California Environmental Protection Agency
Air Resources Board

Enforcement Division

Advisory

To: Manufacturers and Distributors of all Consumer Products

Number 300

March 2002

CALCULATING THE VOC CONTENT OF COMPARTMENTALIZED AEROSOL PRODUCTS

This Advisory discusses how to calculate the volatile organic compound (VOC) content of compartmentalized aerosol products and responds to several questions about these products.

Compartmentalized aerosol products are aerosol products in which the driving propellant is housed in a separate compartment and is not dispensed with the concentrate. In most aerosol products, the concentrate and the propellant are combined, and both are dispensed simultaneously when the product is used. In contrast, compartmentalized aerosol products are typically packaged in a barrier pack, usually in a piston or a bag-in-can system. These barrier pack systems dispense the concentrate, but not the driving propellant, because the concentrate is physically separated from the propellant that drives it from the can.

When calculating the VOC content of compartmentalized aerosol products, the weight of the driving propellant is included in the total weight of the VOC. This approach is consistent with the definition of "VOC content" in the ARB consumer products regulation (title 17, California Code of Regulations (CCR), sections 94507-94517):

> "VOC Content" means the <u>total weight of VOC</u> in a product expressed as a percentage of the product weight (exclusive of the container or packaging), as determined pursuant to sections 94515(a) and (b)" (emphasis added; see section 94508(a)(130), title 17, CCR).

For compartmentalized aerosol products, the total weight of VOC includes the VOC contained in the driving propellant portion, since the driving propellant is located inside the product container and is part of the product.

Q1: Because compartmentalized aerosol products are packaged in a barrier system, the driving propellant is not expelled from the can during normal consumer use. Why then are the VOCs in the driving propellant included in the total VOC content of the product and counted when determining compliance with the consumer products standards?

A: As explained previously, ARB regulations specify that all of the VOC in the product (including the driving propellant) is counted when calculating the VOC content. The basic reason for this requirement is that the driving propellant in compartmentalized aerosol products is eventually released into the atmosphere, even though the propellant is not normally released at the time of product application. The driving propellant can be released in a variety of ways, such as through leakage or permeation, during product disassembly at recycling centers, or after the product is disposed of in a landfill. In addition, many of these compartmentalized aerosol cans have a small hole in the bottom into which a rubber plug is inserted. The rubber plug serves as a seal to keep the propellant in the can. This rubber plug

eventually degrades and the seal is compromised, thus releasing the propellant into the atmosphere. Other piston systems can leak propellant around the edges of the piston into the concentrate.

Q2: Are these systems considered to be "aerosol products," since these products do not generate pressure?

A: The consumer products regulation defines an "aerosol product" as:

> "Aerosol Product means a pressurized spray system that dispenses product ingredients by means of a propellant or mechanically induced force. 'Aerosol Product' does not include pump sprays." (section 94508(a)(5), title 17, CCR)

Compartmentalized aerosol products are pressurized systems that use propellant. These products therefore meet the definition of an "aerosol product."

Q3: Isn't the driving propellant part of the container/packaging of the product?

A: No. The presence of propellant is an essential factor in determining whether a product meets the definition of an "aerosol product." The fact that the propellant is kept in a separate compartment within the container does not make it part of the container.

Q4: Is the VOC content of the driving propellant counted when determining whether a product qualifies for the exemption in section 94510(f) of the consumer products regulation for "air fresheners that are comprised entirely of fragrance"?

A: Yes, the VOC content of the driving propellant is counted. The exemption in section 94510(f), title 17, CCR, basically states that the VOC limits in the consumer products regulation do not apply to "air fresheners that are comprised entirely of fragrance." If VOC propellant is used in any aerosol air freshener, then the product is not "comprised entirely of fragrance." The exemption in 94510(f) therefore does not apply, and the product must meet the applicable VOC limit.

If you need further clarification about compartmentalized aerosols please contact Steven Giorgi, Manager, Implementation Section, Stationary Source Division, at (916) 322-9148. For questions or comments regarding this advisory, please contact Chuck Beddow, Manager, Consumer Products Section, Enforcement Division, at (916) 322-6033. You may also access the Consumer Products Regulation via the internet at http://www.arb.ca.gov/consprod/regs/regs.htm