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October 18, 1992

Document Processing Center (TS-790)
Office of Pollution Prevention and Toxics
Environmental Protection Agency
401 M Street., S.W.
Washington, D.C. 20460
Attn: Section 8(e) Coordinator (CAP Agreement)

SECTION 8(e) COORDINATOR

Dear Coordinator:

8EAP-0025

On behalf of the Regulatee and pursuant to Unit II B.1.b. and Unit II C of the 6/28/91 CAP Agreement, E.I. Du Pont de Nemours and Co. hereby submits (*in triplicate*) the attached studies. Submission of this information is voluntary and is occasioned by unilateral changes in EPA's standard as to what EPA now considers as reportable information. Regulatee's submission of information is made solely in response to the new EPA §8(e) reporting standards and is not an admission: (1) of TSCA violation or liability; (2) that Regulatee's activities with the study compounds reasonably support a conclusion of substantial health or environmental risk or (3) that the studies themselves reasonably support a conclusion of substantial health or environmental risk.

The "Reporting Guide" creates new TSCA 8(e) reporting criteria which were not previously announced by EPA in its 1978 Statement of Interpretation and Enforcement Policy, 43 Fed Reg 11110 (March 16, 1978). The "Reporting Guide states criteria which expands upon and conflicts with the 1978 Statement of Interpretation. Absent amendment of the Statement of Interpretation, the informal issuance of the "Reporting Guide" raises significant due processes issues and clouds the appropriate reporting standard by which regulated persons can assure TSCA Section 8(e) compliance.

8EAP

For Regulatee,

Mark H. Christman
Counsel
Legal D-7158
1007 Market Street
Wilmington, DE 19898
(302) 774-6443

RECEIVED
3/22/95

ATTACHMENT 1

Submission of information is made under the 6/28/91 CAP Agreement, Unit II. This submission is made voluntarily and is occasioned by recent changes in EPA's TSCA §8(e) reporting standard; such changes made, for the first time in 1991 and 1992 without prior notice and in violation of Regulatee's constitutional due process rights. Regulatee's submission of information under this changed standard is not a waiver of its due process rights; an admission of TSCA violation or liability, or an admission that Regulatee's activities with the study compounds reasonably support a conclusion of substantial risk to health or to the environment. Regulatee has historically relied in good faith upon the 1978 Statement of Interpretation and Enforcement Policy criteria for determining whether study information is reportable under TSCA §8(e), 43 Fed Reg 11110 (March 16, 1978). EPA has not, to date, amended this Statement of Interpretation.

After CAP registration, EPA provided the Regulatee the June 1, 1991 "TSCA Section 8(e) Reporting Guide". This "Guide" has been further amended by EPA, EPA letter, April 10, 1992. EPA has not indicated that the "Reporting Guide" or the April 1992 amendment supersedes the 1978 Statement of Interpretation. The "Reporting Guide" and April 1992 amendment substantively lowers the Statement of Interpretation's TSCA §8(e) reporting standard². This is particularly troublesome as the "Reporting Guide" states criteria, applied retroactively, which expands upon and conflicts with the Statement of Interpretation.³ Absent amendment of the Statement of Interpretation, the informal issuance of the "Reporting Guide" and the April 1992 amendment clouds the appropriate standard by which regulated persons must assess information for purposes of TSCA §8(e).

²In sharp contrast to the Agency's 1977 and 1978 actions to soliciting public comment on the proposed and final §8(e) Policy, EPA has unilaterally pronounced §8(e) substantive reporting criteria in the 1991 Section 8(e) Guide without public notice and comment, See 42 Fed Reg 45362 (9/9/77), "Notification of Substantial Risk under Section 8(e): Proposed Guidance".

³A comparison of the 1978 Statement of Interpretation and the 1992 "Reporting Guide" is appended.

Throughout the CAP, EPA has mischaracterized the 1991 guidance as reflecting "longstanding" EPA policy concerning the standards by which toxicity information should be reviewed for purposes of §8(e) compliance. Regulatee recognizes that experience with the 1978 Statement of Interpretation may cause a review of its criteri. Regulatee supports and has no objection to the Agency's amending reporting criteria *provided that* such amendment is not applied to the regulated community in an unfair way. However, with the unilateral announcement of the CAP under the auspices of an OCM enforcement proceeding, EPA has wrought a terrific unfairness since much of the criteria EPA has espoused in the June 1991 Reporting Guide and in the Agency's April 2, 1992 amendment is new criteria which does not exist in the 1978 Statement of Interpretation and Enforcement Policy.

