Contains No CBI

PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA 74004 918 661-6600

HEALTH, ENVIRONMENT AND SAFETY

"Contains NO CBI"

1992 SEP -2 PM 1:16
OTS CBIC

August 24, 1992

Compliance Audit Program
CAP ID#: 8ECAP-0075

CERTIFIED MAIL - RETURN RECEIPT

8EHQ-92-12554

889200 10738

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Document Processing Center (TS-790)
Office of Pollution Prevention and Toxics
Environmental Protection Agency
401 M Street, SW
Washington, D. C. 20460

Attn: Section 8(e) Coordinator
(CAP Agreement)

Gentlemen:

Phillips Petroleum Company is submitting the enclosed sixty (60) reports (two boxes, numbered 1 and 2) of toxicological studies pursuant to catagory II.B.2.b of the CAP Agreement 8ECAP-0075 Reports. Reports being submitted contain no confidential business information.

We are sending an additional five boxes (box numbers 3-7) of reports of studies that have, previously, been submitted to the FYI coordinator of the Office of Pollution Prevention and Toxics by the American Petroleum Institute (API). These are being provided solely for the Agency's convenience.

For questions concerning this correspondence, plese contact Fred Marashi at 918-661-8153.

Very truly yours,

Barbara J. Price

Barbara J. Price
Vice President
Health, Environment & Safety

Enclosure (Seven Boxes)

FFM/dh:29

3/10/95

Phillips Petroleum Company

CAP Identification Number: 8ECAP-0075
Pursuant to Category: II.B.2.b

Contains No CBI

Title of Study: Mouse Lymphoma Forward Mutation Assay Ethyl Mercaptan (Ethanthiol) and In Vitro Sister Chromated Exchange in Chinese Hamster Ovary Cells Ethyl Mercaptan

Name of Chemical: Ethyl Mercaptan

CAS#: 75-08-1

Summary: Ethyl mercaptan was shown to be positive in two mutagenic assays. However, a re-evaluation of the Mouse Lymphoma Assay resulted in equivocal results at a later date.

Contact:

Fred Marashi
Phillips Petroleum Company
13 D2 PB
Bartlesville, OK 74004
Phone: 918/661-8153
Fax: 918/661-5664

HAZLETON
LABORATORIES AMERICA, INC

In vitro Sister Chromatid Exchange in Chinese Hamster Ovary Cells

Ethyl Mercaptan

FINAL REPORT

Submitted to

Phillips Petroleum Company
Bartlesville, Oklahoma

December 11, 1984

HAZLETON
LABORATORIES AMERICA, INC.

SUBJECT: *In vitro* Sister Chromatid Exchange in Chinese Hamster Ovary Cells
Project No. 652-147

We, the undersigned, hereby declare that the work was performed under our supervision, according to the procedures herein described.

Study Director:

Deborah H. Pence

DEBORAH H. PENCE, Ph.D.
Diplomate, American Board of Toxicology
Associate Director of Toxicology/
Scientific Coordination
Life Sciences Division

Laboratory Supervision and
Report Preparation:

Thomas A. Cortina

THOMAS A. CORTINA, B. S.
Research Associate
Genetic Toxicology Department

dms

FINAL REPORT

STUDY: Sister Chromatid Exchange in Chinese Hamster Ovary Cells

COMPOUND INFORMATION:

1. Name: Ethyl Mercaptan
2. Purity: 97.5% (Adjusted to 100%)
3. Solubility: The test material appeared miscible at approximately 500 mg/ml in dimethylsulfoxide (DMSO).

EXPERIMENTAL DESIGN: See sponsor approved protocol No. 10

RESULTS:

1. Toxicity Evaluation

   The maximum dose selected for the mutagenicity test was 2,500 µg/ml because it exhibited growth inhibition.

2. Mutagenicity Evaluation (Table 1)

   In Test No. 1, a statistically significant increase in the number of SCE's per chromosome was seen at 840 µg/ml without metabolic activation. All cells recovered at 2,500 µg/ml were first division metaphases which could not be analyzed for SCE's. A repeat test was performed with 2,500 µg/ml in which the chromosomes were recovered 43 hours after exposure in order to allow for two cell divisions.

