

VOLATILE ORGANIC COMPOUNDS (VOCs)



SUMMARY

Volatile Organic Compounds (VOCs) are certain organic chemicals in solid or liquid state that can, because of their volatile chemical state, be emitted as gases. Products containing these organic chemicals may be sources of airborne VOC emissions. Many common household products contain organic chemicals that emit VOCs. Because VOCs react with nitrogen oxide (another common air pollutant) to form ground-level ozone (smog), a number of U.S. jurisdictions have adopted regulations that limit the amount of VOCs that can be contained in certain consumer products. In addition, some VOCs may have direct adverse health effects, although compounds with such effects are typically addressed on an individual basis.

At the federal level, the U.S. Environmental Protection Agency (EPA) established regulations that limit the amount of VOCs in certain categories of consumer products nationwide. Several states have adopted their own more stringent limits. California's regulations govern the broadest scope of products, and typically impose the most stringent limits. All of these regulations prohibit the sale, and the manufacture for sale in the applicable jurisdiction, of products that exceed the VOC content limits. Typically, VOC content is measured by percent of VOC content by weight.

The [RCC Consumer Product VOC Matrix](#) lists U.S. state and federal VOC standards for various categories of consumer products. The standards for several states are based on Model Rules developed by the [Ozone Transport Commission \(OTC\)](#), a multi-state organization created under the Clean Air Act to advise EPA on ozone transport issues and to develop and implement regional solutions to the ground-level ozone problem in the Northeast and Mid-Atlantic regions. However, some of the relevant states have modified the OTC standards. Retailers and manufacturers may consult the Matrix to identify the general product categories regulated in these jurisdictions and the permissible VOC content in each category.

Retailers and manufacturers should consult the relevant regulations to determine the limits that may apply to specific products in their inventories. Product categories are defined in the regulations, and vary across jurisdictions. For example, some regulations have incorporated different dates of manufacture into certain product category definitions, such as those for "multi-purpose solvents" or "paint thinners." Some regulations also contain exemptions that apply to particular products, retailers, or manufacturers, or allow regulated entities to apply for a variance. Many of the regulations allow manufacturers to apply for an exemption for "innovative products" that emit lower levels of VOCs than other similar products.



For compliance purposes, retailers can obtain helpful information about the VOC content of products in several ways, including by testing or by asking suppliers. Any such information, however, must be used with care. For example, Material Safety Data Sheets (MSDS) or their equivalents may not provide sufficient data, because they generally focus only on hazardous constituents and may not clearly distinguish between VOCs and other constituents.

There may be additional requirements beyond the VOC limits specified in the CRC Matrix that retailers should be aware of. For example, California's consumer product VOC regulations restrict the presence of methylene chloride, perchloroethylene, trichloroethylene, para-dichlorobenzene, alkylphenol ethoxylate surfactants, and any chemical compound that has a global warming potential value of greater than 150 in various products. See [17 C.C.R. §§ 94509](#). California regulations also require date code marking on products, either in the format specified in [17 C.C.R. § 94512\(b\)](#), or as stated in a description submitted by the company to CARB annually as required under section 94512(c).

In addition to regulations governing the consumer product categories identified in the RCC Matrix, many states have separate regulations governing additional categories of "industrial," "institutional," or "commercial" products, such as aerosol, architectural and marine coatings. For example, California has separate regulations governing aerosol spray coatings. These "industrial," "institutional," or "commercial" VOC regulations often restrict the use of certain products, particularly in commercial settings (e.g., the use of solvents in commercial machine cleaning operations, or the commercial application of waterproofing agents or varnishes to boats). Typically, they are expressed as limits on VOC emissions from products (as opposed to limits on the maximum permissible VOC content). These use regulations are not in the CRC Matrix, and in many cases do not apply to retailers or manufacturers directly.

Local air districts in some states may have their own restrictions on VOC content and/or product use, which may be imposed either by state or district-level regulations. [California's South Coast Air Quality Management District \(SCAQMD\)](#) has significant requirements on VOC content, labeling, and commercial use. The RCC matrix includes SCAQMD's VOC content limits, however the SCAQMD has extensive regulations governing product use—particularly in commercial operations—that are not in the Matrix. Regulated entities doing business in the SCAQMD should consult the regulations to determine what other requirements, in addition to VOC content limits, apply.

For consumer product retailers or manufacturers that are regional or national in scope, the RCC Matrix may assist in identifying the relevant jurisdictions with the most restrictive regulations, so that compliance efforts can be focused on meeting the most aggressive VOC content limits. For consumer product retailers or manufacturers that are regional or national in scope, the [RCC VOC State Matrix](#) can help in identifying.

ABOUT THE RETAIL COMPLIANCE CENTER

The Retail Compliance Center (RCC) provides resources on environmental compliance and sustainability for all types and sizes of retailers. The RCC's goal is to develop retail-specific resources, tools and innovative solutions to help companies cost-effectively improve their compliance and environmental performance.