The following examples of new criteria contained in the "Reporting Guide" that is not contained in the Statement of Interpretation follow:

- o even though EPA expressly disclaims each "status report" as being preliminary evaluations that should not be regarded as final EPA policy or intent⁴, the "Reporting Guide" gives the "status reports" great weight as "sound and adequate basis" from which to determine mandatory reporting obligations. ("Guide" at page 20).
- o the "Reporting Guide" contains a matrix that establishes new numerical reporting "cutoff" concentrations for acute lethality information ("Guide" at p. 31). Neither this matrix nor the cutoff values therein are contained in the Statement of Interpretation. The regulated community was not made aware of these cutoff values prior to issuance of the "Reporting Guide" in June, 1991.
- o the "Reporting Guide" states new specific definitional criteria with which the Agency, for the first time, defines as 'distinguishable neurotoxicological effects'; such criteria/guidance not expressed in the 1978 Statement of Interpretation.⁵;
- o the "Reporting Guide" provides new review/ reporting criteria for irritation and sensitization studies; such criteria not previously found in the 1978 Statement of Interpretation/Enforcement Policy.
- o the "Reporting Guide" publicizes certain EPA Q/A criteria issued to the Monsanto Co. in 1989 which are not in the Statement of Interpretation; have never been published in the Federal Register or distributed by the EPA to the Regulatee. Such Q/A establishes new reporting criteria not previously found in the 1978 Statement of Interpretation/Enforcement Policy.

⁴The 'status reports' address the significance, if any, of particular information reported to the Agency, rather than stating EPA's interpretation of §8(e) reporting criteria. In the infrequent instances in which the status reports contain discussion of reportability, the analysis is invariably quite limited, without substantial supporting scientific or legal rationale.

⁵ See, e.g., 10/2/91 letter from Du Pont to EPA regarding the definition of 'serious and prolonged effects' as this term may relate to transient anesthetic effects observed at lethal levels; 10/1/91 letter from the American Petroleum Institute to EPA regarding clarification of the Reporting Guide criteria.

In discharging its responsibilities, an administrative agency must give the regulated community fair and adequate warning to as what constitutes noncompliance for which penalties may be assessed.

Among the myriad applications of the due process clause is the fundamental principle that statutes and regulations which purport to govern conduct must give an adequate warning of what they command or forbid.... Even a regulation which governs purely economic or commercial activities, if its violation can engender penalties, must be so framed as to provide a constitutionally adequate warning to those whose activities are governed.

Diebold, Inc. v. Marshall, 585 F.2d 1327, 1335-36 (D.C. Cir. 1978). See also, Rollins Environmental Services (NJ) Inc. v. U.S. Environmental Protection Agency, 937 F. 2d 649 (D.C. Cir. 1991).

While neither the are rules, This principle has been applied to hold that agency 'clarification', such as the Statement of Interpretation, the "Reporting Guide" nor the April 1992 amendments will not applied retroactively.

...a federal court will not retroactively apply an unforeseeable interpretation of an administrative regulation to the detriment of a regulated party on the theory that the post hoc interpretation asserted by the Agency is generally consistent with the policies underlying the Agency's regulatory program, when the semantic meaning of the regulations, as previously drafted and construed by the appropriate agency, does not support the interpretation which that agency urges upon the court.

Standard Oil Co. v. Federal Energy Administration, 453 F. Supp. 203, 240 (N.D. Ohio 1978), aff'd sub nom. Standard Oil Co. v. Department of Energy, 596 F.2d 1029 (Em. App. 1978):

The 1978 Statement of Interpretation does not provide adequate notice of, and indeed conflicts with, the Agency's current position at §8(e) requires reporting of all 'positive' toxicological findings without regard to an assessment of their relevance to human health. In accordance with the statute, EPA's 1978 Statement of Interpretation requires the regulated community to use scientific judgment to evaluate the significance of toxicological findings and to determining whether they reasonably support a conclusion of a substantial risk. Part V of the Statement of Interpretation urges persons to consider "the fact or probability" of an effect's occurrence. Similarly, the 1978 Statement of Interpretation stresses that an animal study is reportable only when "it contains reliable evidence ascribing the effect to the chemical." 43 Fed Reg. at 11112. Moreover, EPA's Statement of Interpretation defines the substantiality of risk as a function of both the seriousness of the effect and the probability of its occurrence. 43 Fed Reg 11110 (1978). Earlier Agency interpretation also emphasized the "substantial" nature of a §8(e) determination. See 42 Fed Reg 45362, 45363

(1977). [Section 8(e) findings require "extraordinary exposure to a chemical substance...which critically imperil human health or the environment"].