HAZLETON
LABORATORIES AMERICA, INC.
9200 LEESBURG TURNPIKE, VIENNA, VIRGINIA 22180 U.S.A.

In Test No. 2, a statistically significant increase in SCE's was seen at 2,500 μg/ml both with and without metabolic activation, and a greater than two-fold increase in SCE's was seen both with and without activation.

Under these conditions, the experimental compound, Ethyl Mercaptan, did exhibit a positive response and is, therefore, considered to be mutagenic in this test system.

Table 1
Summary of Sister Chromatid Exchange Data
Ethyl Mercaptan

Without Activation
Test No. 1

Treatment	Dose Level (µg/ml)	Number of Cells Analyzed	Total Number of SCE's	Number of SCE's/Cell	P Value	Fold Increase in SCE's/Cell	Number of Chromosomes Analyzed	Number of SCE's/Chromosome	P Value	Fold Increase in SCE's/Chromosome
Media Control	-	50	433	8.66	-	-	979	0.44	-	-
DMSO	-	50	484	9.68	-	-	972	0.50	-	-
EMS	400	50	775	15.50	0.0000(S)	1.8	987	0.79	0.0000(S)	1.8
Ethyl Mercaptan	2,500	0	-	-	-	-	0	-	-	-
	840	50	603	12.06	0.0044(S)	1.2	981	0.62	0.0056(S)	1.2
	250	50	572	11.44	0.017(NS)	1.2	986	0.58	0.024(NS)	1.2
	84	50	501	10.02	0.32(NS)	1.0	979	0.51	0.36(NS)	1.0
	25	50	499	9.98	0.34(NS)	1.0	989	0.51	0.41(NS)	1.0

With Activation

Treatment	Dose Level (µg/ml)	Number of Cells Analyzed	Total Number of SCE's	Number of SCE's/Cell	P Value	Fold Increase in SCE's/Cell	Number of Chromosomes Analyzed	Number of SCE's/Chromosome	P Value	Fold Increase in SCE's/Chromosome
Media Control	-	50	574	11.48	-	-	985	0.58	-	-
DMSO	-	50	577	11.54	-	-	979	0.59	-	-
CP	1.4	50	922	18.44	0.0000(S)	1.6	977	0.94	0.0000(S)	1.6
Ethyl Mercaptan	2,500	0	-	-	-	-	0	-	-	-
	840	50	675	13.50	0.0073(S)	1.2	981	0.69	0.01(NS)	1.2
	250	50	630	12.60	0.09(NS)	1.1	994	0.64	0.14(NS)	1.1
	84	50	637	12.74	0.06(NS)	1.1	991	0.64	0.09(NS)	1.1
	25	50	532	10.64	0.11(NS)	0.9	983	0.54	0.09(NS)	0.9

DMSO = Dimethylsulfoxide
EMS = Ethylmethanesulfonate
CP = Cyclophosphamide
NS = Not significant
S = Significant

Table 1 - Continued
Summary of Sister Chromatid Exchange Data
Ethyl Mercaptan

Without Activation
Test No. 2

Treatment	Dose Level (µg/ml)	Number of Cells Analyzed	Total Number of SCE's	Number of SCE's/Cell	P Value	Fold Increase in SCE's/Cell	Number of Chromosomes Analyzed	Number of SCE's/Chromosome	P Value	Fold Increase in SCE's/Chromosome
Media Control	-	50	368	7.36	-	-	988	0.37	-	-
DMSO	-	50	425	8.50	-	-	992	0.43	-	-
Ethyl Mercaptan	2,500	19	399	21.00	0.0000(S)	2.5	368	1.09	0.0000(S)	2.5

With Activation

Treatment	Dose Level (µg/ml)	Number of Cells Analyzed	Total Number of SCE's	Number of SCE's/Cell	P Value	Fold Increase in SCE's/Cell	Number of Chromosomes Analyzed	Number of SCE's/Chromosome	P Value	Fold Increase in SCE's/Chromosome
Media Control	-	50	467	9.34	-	-	1,000	0.46	-	-
DMSO	-	50	431	8.62	-	-	982	0.44	-	-
Ethyl Mercaptan	2,500	11	227	20.64	0.0001(S)	2.4	219	1.04	0.0001(S)	2.4

DMSO = Dimethylsulfoxide
NS = Not significant
S = Significant

HAZLETON
LABORATORIES AMERICA, INC.

