



**STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION**



**Statement of Reasons Pursuant to 4-168b
of the Connecticut General Statutes**

Hearing Report

Amendment to the Regulations of Connecticut State Agencies Concerning:

Definition of Volatile Organic Compound - section 22a-174-1

Hearing Officer Paul E. Farrell

September 19, 1997

On May 20, 1997, the Commissioner of the Department of Environmental Protection ("Department") signed a notice of intent to amend section 22a-174-1 of the Regulations of Connecticut State Agencies ("R.C.S.A.") concerning the definition of volatile organic compound ("VOC"). Pursuant to such notice, a public hearing was held on July 16, 1997. The public comment period for these proposed amendments closed on July 18, 1997.

I. Outline of this Report

This report describes the amendments to the Regulations of Connecticut State Agencies as proposed for hearing; the final wording of the proposed regulations; a statement of the principal reasons in support of the Department's intended action; a statement of the principal reasons in opposition of the Department's intended action and the reasons for rejecting such comments; and a summary of all comments and responses thereto on the proposed action. Those who provided comments are identified in Attachment 1.

II. Summary of the Proposed Amendments

This regulation is being amended to incorporate twenty volatile organic compounds (VOCs) into Table 1(a)-(1) contained in R.C.S.A. section 22a-174-1(97). The VOCs included are: perchloroethylene (also known as tetrachloroethylene); 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee); 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC 225ca); 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC 225cb); difluoromethane (HFC-32); ethylfluoride (HFC-161); 1,1,1,3,3,3-hexafluoropropane (HFC-236fa); 1,1,2,2,3-pentafluoropentane (HFC-245ca); 1,1,2,3,3-pentafluoropropane (HFC-245ea); 1,1,1,3,4-pentafluoropentane (HFC-245eb); 1,1,1,3,3-pentafluoropentane (HFC-245fa); 1,1,1,2,3,3-hexafluoropropane (HFC-236ea);

1,1,1,3,3-pentafluorobutane (HFC-365mfc); chlorofluoromethane (HCFC-31); 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a); 1-chloro-1-fluoroethane (HCFC-151a); 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C₄F₉OCH₃); 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF₃)₂CFCH₂OCH₃); 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C₄F₉OC₂H₅); and 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF₃)₂CFCH₂OC₂H₅).

In February, 1996 the U.S. Environmental Protection Agency (EPA) published a final rule revising the definition of VOC by excluding perchloroethylene on the basis that it has negligible photochemical reactivity. (Vol. 61 Federal Register No. 26, p. 4588). In October, 1996, EPA published a final rule revising the definition of VOC by excluding HFC 43-10mee; HCFC 225ca; and HCFC 225cb on the basis that they have negligible photochemical reactivity. (Vol. 61 Federal Register No. 196, p. 52848). In March, 1997, EPA published a proposed rule revising the definition of VOC by excluding the remaining sixteen (16) compounds mentioned in the previous paragraph on the basis that they have negligible photochemical reactivity. (Vol. 62 Federal Register No. 51, p. 12583). EPA published a final rule with respect to these sixteen compounds on August 25, 1997. (Vol. 62 Federal Register No. 164, p. 44900). The Department of Environmental Protection proposed this amendment to be consistent with federal treatment of these compounds as follows:

Subsection (97) of section 22a-174-1 of the Regulations of Connecticut State Agencies is amended as follows:

Sec. 22a-174-1. Definitions.

(97) "Volatile organic compound" or "VOC" means any compound of carbon which participates in atmospheric photochemical reactions excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate and the organic compounds listed on Table 1(a)-1 below which the Administrator has designated as having negligible photochemical reactivity.

Table 1(a)-1 Exempt Volatile Organic Compounds	
acetone	ethane
methane	cyclic, branched, or linear completely methylated siloxanes
1,1,1-trichloroethane (methyl chloroform)	methylene chloride (dichloromethane)