The recently issued "Reporting Guide" and April 1992 Amendment guidance requires reporting beyond and inconsistent with that required by the Statement of Interpretation. Given the statute and the Statement of Interpretation's explicit focus on substantial human or environmental risk, whether a substance poses a "substantial risk" of injury requires the application of scientific judgment to the available data on a case-by-case basis.

If an overall weight-of-evidence analysis indicates that this classification is unwarranted, reporting should be unnecessary under §8(e) because the available data will not "reasonably support the conclusion" that the chemical presents a substantial risk of serious adverse consequences to human health.

Neither the legislative history of §8(e) nor the plain meaning of the statute support EPA's recent lowering of the reporting threshold that TSCA §8(e) was intended to be a sweeping information gathering mechanism. In introducing the new version of the toxic substances legislation, Representative Eckhart included for the record discussion of the specific changes from the version of H. R. 10318 reported by the Consumer Protection and Finance Subcommittee in December 1975. One of these changes was to modify the standard for reporting under §8(e). The standard in the House version was changed from "causes or contributes to an unreasonable risk" to "causes or significantly contributes to a substantial risk". This particular change was one of several made in TSCA §8 to avoid placing an undue burden on the regulated community. The final changes to focus the scope of Section 8(e) were made in the version reported by the Conference Committee.

The word "substantial" means "considerable in importance, value, degree, amount or extent". Therefore, as generally understood, a "substantial risk" is one which will affect a considerable number of people or portion of the environment, will cause serious injury and is based on reasonably sound scientific analysis or data. Support for the interpretation can be found in a similar provision in the Consumer Product Safety Act. Section 15 of the CPSA defines a "substantial product hazard" to be:

"a product defect which because of the pattern of defect, the number of defective products distributed in commerce, the severity of the risk, or otherwise, creates a substantial risk of injury to the public."

Similarly, EPA has interpreted the word 'substantial' as a quantitative measurement. Thus, a 'substantial risk' is a risk that can be quantified, *See*, 56 Fed Reg 32292, 32297 (7/15/91). Finally, since information pertinent to the exposure of humans or the environment to chemical substances or mixtures may be obtained by EPA through Sections 8(a) and 8(d) regardless of the degree of potential risk, §8(e) has specialized function. Consequently, information subject to §8(e) reporting should be of a type which would lead a reasonable man to conclude that some type action was required immediately to prevent injury to health or the environment.

Attachment

Comparison:

Reporting triggers found in the 1978 "Statement of Interpretation/ Enforcement Policy", 43 Fed Reg 11110 (3/16/78) and the June 1991 *Section 8(e) Guide*.

<u>TEST TYPE</u>	<u>1978 POLICY CRITERIA EXIST?</u>	<u>New 1991 GUIDE CRITERIA EXIST?</u>
ACUTE LETHALITY		
Oral	N}	Y}
Dermal	N}	Y}
Inhalation (Vapors)	} ⁶	} ⁷
aerosol	N}	Y}
dusts/ particles	N}	Y}
SKIN IRRITATION	N	Y ⁸
SKIN SENSITIZATION (ANIMALS)	N	Y ⁹
EYE IRRITATION	N	Y ¹⁰
SUBCHRONIC (ORAL/DERMAL/INHALATION)	N	Y ¹¹
REPRODUCTION STUDY	N	Y ¹²
DEVELOPMENTAL TOX	Y ¹³	Y ¹⁴

⁶43 Fed Reg at 11114, comment 14:

"This policy statements directs the reporting of specific effects when unknown to the Administrator. Many routine tests are based on a knowledge of toxicity associated with a chemical. Unknown effects occurring during such a range test may have to be reported if they are those of concern to the Agency and if the information meets the criteria set forth in Parts V and VII."

⁷Guide at pp.22, 29-31.

⁸Guide at pp-34-36.

⁹Guide at pp-34-36.

¹⁰Guide at pp-34-36.

¹¹Guide at pp-22; 36-37.

¹²Guide at pp-22

¹³43 Fed Reg at 11112

"Birth Defects" listed.

