BS-407
TR-2337

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

002337

MEMORANDUM

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

TO: W. H. Miller, Product Manager, Team #16
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SUBJECT: MONITOR: Mutagenic Study (Ames Test).
EPA Accession No. None
EPA Record No. 64423-

TOX Chem. No. 378 A

The above-mentioned study has been evaluated and found acceptable. Monitor Technical was not mutagenic under the conditions of this test.

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OPP:HED:TOX: K.LOCKE:sb 12/14/82 X71511 Rm 824 #m20

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Salmonella/Mammalian Microsome Mutagenicity Test (Ames Test) with MONITOR Technical by M. L.Machado, Standard Oil Company of California (SOCAL); Study No. SOCAL 1711, 2/3/82

EPA Accession No. None
EPA Record No. 64423
TOX Chem No. 378A

Summary:

MONITOR Technical (0.1, 0.5, 1.0, 5.0 and 10.0 mg/plate) was tested for mutagenicity using the following histidine-deficient strains of Salmonella typhimurium: TA 1538, TA 1537, TA 1535, TA 100 and TA 98, with and without metabolic activation. MONITOR Technical was not mutagenic under the conditions of this test.

Mutagenicity was observed with the following positive controls (ug/plate): 2-Nitrofluorene (10), 2-aminoanthracene (2), sodium azide (1) and 9-aminoacridine (50).

Classification of this study: Acceptable.

Materials and Methods:

This test was conducted by the procedure of Ames, B. N., J. McCann and E. Yamasaki (Methods for detecting carcinogens and mutagens with the Salmonella/mammalian-microsome mutagenicity test. Mut. Res., 31 (1975), 347-363).

The bacterial strains used were histidine auxotrophs derived originally from Salmonella typhimurium LT_2 and supplied by B. N. Ames, Univ. of California, Berkeley. The following strains were used: TA 1335 and TA 100 (which detect base-pair substitution) and TA 1537, TA 1538 and TA 98 (which detect frame-shift mutations). The levels of MONITOR used were 0.1, 0.5, 1, 5 and 10 mg/plate. The histidine-deficient strains of Salmonella typhimurium were grown on media that contained only minimal amounts of histidine and biotin. Only bacteria that reverted and were able to synthesize histidine grew into a colony after 2-3 days of incubation at 37°C. The number of colonies per plate was an index of the mutation rate. Metabolic activation was effected by growing the Salmonella typhimurium strains used in the presence of a liver microsomal fraction S-9 (purchased from EG & G Mason Research Institute, Rockville, Maryland).

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Positive controls (known mutagens) were used as follows:

Salmonella typhimurium Strain	Positive Controls - 2-Nitrofluorene, 10 ug/plate	2-Aminoanthracene, 2 ug/plate	sodium azide lug/plate	9-Aminoacridine, 50 ug/plate
TA 98 + S-9		x		
Without S-9	x			
TA 100 + S-9		x		
Without S-9			x	
TA 1535 + S-9		x		
Without S-9			x	
TA 1537 + S-9		x		
Without S-9				x
TA 1538 + S-9		x		
Without S-9	x			

Distilled water (0.1 ml) was used as a negative control. Each assay was performed in triplicate.

Results:

MONITOR Technical (0.1-10.0 mg/plate) was not mutagenic in any strain of Salmonella typhimurium tested, with or without metabolic activation. The numbers of revertant colonies/plate were small and were similar for the control plates and the MONITOR-containing plates. There was also no difference in the number of revertant colonies/plate between the different levels of MONITOR tested. In the case of the positive controls used, there were about 6-133 times more revertant colonies/plate, when compared with the MONITOR-containing and the negative control plates. These data are summarized below.

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Test Material	Number of Revertant Colonies Per Plate				
	TA 98	TA 100	TA 1535	TA 1537	TA 1538
None + S-9	34-60	120-130	11-26	13-20	25-35
Without S-9	27-31	94-128	31-35	12-14	14-20
MONITOR (0.1-10.0 mg/plate) + S-9	26-49	103-144	10-40	14-24	18-40
Without S-9	19-36	101-132	27-52	7-22	15-28
2-Nitrofluorine* (10 ug/plate)+ S-9					
Without S-9	1198-1557				3469-3721
2-Aminoanthracene* (2 ug/plate) + S-9	2831-3505	1143-1268	300-305	269-383	2770-3211
Without S-9					
Sodium azide* (1 ug/plate + S-9					
Without S-9		684-744	520-591		
9-Aminoacridine* (50 ug/plate)+ S-9					
Without S-9				194-319	

* Positive controls. Blank space means that the control was not used.

Classification of study: Acceptable

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