**Table 1(a)-1
Exempt Volatile Organic Compounds**

trichlorofluoromethane (CFC-11)	dichlorodifluoromethane (CFC-12)
chlorodifluoromethane (HCFC-22)	trifluoromethane (HFC-23)
1,1,-dichloro-1-fluoroethane (HCFC-141b)	pentafluoroethane (HFC-125)
1,1,2-trichloro-1,2,2- trifluoroethane (CFC-113)	1,2-dichloro- 1,1,2,2-tetrafluoroethane (CFC-114)
chloropentafluoroethane (CFC-115)	1,1,2,2-tetrafluoroethane (HFC-134)
1,1,1,2-tetrafluoroethane (HFC-134a)	1,1,1-trifluoroethane (HFC-143a)
1-chloro-1,1-difluoroethane (HCFC-142b)	1,1-difluoroethane (HFC-152a)
1,1,1-trifluoro- 2,2-dichloroethane (HCFC-123)	2-chloro- 1,1,1,2-tetrafluoroethane (HCFC-124)
PERCHLOROETHYLENE	<u>1,1,1,2,3,4,4,5,5,5-</u> DECAFLUOROPENTANE (HFC 43-10mee)
<u>3,3-DICHLORO-1,1,1,2,2-</u> PENTAFLUOROPROPANE (HCFC 225ca)	<u>1,3-DICHLORO-1,1,2,2,3-</u> PENTAFLUOROPROPANE (HCFC 225cb)
DIFLUOROMETHANE (HFC-32)	ETHYLFLUORIDE (HFC-161)
<u>1,1,1,3,3,3-HEXAFLUOROPROPANE</u> (HFC-236fa)	<u>1,1,2,2,3-PENTAFLUOROPENTANE</u> (HFC-245ca)
<u>1,1,2,3,3-PENTAFLUOROPROPANE</u> (HFC-245ea)	<u>1,1,1,3,4-PENTAFLUOROPENTANE</u> (HFC-245eb)
<u>1,1,1,3,3-PENTAFLUOROPENTANE</u> (HFC-245fa)	<u>1,1,1,2,3,3-HEXAFLUOROPROPANE</u> (HFC-236ea)

Table 1(a)-1 Exempt Volatile Organic Compounds	
<u>1,1,1,3,3-PENTAFLUOROBUTANE</u> (HFC-365mfc)	CHLOROFLUOROMETHANE (HCFC-31)
<u>1,2-DICHLORO-1,1,2-</u> TRIFLUOROETHANE (HCFC-123a)	<u>1-CHLORO-1-FLUOROETHANE</u> (HCFC-151a)
<u>1,1,1,2,2,3,3,4,4-NONAFLUORO-4-</u> METHOXY-BUTANE (C ₄ F ₉ OCH ₃)	<u>2-(DIFLUOROMETHOXYMETHYL)-</u> <u>1,1,1,2,3,3,3-HEPTAFLUOROPROPANE</u> ((CF ₃) ₂ CFCE ₂ OCH ₃)
<u>1-ETHOXY-1,1,2,2,3,3,4,4,4-</u> NONAFLUOROBUTANE (C ₄ F ₉ OC ₂ H ₅)	<u>2-(ETHOXYDIFLUOROMETHYL)-</u> <u>1,1,1,2,3,3,3-HEPTAFLUOROPROPANE</u> ((CF ₃) ₂ CFCE ₂ OC ₂ H ₅)
perfluorocarbon compounds which fall into these classes: (1)cyclic, branched, or linear, completely fluorinated alkanes; (2)cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; (3)cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (4)sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.	parachlorobenzotrifluoride (4-chlorobenzotrifluoride)

Statement of Purpose: to amend the definition of volatile organic compounds (VOC) to exempt an additional twenty compounds from the definition of VOC based on a finding by the U.S. Environmental Protection Agency that such compounds have negligible photochemical reactivity.

III. Principal Reasons in Support of the Proposed Action

The principal reason in support of incorporating twenty additional VOCs into Table 1(a)-1 of R.C.S.A. section 22a-174-1 is that such action will make Connecticut environmental regulations consistent with federal treatment of these twenty compounds. The proposed action is also necessary to amend the Connecticut State Implementation Plan for air quality.

IV. Principal Considerations in Opposition to the Proposed Action

The Department received no comments in opposition to the proposed action. However, one commentor questioned the health impact of the proposed action. Please see the comment of Mr. Paul L. Lovington and the response thereto.

V. Summary of Comments

Comments from the U.S. Environmental Protection Agency (EPA)

Comment:

EPA noted that the "chemical name or formula" column in Table 3 set forth at 62 Federal Register 12584 (March 17, 1997) contains three technical errors. Three compounds, HFC-245ca, 1,1,2,2,3-pentafluoropentane; HFC-245eb, 1,1,1,3,4-pentafluoropentane; and HFC-245fa, 1,1,1,3,3-pentafluoropentane, were incorrectly listed in the Federal Register. EPA notes that these errors have been repeated in Connecticut's proposed Table 1(a)-1. EPA requests that Connecticut make the following changes to Table 1(a)-1:

<u>Compound</u>	<u>Chemical Name of Formula</u>
HFC-245ca	1,1,2,2,3-pentafluoropropane
HFC-245eb	1,1,1,2,3-pentafluoropropane
HFC-245fa	1,1,1,3,3-pentafluoropropane

Response:

I recommend the technical corrections noted by EPA be incorporated into the final wording of the proposed regulation.