MOUSE LYMPHOMA FORWARD MUTATION ASSAY

ETHYL MERCAPTAN (ETHANETHIOL)

FINAL REPORT

Submitted to

Phillips Petroleum Company
Bartlesville, Oklahoma

April 28, 1983

HAZLETON
LABORATORIES AMERICA, INC.

SUBJECT: Mouse Lymphoma Forward Mutation
Project No. 652-146

We, the undersigned, hereby declare that the work was performed under our supervision, according to the procedures herein described.

Study Director:

Deborah H. Pence

DEBORAH H. PENCE, Ph.D.
Diplomate, American Board of Toxicology
Associate Director of Toxicology/ Scientific Coordination
Department of Toxicology

Study Manager:

Michael G. Farrow

MICHAEL G. FARROW, Ph.D.
Director
Genetic Toxicology Department

Laboratory Supervision and Report Preparation:

Marie Draus

MARIE A. DRAUS, M.S.
Research Associate
Genetic Toxicology Department

mhr

HAZLETON
LABORATORIES AMERICA, INC.
1200 LEESBURG TURNPIKE VIENNA VIRGINIA 22180 U.S.A.

FINAL REPORT

STUDY: Mouse Lymphoma Forward Mutation Assay

COMPOUND INFORMATION:

1. Name: Ethyl Mercaptan (Ethanethiol)
2. Purity: Assumed 100%
3. Solubility: 100 mg/ml in Dimethylsulfoxide

EXPERIMENTAL DESIGN: See sponsor approved protocol No. 9

RESULTS:

1. Toxicity Evaluation

   The maximum dose selected for the mutagenicity test was 1000 µg/ml because it represented the limits of solubility of the test material.

2. Mutagenicity Evaluation (Summary Table)

   Exposure to 8 graded doses of Ethyl Mercaptan (Ethanethiol) in the absence of metabolic activation increased the induction of forward mutations in L5178Y Mouse Lymphoma cells at the T/K locus. In the presence of metabolic activation, the test compound did not increase the induction of forward mutations.

CONCLUSION:

Under these conditions, the experimental compound Ethyl Mercaptan (Ethanethiol) did exhibit a positive response without metabolic activation and is, therefore, considered to be mutagenic in this test system.

Table 1
Summary of Mouse Lymphoma Data
Ethyl Mercaptan (Ethanethiol)

Treatment and Dose Level	S-9	Percentage Total Survival	Mutation Frequency	Fold Increase
Media	-	-	5.1	-
DMSO	-	100	3.6	1.0
EMS (620 ug/ml)	-	53.5	41.7	8.2
1000 ug/ml	-	NR	NR	NR
670 ug/ml	-	NR	NR	NR
448.9 ug/ml	-	0.9	5.4	1.5
300.8 ug/ml	-	1.2	5.1	1.4
201.5 ug/ml	-	1.1	7.4	2.1
135.0 ug/ml	-	15.6	6.3	1.8
90.5 ug/ml	-	20.1	13.3	3.7
60.6 ug/ml	-	30.8	5.6	1.6
Media	+	-	4.0	-
DMSO	+	100	5.9	1.0
MCA (3 ug/ml)	+	72.4	19.2	3.2
1000 ug/ml	+	NR	NR	NR
670 ug/ml	+	NR	NR	NR
448.9 ug/ml	+	1.9	8.8	1.5
300.8 ug/ml	+	1.3	7.2	1.2
201.5 ug/ml	+	0.5	6.9	1.2
135.0 ug/ml	+	16.0	4.4	0.7
90.5 ug/ml	+	22.6	4.0	0.7
60.6 ug/ml	+	10.0	5.2	0.9

DMSO = Dimethylsulfoxide
EMS = Ethylmethanesulfonate
3-MCA = 3-Methylcholanthrene
NR = No Result, Toxic Dose

HAZLETON
LABORATORIES AMERICA, INC.