¹⁴Guide at pp-22

NEUROTOXICITY	N	Y ¹⁵
CARCINOGENICITY	Y ¹⁶	Y ¹⁷
MUTAGENICITY		
<i>In Vitro</i>	Y ¹⁸	Y ¹⁹
<i>In Vivo</i>	Y}	Y}
ENVIRONMENTAL		
Bioaccumulation	Y}	N
Bioconcentration	Y ²⁰	N
Oct/water Part. Coeff.	Y}	N
Acute Fish	N	N
Acute Daphnia	N	N
Subchronic Fish	N	N
Subchronic Daphnia	N	N
Chronic Fish	N	N
AVIAN		
Acute	N	N
Reproductive	N	N
Reprodutive	N	N

¹⁵Guide at pp-23; 33-34.

¹⁶43 Fed Reg at 11112
"Cancer" listed

¹⁷Guide at pp-21.

¹⁸43 Fed Reg at 11112; 11115 at Comment 15

"Mutagenicity" listed/ *in vivo* vs *invitro* discussed; discussion of "Ames test".

¹⁹Guide at pp-23.

²⁰43 Fed Reg at 11112; 11115 at Comment 16.

CAS: 126-99-8

Chem: Chlorobutadiene

Title: The toxicity of monovinyl acetylene, chlorobutadiene and phosphine

Date: 5/28/41

Summary of Effects: effects on the circulatory system

Personal and Confidential

May 23, 1941

Medical Research Project No. MR-77

The Toxicity of Monovinyl Acetylene,
Chlorobutadiene and Phosphine

Haskell Laboratory of
Industrial Toxicology

Wilmington, Delaware

Medical Research Project No. MR-77

Distribution

5/28/41

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Medical Research Project No. MR-77

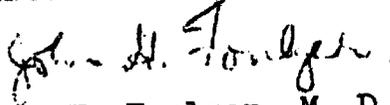
The Toxicity of Monovinyl Acetylene,
Chlorobutadiene and Phosphine

Studies made on animals exposed to relatively low concentrations of the vapors of chlorobutadiene show that concentrations above 50 parts per million, and especially above 100 parts per million, can produce abnormalities of circulation of the type found by the Dye Works Medical Staff in men exposed to chlorobutadiene in the manufacture of "Neoprene".

On the basis of these studies, which are briefly reported below, it is recommended that air analysis be made where men are exposed to chlorobutadiene, and that equipment be provided to prevent the concentrations from rising above 50 parts per million. A concentration not higher than 30 parts per million is desirable. Further, it is recommended that these men be examined at frequent intervals (periods of two weeks to three weeks), by a simple form of examination, which includes the inquiry as to

a few symptoms shown since the last examination, and measurements of blood pressure and pulse rate. It is recommended that any man showing marked abnormality of circulation at this exposure be examined again within a few days, and if the abnormality is still present, arrangements be made either to reduce his exposure by improved conditions at the site of his work, or to give him a period out of exposure so that he may recover from functional disturbance and so avoid the production of definite tissue damage.

HASKELL LABORATORY OF
INDUSTRIAL TOXICOLOGY


John H. Foulger, M. D.
Director

JHF:asg
5/28/41

Medical Research Project No. MR-77

The Toxicity of Monovinyl Acetylene,
Chlorobutadiene and Phosphine

Toxicity of Chlorobutadiene

Experimental and clinical studies made during the last three and one-half years in the Haskell Laboratory have shown that the earliest detectable effects of exposure to concentrations of toxic vapors, gases, or fumes, which might eventually cause serious disturbance of health, are a simple list of complaints made by workers and significant trends in the level of the various blood pressure factors.

The symptoms usually met are headache, ease of fatigue, gastric disturbance (nausea, loss of appetite, frequent belching, distention of the stomach, pain in the epigastrium), dizziness, respiratory distress on exertion, pain around the heart, palpitation, and tingling or pain in the arms. The changes in blood pressure depend upon the atmospheric concentration of the toxic chemical, and are, in general:

brief, the significant facts in this report were as follows:

The greatest number of complaints was found in workers with chlorobutadiene, and the least in those working with monovinyl acetylene. In decreasing frequency of occurrence, the complaints were:

Nervousness

Fatigue

Indigestion (heartburn, gas on
stomach, or gastric fullness)

Dizziness

Palpitation

Headache

Nausea

Epigastric pain

Precordial pain

Constipation or Diarrhea

The most marked signs were circulatory abnormalities (slow or rapid pulse, moderately elevated or low blood pressure and pulse pressure). There was also frequent abnormality in the response of the circulation to change from a lying to a standing position. These

circulatory abnormalities were most frequent in the men exposed to chlorobutadiene, but occurred also in men exposed to monovinyl acetylene. In both groups, the incidence of these changes was much higher than normal, reaching up to about fifty per cent or more of the workers exposed.