Comment from Mr. Paul L. Lovington

Comment:

In a letter dated July 14, 1997, Mr. Lovington expressed several concerns with respect to federal and state air quality programs. Mr. Lovington stated his belief that certain gasoline additives such as MTBE and MMT are strongly correlated to increased respiratory illness in children and elder citizens. Mr. Lovington also stated that among European taxi drivers it is well known that breathing diesel fumes leads to lung disease yet trucks in the United States operate uncontrolled. Mr. Lovington closed his letter by questioning whether there is a public health impact associated with exempting the twenty additional VOCs from regulation.

Response:

Mr. Lovington's comments with respect to MTBE, MMT and regulation of heavy duty diesel vehicles is beyond the scope of this proposed regulation. However, Mr. Lovington's letter has been forwarded to appropriate staff and he will receive a response from this Department.

In order to address Mr. Lovington's concern about the health impacts of this proposal, it is important to understand why the Department is recommending the exemption of twenty VOCs. Collectively, volatile organic compounds and oxides of nitrogen (known as ozone precursors) combine in the presence of sun light to form ground level ozone. Ground level ozone is a public health concern because exposure to it can make people more susceptible to respiratory infection, lung inflammation and can aggravate preexisting respiratory diseases, such as asthma. Ozone precursors must be controlled in order to meet the national health standard for ozone.

The proposed regulation improves this Department's ability to protect the public from the effects of ground level ozone. The proposed rule does this by focusing this Department's regulatory efforts on those VOCs which are ozone precursors, rather than allowing the state to take credit for reductions of VOCs which do not form ozone. The public will be exposed to lower amounts of ground level ozone if there are greater reductions of ozone precursors.

In addition, some of the compounds that are proposed for exemption will continue to be regulated by other programs. For example, perchloroethylene (also known as "perc" a chemical used by dry cleaners) is proposed for exemption from the definition of VOC because it is not highly photochemically reactive. This means that perc doesn't tend to form ozone in the presence of sun light. But perc will still be regulated as a hazardous air pollutant under section 112 of the Clean Air Act and Connecticut will continue to implement the national program to control perc emissions from dry cleaners.

Comment by United Technologies Corporation (UTC)

Comment:

UTC agrees with the Department's decision to add twenty VOC's to the list in Table 1(a)-1 of R.C.S.A. section 22a-174-1 to be consistent with the federal treatment of these compounds. In addition, UTC believes that the Department's efforts to harmonize its regulations with corresponding federal regulations will lead to less confusion and will provide the regulated community more clarity in maintaining compliance with environmental regulations.

Response:

UTC's support of this proposal is noted.

VI. Final Wording of the Proposed Regulation

Subsection (97) of section 22a-174-1 of the Regulations of Connecticut State Agencies is amended as follows:

Sec. 22a-174-1. Definitions.

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**Table 1(a) -1
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Table 1(a) -1 Exempt Volatile Organic Compounds	
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<u>1-ETHOXY-1,1,2,2,3,3,4,4,4-</u> NONAFLUOROBUTANE (<u>C₄F₉OC₂H₅</u>)	<u>2-(ETHOXYDIFLUOROMETHYL)-</u> <u>1,1,1,2,3,3,3-HEPTAFLUOROPROPANE</u> (<u>(CF₃)₂CFCE₂OC₂H₅</u>)
perfluorocarbon compounds which fall into these classes: (1)cyclic, branched, or linear, completely fluorinated alkanes; (2)cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; (3)cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (4)sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.	parachlorobenzotrifluoride (4-chlorobenzotrifluoride)

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VII. Conclusion

Based upon the comments submitted by interested parties and addressed in this Hearing Report, I recommend the proposed final regulation, as contained herein, be submitted by the Commissioner of Environmental Protection for approval by the Attorney General and the Legislative Regulations Review Committee. Based upon the same considerations, I also recommend this proposed regulation, upon promulgation, be submitted to the U.S. Environmental Protection Agency as a revision to the Connecticut State Implementation Plan for Air Quality.



Paul E. Farrell
Hearing Officer

9/19/97
Date

Attachment 1
List of Commentors

1. Mr. David B. Conroy, Manager
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Boston, MA 02203-0001

2. Mr. Paul L. Lovington
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3. Ms. Leslie Carothers, Vice President
Environment, Health & Safety
United Technologies Corporation
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