March 11, 1986

Ms. Marcia Smith
B57-AB
Medical Department
Phillips Petroleum Company
Bartlesville, Oklahoma 74004

Dear Marcia:

Enclosed please find two copies of the revised final report for HLA Project 652-146, Mouse Lymphoma Forward Mutation with Ethyl Mercaptan (Ethanethiol). This report replaces the original final report which was issued on April 28, 1983.

If you should have any comments or questions on this report, please contact me.

Best regards.

Sincerely,

Joan

JOAN K. LEMEN, B.S
Research Associate
Department of Toxicology

JKL:ew
Enclosure

HAZLETON
BIOTECHNOLOGIES CORPORATION

MOUSE LYMPHOMA FORWARD MUTATION ASSAY

ETHYL MERCAPTAN (ETHANETHIOL)

REVISED FINAL REPORT

Submitted to

Phillips Petroleum Company
Bartlesville, Oklahoma

March 13, 1985

HAZLETON
BIOTECHNOLOGIES CORPORATION

SUBJECT: Mouse Lymphoma Forward Mutation

PROJECT NUMBER: 652-146

Study Director:

Deborah H. Pence 3/12/85

DEBORAH H. PENCE
Diplomate, American Board
of Toxicology
Associate Director of Toxicology/
Scientific Coordination
Department of Toxicology

Date

03.12.85

JOY CAVAGNARO, Ph.D.
Head
Genetic and Immunotoxicology

Date

Report Preparation:

Russell C. Sernau 3/12/85

RUSSELL C. SERNAU
Research Associate

Date

HAZLETON

STUDY: Mouse Lymphoma Forward Mutation Assay

COMPOUND INFORMATION:

1. Name: Ethyl Mercaptan (Ethanethiol)
2. Purity: Assumed 100%
3. Solubility: 100 mg/ml in Dimethylsulfoxide

EXPERIMENTAL DESIGN: See sponsor approved protocol No. 9

RESULTS

1. Toxicity Evaluation

   The maximum dose selected for the mutagenicity test was 1000 ug/ml because it represented the limits of solubility of the test material.

2. Mutagenicity Evaluation (Summary Table)

   Exposure to eight graded doses of ethyl mercaptan resulted in three valid doses (>10% survival) both with and without metabolic activation. One of the three dose levels without activation (90.5 ug/ml) resulted in a mutation frequency that was two-fold greater than the DMSO solvent control. However, in the presence of metabolic activation, no significant increase was obtained at any dose level tested.

CONCLUSION

Since one dose level, in the absence of metabolic activation, elicited a two-fold response, the results of this test were considered to be equivocal. Further testing would be required in the absence of activation and using duplicate doses in order to obtain definitive results.

Table 1
Summary of Mouse Lymphoma Data
Ethyl Mercaptan (Ethanethiol)

Treatment and Dose Level	S-9	Percentage Total Survival	Mutation Frequency[b]	Fold Increase
Media	-	-	5.1	-
DMSO	-	100	3.6	1.0
EMS (620 ug/ml)	-	53.5	41.7	8.2
1000 ug/ml	-	NR	NR	NR
670 ug/ml	-	NR	NR	NR
448.9 ug/ml	-	0.9[a]	5.4	1.5
300.8 ug/ml	-	1.2[a]	5.1	1.4
201.5 ug/ml	-	1.1[a]	7.4	2.1
135.0 ug/ml	-	15.6	6.3	1.8
90.5 ug/ml	-	20.1	13.3	3.7
60.6 ug/ml	-	30.8	5.6	1.6
Media	+	-	4.0	-
DMSO	+	100	5.9	1.0
MCA (3 ug/ml)	+	72.4	19.2	3.2
1000 ug/ml	+	NR	NR	NR
670 ug/ml	+	NR	NR	NR
448.9 ug/ml	+	1.9[a]	8.8	1.5
300.8 ug/ml	+	1.3[a]	7.2	1.2
201.5 ug/ml	+	0.5[a]	6.9	1.2
135.0 ug/ml	+	16.0	4.4	0.7
90.5 ug/ml	+	22.6	4.0	0.7
60.6 ug/ml	+	10.0	5.2	0.9