The observations included in Dr. Norwood's report suggested that chlorobutadiene or monovinyl acetylene, or both, behaved in low atmospheric concentrations in the same manner as do many other volatile compounds. The changes observed indicated a functional derangement of the circulation, and not actual, permanent damage to organs of the body.

The atmospheric concentrations to which the men were exposed are not definitely known. Exploratory experiments with a new optical apparatus gave values of 1 to 900 parts per million of chlorobutadiene. Air samples made later, and determined by a chemical method (described below), gave values of 14 to 29 parts per million around the CD reactor, the base of the stripper, and the crude column circulating pump. However, no really sound estimate of the concentration to which the men may be exposed has yet been made.

The problem for this laboratory appeared to be:

- (a) To show that chlorobutadiene or monovinyl acetylene, or both, could cause the symptoms and signs of circulatory abnormality observed in the workers, and
- (b) To discover an atmospheric concentration which would be without effect, so that a yardstick might be set up for deciding upon the degree of ventilation needed in the operating plant.

The present report deals with studies of the effect of inhaling chlorobutadiene. Experience has shown that information of the required type can be gained by two concurrent experiments:

1. The study of blood pressure and pulse rate, basal metabolism and other functions in dogs exposed to known concentrations of the toxic vapors; and
2. The following of weight changes in guinea pigs exposed to the vapors. This second study is carried out because guinea pigs

appear very sensitive to many toxic vapors, and also, because one can study in them the influence of vitamin "C" metabolism. This is of value because vitamin "C" metabolism appears to be extremely important in protection against certain toxic compounds.

The general mode of procedure, and the results obtained are as follows:

Studies of Circulation, Etc. In
Dogs Exposed to Chlorobutadiene

Five male dogs were exposed daily for about six hours a day, on five days of each week, in a gas chamber of about 10 cubic meters capacity. The total number of exposures was between 40 and 50. No exposures were made on Saturdays or Sundays. The concentrations of chlorobutadiene were kept as near as possible to 100 parts per million in the first thirty days of the experiment. They actually varied during this period between 30 and 140 parts per million. This variability was due to the property of polymerization, which chlorobutadiene shows and which interfered with proper

evaporation of known quantities of the material. In the later part of the experiment, the concentrations reached as high as 230 parts per million.

Before the exposure period started, the animals were studied for approximately thirty days in order to establish the normal trend for blood pressure, pulse rate and other factors.

Each day, before and after exposure, measurements were made of pulse rate and blood pressure. From time to time, basal metabolism was measured, blood counts taken, and venous oxygen concentration determined. Electrocardiograms and heart sound tracings were also made. The general results are listed below under the effects of different levels of atmospheric concentration of chlorobutadiene, as far as they could be found by analysis of the whole record:

1. Concentrations below 50 parts per million made no significant changes in either pulse pressure or diastolic blood pressure. The pulse pressure changed within normal limits, sometimes rising; sometimes falling. The diastolic blood pressure tended to rise slightly, but always within normal limits.

2. Concentrations from 50 to 100 parts per million produced a progressive deterioration of circulation in the course of the weekly five-days of exposure. During the non-exposure period, between Saturday and Sunday, the animals appeared to recover. The actual changes consisted of, in general, an increase in both diastolic blood pressure and pulse pressure. Both usually remained within normal limits, but taken together, tended to force the circulation as a whole to abnormal levels.
3. Concentrations of chlorobutadiene above 100 parts per million and less than 150 parts per million produced quite definite increases in diastolic blood pressure up to abnormal levels. The pulse pressure changes were not significant, but the circulation, as a whole, tended to become abnormal.
4. Concentrations above 200 parts per million: Animals not previously exposed to chlorobutadiene could stand one or two six-hour-exposures at concentrations as high as 200 to 220 parts per million without suffering any serious abnormality,

but animals previously exposed to lower concentrations of the order of 50 to 100 parts per million were often so seriously affected by concentrations of 200 parts per million that they suffered circulatory collapse. In one case, a single such exposure caused death in the inhalation chamber. Autopsy of the dead animal showed nothing other than dilatation of all of the blood vessels throughout the body, and all signs of circulatory failure and collapse.

