05/21/1979 VOC280521791

Category: 28 Exempt Solvents

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: 5/21/79

SUBJECT: Draft Language--Preambles for SIP Proposals and Approvals

FROM: Richard G. Rhoads, Director
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TO: Director, Air and Hazardous Materials Division, Regions I-X

As a follow-up to the mid-April Division Directors; meeting in Atlanta, I am attaching sample Federal Register language on two topics:

1. Commitment to Future CTG RACT Categories (Attachment #1)

2. Solvent Exemptions in Ozone SIPs (Attachment #2)

Attachment #1 should be self-explanatory. Attachment #2, pertaining to methylene chloride and methyl chloride, can be used for VOC solvent exemptions in cases where the solvents have been shown to have minimal reactivity, yet have other adverse effects. For these two specific compounds, I am also attaching additional information (Attachment #3) which may be of value to you in your State discussions.

I appreciate your cooperation and hope you find the draft language useful.

Attachments

Attachment 1

COMMITMENT TO FUTURE CTG RACT CATEGORIES

EPA will accept a commitment from States to adopt reasonably available control technology (RACT) regulations which apply to those source categories emitting volatile organic compounds (VOCs) for which control technique guidelines (CTGs) did not exist on January 1, 1978. This policy was discussed in a notice entitled "Criteria for Proposing Approval of Revision to Plans for Nonattainment Areas" which appeared in the Federal Register on May 19, 1978 (43 FR 21673). The State Implementation Plan (SIP) described in this notice does not contain a formal commitment to adopt regulations for future CTG source categories. However, the Agency proposes to approve the SIP on the following conditions:

1. The State submits adopted RACT regulations for the following source categories by January 1980:

   i. Vegetable oil processing
   ii. Petroleum refinery leaks
   iii. Gasoline tank truck
   iv. Perchloroethylene dry cleaning
   v. Pharmaceutical manufacture
   vi. Miscellaneous metal parts and products
   vii. Graphic arts
   viii. Pneumatic rubber tire manufacture
   i. Flatwood paneling
   a. Floating roof tanks

2. The State adopts by January 1981 regulations which control emissions from additional source categories for which EPA issues a new CTG by January 1980.

3. The State demonstrates by certification that there are no sources in the State for a given VOC source category that is not regulated.

Attachment 2

SOLVENT EXEMPTIONS IN OZONE STATE IMPLEMENTATION PLANS

The State Implementation Plan (SIP) includes a provision which exempts methyl chloroform (1,1,1 trichloroethane) and/or methylene chloride. These volatile organic compounds (VOC), while not appreciably affecting ambient ozone levels, are potentially harmful. Both methyl chloroform and methylene chloride have been identified as mutagenic in bacterial and mammalian cell test systems, a circumstance which raises the possibility of human mutagenicity and/or carcinogenicity.

Furthermore, methyl chloroform is considered one of the slower reacting VOCs which eventually migrates to the stratosphere where it is suspected of contributing to the depletion of the ozone layer. Since stratosphere ozone is the principal absorber of ultraviolet light (UV), the depletion could lead to an increase of UV penetration resulting in a worldwide increase in skin cancer.

With the exemption of these compounds, some sources, particularly existing degreasers, will be encouraged to utilize methyl chloroform in place of other more photochemically reactive degreasing solvents. Such substitution has already resulted in the use of methyl chloroform in amounts far exceeding that of other solvents. Endorsing the use of methyl chloroform by exempting it in the SIP can only further aggravate the problem by increasing the emissions produced by existing primary degreasers and other sources.

The Agency is concerned that the State has chosen this course of action without full consideration of the total environmental and health implications. The Agency does not intend to disapprove the State SIP submittal if, after due consideration, the State chooses to maintain these exemptions. However, we are concerned that this policy not be interpreted as encouraging the increased use of these compounds nor compliance by substitution. The Agency does not endorse such approaches. Furthermore, State officials and sources should be advised that there is a strong possibility of future regulatory action to control these compounds. Sources which choose to comply by substitution may well be required to install control systems as a consequence of these future regulatory actions.

Attachment 3

SYNOPSIS OF POTENTIALLY ADVERSE EFFECTS OF METHYL CHLOROFORM AND METHYLENE CHLORIDE

Both methyl chloroform (MCF) and methylene chloride (MC) have been found to be mutagenic in a bacterial test system (Simmon et al)[1] and in *in vitro* tests of mammalian cell transformation (Price et al).[2] In both cases, methylene chloride exhibited a higher potency than either methyl chloroform or trichloroethylene.

A pulmonary tumor bioassay conducted by Theiss (1977)[3] indicated that methylene chloride produced an excess in surface adenomas in male mice. Results of animal studies on methyl chloroform are inconclusive.

On the basis of the available data, EPA's Carcinogen Assessment Group has concluded that, for both methyl chloroform and methylene chloride, "there is suggestive evidence of carcinogenicity."[4,5]

In addition, methyl chloroform has been implicated in the depletion of stratospheric ozone. At a recent conference on the atmospheric chemistry of methyl chloroform and other halocarbon pollutants,[6]-footnote-4 researchers reported tropospheric lifetimes for MCF ranging from three to twelve years, sufficient time to allow for significant migration of the chemical to the stratosphere. It was further estimated that, at the current growth projections in the production and use of this chemical, MCF could account for 10-20 percent of the total ozone depletion attributable to chlorofluorocarbons over the next ten years. Significant depletion of stratospheric ozone impairs the ability of this atmospheric layer to filter out harmful ultraviolet radiation. Increases in the amount of this type of radiation reaching the Earth may lead to reduced crop yields as well as increases in human skin cancer.

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[1] Simmon, V. F., Kauhanen, K. and R. G. Tardiff, "Mutagenic Activity of Chemicals Identified in Drinking Water" in Progress in Genetic Toxicology, ed. I. D. Scott, B. A. Bridges, and F. H. Sobels. p. 249-258 Elsevier (1977).

[2] Price, P. J., C. M. Hassett, and J. I. Mansfield, "Transforming Activities of Trichloroethylene and Proposed Industrial Alternatives" In Vitro 14:3, p. 290-293 (1978).

[3] Theiss, J. C., et al, "Test for Carcinogenicity of Organic Contaminants."

[4] The Carcinogen Assessment Group's Preliminary Risk Assessment on Methyl Chloroform, Type I - Air Program, January 17, 1979.

[5] The Carcinogen Assessment Group's Preliminary Risk Assessment on Methylene Chloride, Type I - Air Program, January 17, 1979.

[6] Conference on Methyl Chloroform and Other Halocarbon Pollutants, sponsored by Environmental Sciences Research Laboratory, U.S. EPA, February 27-28, 1979, Washington, D. C.