DMSO = Dimethylsulfoxide
EMS = Ethylmethanesulfonate
3-MCA = 3-Methylcholanthrene
NR = No Result, Toxic Dose

[a]Invalid Dose: Less than 10% survival

[b]Expressed per 10^5 viable cells

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

Barbara J. Price
Vice President
Health, Environment & Safety
Phillips Petroleum Company
Bartlesville, Oklahoma 74004

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MAY 08 1995

EPA acknowledges the receipt of information submitted by your organization under Section 8(e) of the Toxic Substances Control Act (TSCA). For your reference, copies of the first page(s) of your submission(s) are enclosed and display the TSCA §8(e) Document Control Number (e.g., 8EHQ-00-0000) assigned by EPA to your submission(s). Please cite the assigned 8(e) number when submitting follow-up or supplemental information and **refer to the reverse side of this page for "EPA Information Requests"** .

All TSCA 8(e) submissions are placed in the public files unless confidentiality is claimed according to the procedures outlined in Part X of EPA's TSCA §8(e) policy statement (43 FR 11110, March 16, 1978). Confidential submissions received pursuant to the TSCA §8(e) Compliance Audit Program (CAP) should already contain information supporting confidentiality claims. This information is required and should be submitted if not done so previously. To substantiate claims, submit responses to the questions in the enclosure "Support Information for Confidentiality Claims". This same enclosure is used to support confidentiality claims for non-CAP submissions.

Please address any further correspondence with the Agency related to this TSCA 8(e) submission to:

Document Processing Center (7407)
Attn: TSCA Section 8(e) Coordinator
Office of Pollution Prevention and Toxics
U.S. Environmental Protection Agency
Washington, D.C. 20460-0001

EPA looks forward to continued cooperation with your organization in its ongoing efforts to evaluate and manage potential risks posed by chemicals to health and the environment.

Sincerely,

Terry R. O'Bryan
Risk Analysis Branch

Enclosure

12554A

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Triage of 8(e) Submissions

Date sent to triage: MAY 09 1995 NON-CAP (CAP)

Submission number: 12554A TSCA Inventory: (Y) N D

Study type (circle appropriate):

Group 1 - Dick Clements (1 copy total)

ECO AQUATO

Group 2 - Ernie Falke (1 copy total)

ATOX SBTOX SEN w/NEUR

Group 3 - Elizabeth Margosches (1 copy each)

STOX CTOX EPI RTOX (GTOX)

STOX/ONCO CTOX/ONCO IMMUNO CYTO NEUR

Other (FATE, EXPO, MET, etc.):

Notes:

THIS IS THE ORIGINAL 8(e) SUBMISSION; PLEASE REFILE AFTER TRIAGE DATABASE ENTRY

For Contractor Use Only

entire document: (0) 1 2 **pages** 1,2 **pages** 1,2 MRS

Notes:

Contractor reviewer : PJR **Date:** 4/26/95

CECATS\TRIAGE TRACKING DBASE ENTRY FORM

CECATS DATA:
Submission # 8EHQ- 0992 -12554 SEQ. A

TYPE: INT. SUPP FLWP

SUBMITTER NAME: Phillips Petroleum Company

SUB. DATE: 08/24/92 OTS DATE: 09/02/92 CSRAD DATE: 03/10/95

INFORMATION REQUESTED: FLWP DATE:
0501 NO INFO REQUESTED
0502 INFO REQUESTED (TECH)
0503 INFO REQUESTED (VOL ACTIONS)
0504 INFO REQUESTED (REPORTING RATIONALE)

DISPOSITION:
0639 REFER TO CHEMICAL SCREENING
0670 CAP NOTICE

VOLUNTARY ACTIONS:
0401 NO ACTION REPORTED
0402 STUDIES PLANNED/UNDERWAY
0403 NOTIFICATION OF WORKERS/OTHERS
0404 LABEL/MSDS CHANGES
0405 PROCESS/HANDLING CHANGES
0406 APP/USE DISCONTINUED
0407 PRODUCTION DISCONTINUED
0408 CONFIDENTIAL

