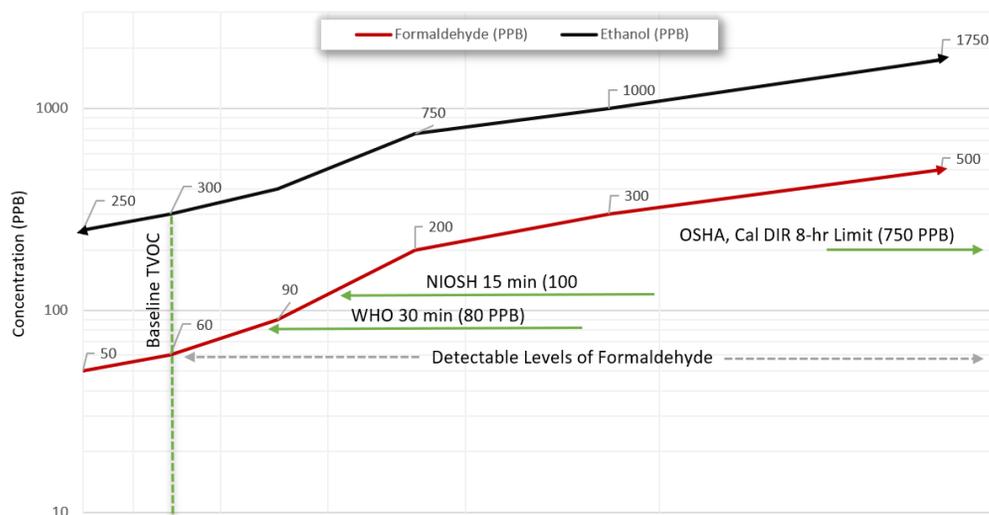


Figure 1: Senva's TVOC sensor responds to Formaldehyde levels from 50-1000ppb. It is sensitive enough to detect Formaldehyde limits set by a variety of occupational safety agencies as well as the World Health Organization (WHO).

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OTHER DANGEROUS INDOOR GASES

Formaldehyde is well-known for its preservative and antiseptic properties, but within the category of VVOC's there are a myriad of toxic gases that are prevalent in indoor environments. Some notably dangerous VVOC's are:

- Xylene, found in glues and inks;
- Benzene, found in paint, wood finishes, furniture;
- Toluene, also found in paints, cleaners, and inks;
- Acetone, Butanal, Carbon Disulfide, and Benzene can be found in coated wooden furniture;
- Ethylene Glycol can be found in clothes, upholstery, carpet, pillows;

and the list of dangerous yet prevalent VVOC's goes on...

Don't sense just one. Formaldehyde is not more prevalent nor more dangerous than the other VVOC's mentioned. So, don't sense just Formaldehyde. A TVOC sensor is sensitive to all VOC's including Acetone, Ammonia, Ethanol, Ethylene, Formaldehyde, Isobutylene, Methane, Octane, Toulene, Xylene, and thousands of others.

When the goal is to measure indoor air quality, all dangerous gases should be accounted for and, thus, a TVOC sensor is a more sensible choice.

SENAVA'S VVOC SOLUTION

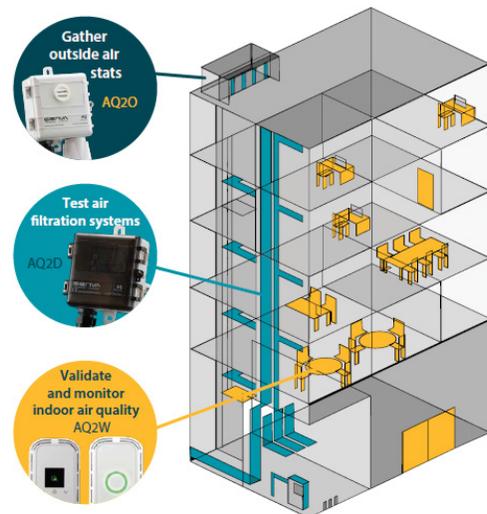
While a Formaldehyde-specific sensor can detect lower concentrations of Formaldehyde, it ignores numerous other very volatile and commonplace gases. When measuring IAQ, a TVOC sensor offers a more comprehensive detection of dangerous compounds than a Formaldehyde-specific sensor. A TVOC sensor ensures that all toxins and even pathogens are accounted for when assessing indoor air quality.

SENAVA'S IAQ SOLUTIONS



See Senva's Air Quality Products

Choose up to 8 sensors for a complete IAQ picture: TVOC including Formaldehyde, Particulate Matter, Carbon Dioxide (CO2), relative humidity, temperature, barometric pressure, and PIR motion detection.



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