TRADE SECRET

Study Title

Comparative Neurotoxicity Study of
HFC-43-10mee and
HFC-43-10mee/DCE 50/50 Blend in Rats

Laboratory Project ID

Haskell Laboratory Report Number 781-96

Author

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Study Completed on

March 12, 1997

Performing Laboratory

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Medical Research Number 10711-001

GENERAL INFORMATION

Material Tested:	1. Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- 2. Pentane, 1,1,1,2,2,3,4,5,5,5- decafluoro- mixt. with ethene, 1,2-dichloro-, (E)
Synonyms and Codes:	1. HFC-43-10mee Vertrel XF Lot #032596 2,3-dihydroperfluropentane 2. HFC-43-10mee/DCE 50/50 Blend HFC-43-10mee mixt. with DCE Vertrel XF mixt. with t-DCE Lot #052696
Haskell No.:	1. H 21912 2. H 21924
Purity:	1. > 99% pure 2. Blend of approximately 50% HFC-43-10mee and 50% trans-1,2-dichloroethylene
Physical State:	1. Clear liquid 2. Clear liquid
Major Impurities:	None considered to be of toxicological significance at this time.
C.A.S. Registry Number.:	1. 138495-42-8 2. There is no C.A.S. number for the HFC-43-10mee/DCE blend. The C.A.S. # for DCE is 156-60-5.
Sponsor:	DuPont Fluoroproducts
Study Initiated/Completed:	07/19/96 - 03/12/97
In-Life Phase Initiated/Completed:	07/22/96- 08/16/96
Records and Sample Management:	All original data and the original of this final report will be retained at Haskell Laboratory, Newark, Delaware, or at Iron Mountain, 200 Todds Lane, Wilmington, Delaware 19802.

SUMMARY

The purpose of this study was to compare the clinical signs of toxicity elicited during an acute inhalation exposure to HFC-43-10mee (denoted as test substance) with the signs elicited during inhalation exposure to a 50/50 blend of HFC-43-10mee/trans-1,2-dichloroethylene (DCE) (the HFC-43-10mee/DCE blend is denoted as test blend). Design exposure concentrations were targeted 1000, 2000, 3000, 4000, 5000, or 6000 ppm of HFC-43-10mee. The concentrations of HFC-43-10mee in vapor generated from the test blend were the same as the vapor concentration of the test substance. Twenty-four male rats per concentration were administered a single, two-hour exposure. During the exposure, the rats were slowly rotated (360 degrees) in their cages every 20 minutes in order to provide an outside stimulus. After rotation, the rats were observed for clinical signs of neurotoxicity. The only endpoints reported in this study are clinical signs of toxicity observed during exposure and parameters related to inhalation exposure conditions.

Neither compound caused clinical signs of neurotoxicity at concentrations of 1000 to 3000 ppm. Four of the 24 rats exposed to 4000 ppm of the test substance (HFC-43-10mee) exhibited clinical signs of neurotoxicity compared to all 24 of the rats exposed to the test blend. At concentrations of 5000 and 6000 ppm of the test substance (HFC-43-10mee), 15 and 16 rats, respectively, of the 24 rats exhibited clinical signs of neurotoxicity compared to all 24 of the rats exposed to either 5000 or 6000 ppm of the test blend. Compound-related clinical signs of toxicity observed during exposure to the test substance (HFC-43-10mee) included tremors, biting the cage, head jerking, seizure-like behavior, convulsions, and wet chin. Compound-related clinical signs of toxicity observed during exposure to the test blend included abnormal posture, hunched-over, tremors, biting the cage, head jerking, seizure-like behavior, convulsions, salivation, foaming from the nose, gasping, and lethargy.

The no-observed-adverse effect level for both the test substance and the test blend was 3000 ppm equivalent of HFC-43-10mee. Under the conditions of the study, the addition of the solvent, DCE, to the test blend did not change the threshold for eliciting clinical signs of toxicity. However, the addition of the DCE solvent did modulate the type and incidence of clinical signs observed. Despite this difference between the test substance and the test blend, these results indicate that the acceptable workplace exposure limits established for HFC-43-10mee will offer sufficient protection from the acute effects of the test blend as well.