CHEMICAL NAME:

CAS#
75-08-1

INFORMATION TYPE:		P F C
0201	ONCO (HUMAN)	01 02 04
0202	ONCO (ANIMAL)	01 02 04
0203	CELL TRANS (IN VITRO)	01 02 04
0204	MUTA (IN VITRO)	01 02 04
0205	MUTA (IN VIVO)	01 02 04
0206	REPRO/TERATO (HUMAN)	01 02 04
0207	REPRO/TERATO (ANIMAL)	01 02 04
0208	NEURO (HUMAN)	01 02 04
0209	NEURO (ANIMAL)	01 02 04
0210	ACUTE TOX. (HUMAN)	01 02 04
0211	CHR. TOX. (HUMAN)	01 02 04
0212	ACUTE TOX. (ANIMAL)	01 02 04
0213	SUB ACUTE TOX (ANIMAL)	01 02 04
0214	SUB CHRONIC TOX (ANIMAL)	01 02 04
0215	CHRONIC TOX (ANIMAL)	01 02 04

INFORMATION TYPE:		P F C
0216	EPI/CLIN	01 02 04
0217	HUMAN EXPOS (PROD CONTAM)	01 02 04
0218	HUMAN EXPOS (ACCIDENTAL)	01 02 04
0219	HUMAN EXPOS (MONITORING)	01 02 04
0220	ECO/AQUA TOX	01 02 04
0221	ENV. OCCC/REL/FATE	01 02 04
0222	EMER INCI OF ENV CONTAM	01 02 04
0223	RESPONSE REQEST DELAY	01 02 04
0224	PROD/COMP/CHEM ID	01 02 04
0225	REPORTING RATIONALE	01 02 04
0226	CONFIDENTIAL	01 02 04
0227	ALLERG (HUMAN)	01 02 04
0228	ALLERG (ANIMAL)	01 02 04
0239	METAB/PHARMACO (ANIMAL)	01 02 04
0240	METAB/PHARMACO (HUMAN)	01 02 04

INFORMATION TYPE:		P F C
0241	IMMUNO (ANIMAL)	01 02 04
0242	IMMUNO (HUMAN)	01 02 04
0243	CHEM/PHYS PROP	01 02 04
0244	CLASTO (IN VITRO)	01 02 04
0245	CLASTO (ANIMAL)	01 02 04
0246	CLASTO (HUMAN)	01 02 04
0247	DNA DAM/REPAIR	01 02 04
0248	PROD/USE/PROC	01 02 04
0251	MSDS	01 02 04
0299	OTHER	01 02 04

TRIAGE DATA: NON-CBI INVENTORY
YES
CAS SR NO
DETERMINI

ONGOING REVIEW
YES (DROP/REFER)
NO (CONTINUE)
REFER

SPECIES
In Vitro

TOXICOLOGICAL CONCERN:
LOW
MED
HIGH

USE:

PRODUCTION:

COMMENTS:

8) 8EHQ-92-12554: Rank - medium.

Chemical: ethyl mercaptan (ethanethiol: CAS# 75-08-1).

Mouse lymphoma forward mutation assay, Hazelton laboratories America, Vienna VA, dated April 28, 1983: Positive for gene mutations with a dose response in the L5178Y $TK^{+/-}$ mouse lymphoma gene mutation assay in vitro without metabolic activation.

Mouse lymphoma forward mutation assay, Hazelton laboratories America, Vienna VA, dated March 13, 1983: Inconclusively positive for gene mutations with a dose response in the L5178Y $TK^{+/-}$ mouse lymphoma gene mutation assay in vitro without metabolic activation.

In vitro sister chromatid exchange in Chinese hamster ovary cells, Hazelton laboratories America, Vienna VA, dated December 11, 1984: Induces DNA effects in the form of sister chromatid exchanges (SCEs) in CHO cells in vitro both with and without metabolic activation.