During this experiment, there were no significant changes in pulse rate, basal metabolic rate, blood count or urinalysis. The electrocardiograms, during exposures at concentrations higher than 100 parts per million tended frequently to show a low voltage T wave, or even an isoelectric or dibasic T wave, indications of an acute anoxia of the heart muscle.

Studies on Guinea Pigs
Exposed to Chlorobutadiene

Two series, each containing five guinea pigs, were studied; and for each series, there was a control of five guinea pigs of about the same weights. Group A was given the standard diet, plus ample vitamin "C". Group B was given the standard diet plus minimal vitamin "C" in the form of greens. The two groups of animals were exposed at the same time as the dogs, in the same chamber. Neither group of animals grew quite as well as did the corresponding controls, but the growth curves appeared smooth so long as the concentration of chlorobutadiene remained below 100 parts per million. When the concentrations reached values higher than 100 parts per million, there was an almost immediate diminution in the growth rate, producing deflections in the smooth growth curve. This indicates that concentrations of about 100 parts per million may be quite definitely toxic.

Summary

The study briefly reported above, based upon a large number of measurements of blood pressure, pulse rate, basal metabolic rate, et cetera, on dogs, and the following of weight changes in guinea pigs, would indicate that concentrations of chlorobutadiene in the air, when below 50 parts per million, would probably not have any serious effects upon the worker. When above 50 parts per million, there may occur circulatory abnormality, which will be more pronounced if the concentrations reach the level of 100 parts per million or more. Concentrations of 100 parts per million or more, superimposed upon continued exposure to much lower concentrations may produce serious circulatory abnormality, and even lead to collapse.

While this experiment was essentially an acute experiment; it has been our general experience with other compounds producing this same type of circulatory abnormality, that the longer a man is exposed to concentrations of toxic chemical capable of producing circulatory abnormality, the less rapidly does he

recover when removed from exposure. This is indicated to some extent by the trend of the results of our animal experiments.

JHF:asg
5/28/41

Determination of Chloroprene in Air

W. R. Halpin

Since there were no methods available for the determination of chloroprene in air, several standard analytical procedures were tried with varying degrees of success.

(1) The compound was burned in air in a combustion tube and the amount of chloride was determined by the Volhard method. Variable results were obtained, probably due to incomplete combustion of the chloroprene. Oxygen was not used in the preliminary experiments with the combustion method because it would be impractical to use in analyzing samples directly from the exposure chamber.

(2) Bromination with pyridine sulfate dibromide reagent (J. Biol. Chem. 94, 401 (1931)) and the estimation of bromine added to the double bonds gave inconsistent results.

(3) Finally, the most satisfactory results were obtained by brominating the chloroprene in chloroform with bromine obtained from the reaction of

potassium bromate, potassium bromide and dilute hydrochloric acid. The excess bromine was determined by adding potassium iodide and titrating the free iodine with sodium thiosulfate, with starch as an indicator.

Reagents:

Chloroform Merck U.S.P.
0.05N Potassium bromate
Potassium bromide crystals
10% Hydrochloric acid
10% Potassium iodide
0.01N Sodium thiosulfate
1% Soluble starch (Merck)

Procedure:

To a 250 cc. Erlenmeyer flask with a ground glass stopper is added by burette, 30 cc. of the unknown chloroform solution of chloroprene. Ten cubic centimeters of 0.05N potassium bromate is added accurately by burette, plus a few crystals of potassium bromide and 4 cc. of 10% hydrochloric acid. The ground glass stopper, coated with lubriseal, is immediately fitted tightly to the flask and, holding tightly stoppered, the flask is shaken

vigorously for exactly fifteen minutes. The stopper is then carefully removed, 5 cc. of 10% potassium iodide added by pipette plus a little distilled water; 1.0 cc. of freshly made 1% starch solution is added and the mixture titrated rapidly with 0.01N sodium thiosulfate which has been accurately standardized by the iodate method. A blank of 30 cc. of chloroform is titrated similarly.

Calculations:

Under these conditions, analyses of standard solutions indicate that each molecule of chloroprene takes up two atoms of bromine.

