

The Clean Air Act: Pesticide VOCs and Ozone

Background



Although the 1990 Clean Air Act (CAA) is a federal law, the states do much of the work to carry out the Act. In the San Joaquin Valley of California, certain chemicals in air pollution known as volatile

organic compounds (VOCs) declined for several years, but recently increased above the state's CAA State Implementation Plan (SIP). To address the non-attainment, the California Department of Pesticide Regulation (DPR) has undertaken an initiative to reduce VOCs in pesticide formulations using an unscientific approach.

Volatile Organic Compounds (VOCs) are usually made from petroleum and are a major component of gasoline. They are used as solvents in products such as paints, adhesives, inks and some consumer and commercial pesticide formulations. As these products dry, VOC solvents are emitted into the air. By far, most VOCs released to the atmosphere come from motor vehicle emissions. Significant amounts of VOCs are also released from biogenic sources such as evergreen forests.

VOC emissions per se do not appear to pose a significant public health risk. In some areas, however, when VOCs react with nitrogen oxides that are present in the air from fossil fuel combustion, ozone is formed near the ground. Ozone near the ground is the main component of smog. When ground-level ozone levels rise, hospitals see an increase in admissions as more people experience health effects from smog. Because VOCs contribute to ground-level ozone formation, they are regulated by the Clean Air Act and similar state laws.

The definition of a VOC can be broad. For this reason, EPA and the states have lists of VOCs that are exempted from regulation because each compound is negligibly reactive and does not contribute appreciably to ozone formation. This "relative reactivity" recognizes that all VOCs are not equal in their ability to produce ozone.

The California Air Resources Board, for one, recognized that individual VOCs differ in their ability to produce ozone. As a result, the Board has developed a rule that allows aerosol coating products to contain more total VOCs because they have low reactivity. EPA is considering a similar approach to regulating VOCs under the federal Clean Air Act.

Unlike other VOC regulations based on reactivity, the California DPR is attempting to regulate pesticide VOC emissions on total emissions despite the fact pesticide VOCs have low reactivity.

Position

- Scientific data¹ support ozone control strategies based on reactivity of individual VOCs rather than on total VOC emissions.
- EPA and states should uniformly adopt VOC control strategies across all regulatory frameworks based only on relative reactivity.
- VOCs in pesticide formulations have low relative reactivity and do not contribute significantly to ground-level ozone.
- VOCs in pesticide formulations do not contribute significantly to non-attainment in the San Joaquin Valley or anywhere else, and should not be regulated in that capacity.

¹Russell, A. et al. (1995). Urban Ozone Control and Atmospheric Reactivity of Organic Gases. *Science* **269**(5223): 491- 5