

Ethanol

Ethanol (CAS 64-17-5), acetone, and isopropanol (the latter two recently discussed in “Getting to Know Your VOCs”) are the three common solvents found in most indoor air environments. They all share the traits of low toxicity, good solvent characteristics, and miscibility with water, which is why they are all popular choices as solvents. Unlike the other two, ethanol is also consumable in moderate amounts and is sometimes referred to as just “alcohol”.

The NIOSH and OSHA exposure limits for ethanol are both TWA 1000 ppm (1900 mg/m³, equivalent to 1,900,000 ng/L) (www.cdc.gov/niosh/npg/npgd0262.html). The acronym TWA refers to “time-weighted average”, meaning that an individual can be exposed to a cumulative amount of the chemical over a time period, which for NIOSH and OSHA, is eight hours. Combined with its low toxic effects and excellent solvent properties, ethanol is present in thousands of consumer products, many of which are listed in the NIH Household Products database (<http://householdproducts.nlm.nih.gov/>).

Personal care and home maintenance products make up the bulk of consumer products where ethanol is present. Examples of personal care items include antiseptic wipes, hand sanitizers, body lotions, perfumes, shaving products, hair care products, and some pharmaceuticals. Many of these products contain fragrance VOCs as well. Therefore, to minimize the contribution of VOCs from personal care products to the overall indoor air quality VOC load, it is recommended that these products be stored in closed airtight containers.

Home maintenance products, such as soaps, detergents, dish washing liquids, reed diffusers, air fresheners, and floor cleaners may also contain ethanol. In addition, automotive, outdoor pest, and pet care products are listed in the household product database as products which may contain ethanol. Most gasoline contains ethanol; however, a leaky gas can located in the garage will typically yield volatiles representative of the aliphatic and aromatic hydrocarbons present in the gasoline, due to their much higher volatility in the gasoline mixture. Therefore, gasoline should not contribute to the ethanol levels present in indoor air. Consumable alcohol can contribute significantly to ethanol levels present. Ethanol levels can be elevated by cooking with alcohol, by leaving open containers of alcoholic beverages in the living area, and by using unsealed recycle bins containing empty bottles and cans in the living area or garage.

Following use of any of the products listed above, the total VOCs in the localized area may stay elevated for several hours or days, depending on the ventilation system available. Proper usage and storage of these products is highly recommended to minimize exposure to ethanol and other VOCs in general.

About Prism Analytical Technologies, Inc.

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