(Blank titration - Unknown titration) x Normality of thiosulfate x

$\frac{\text{Mol. Wt. of Chloroprene}}{2} = \text{Mg. Chloroprene in Unknown}$

$\frac{\text{Mg. Chloroprene}}{\text{Liters of air}} = \text{Mg. Chloroprene per liter}$

$\text{Mg. Chloroprene per liter} \times 276.5 = \text{PPM by volume}$

Standard Solutions

Standard solutions of various concentrations of chloroprene in chloroform were prepared by adding an exact amount of chloroprene with a micro-burette to a volumetric flask and diluting to the mark with chloroform. From this solution several dilutions of various concentrations were accurately prepared.

11-6-40

<u>Sample</u>	<u>Mg. Chloroprene Added</u>	<u>Mg. Recovered</u>	<u>% Recovery</u>
1	7.19	8.15	113
2	8.62	9.23	107
3	10.06	11.38	113
4	11.50	12.36	107
5	12.94	13.52	104
6	14.37	15.26	106

11-12-40

1	7.19	7.07	98
2	8.62	8.93	103
3	10.06	9.55	95
4	11.50	10.43	91
5	12.94	13.71	106

Method of Sampling

The air to be tested was drawn through three absorbers in series, each containing 15 cc. of chloroform, and all immersed in an ice bath. The rate of sampling was not greater than one liter per minute. For concentrations up to 200 parts per million, the volume of the sample taken was 20 liters. With higher concentrations, smaller samples were taken.

WRH:asg
5/28/41

H

Triage of 8(e) Submissions

Date sent to triage: 2/5/96

NON-CAP

CAP

Submission number: 13131A

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

Please evaluate all three chemicals.

There was only data on chlorbutadiene

Thanks

For Contractor Use Only	
entire document: <u>0</u> 1 2 pages <u>1, 1st tab</u> pages <u>[redacted]</u>	
Notes:	
Contractor reviewer: <u>LPS</u>	Date: <u>12/6/95</u> <u>[signature]</u>

CECATS DATA: Submission # BEHO- 1192-13131 SEQ. A

TYPE: INT-SUPP FLWP

SUBMITTER NAME: E. I. Dupont de Nemours and Company

INFORMATION REQUESTED: FLWP DATE: _____
 0501 NO INFO REQUESTED
 0502 INFO REQUESTED (TECH)
 0503 INFO REQUESTED (VOL. ACTIONS)
 0504 INFO REQUESTED (REPORTING RATIONALE)
 DISPOSITION:
 REFER TO CHEMICAL SCREENING
 CAP NOTICE

SUB DATE: 10/18/92 ORS DATE: 11/02/92 CSRAD DATE: 03/22/95

CHEMICAL NAME: Chlorobutadiene and Phosphine
 CASE
126-99-8
7803-51-2
689-97-4

ADMINISTRATIVE ACTIONS:
 NOT ACTION RI FOR TID
 0402 STUDIES PLANNED/IN PROGRESS
 0403 NOTIFICATION OF WORK REQUIRED
 0404 LABELS/MSDS (TIANG) S
 0405 PROCESS/ANDL. ING. (TIANG) S
 0406 APP USE DISCONTINUED
 0407 PRODUCTION DISCONTINUED
 0408 CONFIDENTIAL

INFORMATION TYPE:	P F C	INFORMATION TYPE:	P F C	INFORMATION TYPE:	P F C
0201 ONCO (HUMAN)	01 02 04	0216 BP/C/LIN	01 02 04	0241 INADJNO (ANIMAL)	01 02 04
0202 ONCO (ANIMAL)	01 02 04	0217 HUMAN EXPOS (PROD CONTAM)	01 02 04	0242 INADJNO (HUMAN)	01 02 04
0203 CELL TRANS (IN VITRO)	01 02 04	0218 HUMAN EXPOS (ACCIDENTAL)	01 02 04	0243 CHEM/PHYS PROP	01 02 04
0204 MUTA (IN VITRO)	01 02 04	0219 HUMAN EXPOS (MONITORING)	01 02 04	0244 CLASTO (IN VITRO)	01 02 04
0205 MUTA (IN VIVO)	01 02 04	0220 ECO/NOVA TOX	01 02 04	0245 CLASTO (ANIMAL)	01 02 04
0206 REPRO/TERATO (HUMAN)	01 02 04	0221 ENV. OCCUR/FATE	01 02 04	0246 CLASTO (HUMAN)	01 02 04
0207 REPRO/TERATO (ANIMAL)	01 02 04	0222 EMER INCI OF ENV CONTAM	01 02 04	0247 DNA DAM/REPAIR	01 02 04
0208 NEURO (HUMAN)	01 02 04	0223 RESPONSE REQUEST DELAY	01 02 04	0248 PROD/USE/PROC	01 02 04
0209 NEURO (ANIMAL)	01 02 04	0224 PROD/COM/PEM ID	01 02 04	0251 MSDS	01 02 04
0210 ACUTE TOX. (HUMAN)	01 02 04	0225 REPORTING RATIONALE	01 02 04	0259 OTHER	01 02 04
0211 CHR. TOX. (HUMAN)	01 02 04	0226 CONFIDENTIAL	01 02 04		
0212 ACUTE TOX. (ANIMAL)	01 02 04	0227 ALLERG (HUMAN)	01 02 04		
0213 SUB ACUTE TOX (ANIMAL)	01 02 04	0228 ALLERG (ANIMAL)	01 02 04		
0214 SUB CHRONIC TOX (ANIMAL)	01 02 04	0229 METAB/PHARMACO (ANIMAL)	01 02 04		
0215 CHRONIC TOX (ANIMAL)	01 02 04	0230 METAB/PHARMACO (HUMAN)	01 02 04		

INTRA-SPECIES: NON-CBL INVENTORY ONGOING REVIEW YES (DROPPABLE) NO (CONTINUE)

CAS SR NO YES NO

SPECIES: Human DDG SR CP

TOXICOLOGICAL CONCERN: LOW MILD HIGH

USE: _____ PRODUCTION: _____

1941 IN TRIAL (M41) REPR
 STUDIES in dogs & guinea pigs with chlorobutadiene showed that the higher exposures than 50 ppm concentrations (duration of the exposure is not specified) affected circulating systems.

CHLOROBUTADIENE

126-99-8

"13131A"⁰¹ L "FIVE MALE DOGS WERE EXPOSED 6 HOURS DAILY FOR 5 DAYS/WEEK TO AN AVERAGE OF 100 PPM OF CHLOROBUTADIENE (CAS #126-99-8) VAPOR FOR 40-50 EXPOSURES. ACTUAL DOSAGES RANGED FROM 30 TO 140 PPM. CONCENTRATIONS FROM 50-100 PPM RAISED DIASTOLIC BLOOD PRESSURE AND PULSE PRESSURE; HOWEVER, THESE VALUES REMAINED WITHIN NORMAL LIMITS. ANIMALS APPEARED TO RECOVER DURING 2 DAYS OF NON-EXPOSURE. CONCENTRATIONS FROM 100-140 PPM RAISED DIASTOLIC BLOOD PRESSURE UP TO ABNORMAL LEVELS. AT CONCENTRATIONS HIGHER THAN 100 PPM, ELECTROCARDIOGRAMS INDICATED ACUTE ANOXIA OF THE HEART MUSCLE. NOEC <50 PPM. NO ACTUAL BLOOD PRESSURE DATA WERE PROVIDED FOR ANY DOSE.

DOGS THAT PREVIOUSLY HAD BEEN EXPOSED TO 50-100 PPM WERE EXPOSED TO A SINGLE DOSE ABOVE 200 PPM. THIS RESULTED IN CIRCULATORY COLLAPSE FROM THE DILATION OF ALL BLOOD VESSELS; ONE DOG DIED AFTER RECEIVING THE SINGLE EXPOSURE. ANIMALS NOT PREVIOUSLY EXPOSED TO CHLOROBUTADIENE COULD TOLERATE 1-2 6-HOUR EXPOSURES AT 200-220 PPM WITHOUT SUFFERING SERIOUS ABNORMALITY. THERE WERE NO SIGNIFICANT CHANGES IN PULSE RATE, BASAL METABOLIC RATE, BLOOD COUNT, OR URINALYSIS AT ANY DOSE.

TWO GROUPS OF GUINEA PIGS (5/GROUP) WERE EXPOSED TO CHLOROBUTADIENE AT THE SAME TIME AS THE DOGS, IN THE SAME CHAMBER. GROUP A RECEIVED AMPLE VITAMIN C; GROUP B RECEIVED MINIMAL VITAMIN C ALONG WITH STANDARD DIET. CONTROL ANIMALS OF SAME WEIGHT WERE INCLUDED IN STUDY. NEITHER GROUP OF ANIMALS GREW AS WELL AS CORRESPONDING CONTROL, BUT GROWTH CURVES APPEARED SMOOTH AT CONCENTRATIONS <100 PPM. AT CONCENTRATIONS >100 PPM, THERE WAS AN IMMEDIATE DIMINUTION IN THE GROWTH RATE."