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Doc Title	ACUTE TOXICOLOGICAL PROPERTIES AND DOT TEST FOR CORROSIVENESS ON BROMINATED PHENOL DERIVATIVES (TETRABROMOBISPHENOL A WASTE) WITH COVER LETTER	23					

Chemical Name (300 per name)	25	CAS No. (10)	24
TETRABROMOBISPHENOL A		79-94-7	

UC 8/2/85 1B

THE DOW CHEMICAL COMPANY

MIDLAND, MICHIGAN 48674

July 22, 1985

Document Control Officer
U.S. Environmental Protection Agency
TSCA-8D1
P.O. Box 2060
Rockville, MD 20852

Re: OPTS-82022

Dear Sir or Madam:

As required by 40 CFR 716, as amended effective June 20, 1985 we herewith submit copies of reports of 12 health and safety studies.

Each report is marked with an identifying number at the top of the first page of the report, e.g., D-1722. Use of this identification number in future correspondence regarding this submission will facilitate handling of questions.

The index required by 40 CFR 716.6(b) is enclosed. It lists the Dow identification number and title of each report submitted in CAS number order.

Dow manufactures three products, Dowanol* TMH, Dowanol TEH and Dowanol TBH, which are, respectively, the monomethyl, monoethyl and monobutyl ethers of polyethylene glycol. Each contains 70% or more of the respective monoalkylether of triethylene glycol. Further, the monoalkyl ethers of polyethylene glycol were listed on the Initial Inventory, respectively, under CAS numbers 9004-74-4, 27879-07-8, and 9004-77-7. Thus, for puposes of this submission, please understand that the products reported on the Inventory correspond to products which are listed on the enclosed index as follows:

9004-74-4	contains	112-35-6
27879-07-8	contains	112-50-5
9004-77-7	contains	143-22-6

*Trademark of The Dow Chemical Company

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These reports contain some information which is not relevant to health or safety studies of listed chemicals, e.g., references to unlisted chemicals, marketing or process data, account numbers, internal document identification codes or distribution lists. Such information has been deleted from all copies submitted.

Very truly yours,

Leroy Hampton, PhD.

Leroy Hampton
Research Associate
Regulatory and Legislative Issues
Health and Environmental Sciences
2020 The Willard H. Dow Center
(517) 636-6226

rt

Enclosures

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878216065

BIOMEDICAL RESEARCH
Texas Division Toxicology

DOW CHEMICAL U.S.A.

SUBMITTED BY	CHARGE	DATE	FILE / K NUMBER
		May 3, 1976	

ACUTE TOXICOLOGICAL PROPERTIES AND DOT TEST FOR CORROSIVENESS ON BROMINATED PHENOL DERIVATIVES (TETRABROMOBISPHENOL A WASTE)

M.N.P. RJS LRJ D-001725

REPORTED BY: M. N. Pinkerton, R. L. Schwebel
CHECKED BY: R. V. Johnston, D.V.M.

INFORMATIVE SUMMARY WITH CONCLUSIONS BASED ON THE SAMPLE RECEIVED. ADDITIONAL INFORMATION INCLUDING THE EFFECTS OF REPEATED EXPOSURE MAY BE REQUIRED AS SPECIFIC USES AND FORMULATIONS ARE DEVELOPED OR IF PROCESS CHANGES OCCUR.

A sample of brominated phenol derivatives was submitted to the Comparative Toxicology Research Laboratory for evaluation of acute oral lethality, eye and skin irritation properties, acute inhalation toxicity, and for evaluation of corrosiveness to skin in accordance with the Department of Transportation Hazardous Materials Regulation of the Code of Federal Regulations, Title 49, Section 173.240, and for definition of industrial handling hazards involving aucte exposures.

A member of the Industiral Health Team (Toxicologist, Industrial Hygienist, and/or Industrial Physician) should be consulted for recommendation of additional safety evaluations or handling procedures which may be needed to support manufacture and/or use of this test material.

The acute oral lethality of the test material is low. The acute oral LD_{50} determined in twelve albino rats is greater than 2.0 g/kg body weight. There is little likelihood that internal injury would result from acute ingestion of amounts of the test material one might encounter incidental to industrial handling.

The test material had an extremely severe effect upon the eye of the albino rabbit. Direct contact with this material resulted in tissue destruction leading to permanent impairment of vision. If contact occurs, contaminated eyes should be flushed immediately with copious amounts of flowing tap water for at least 15 minutes. Meanwhile the medical department should be alerted and medical attention immediately obtained for the patient. Special and particular precautions should be taken to prevent eye contact with this material. Chemical workers' goggles are recommended whenever the likelihood of eye contact exists.

The test material is rapidly destructive to the skin of the albino rabbit. A single exposure (24 hours) will likely cause a severe chemical burn. Every precaution should be taken to prevent any and all skin contact with the test material. Design of equipment and operational procedures should be such that the likelihood of contact does not exist. If contact occurs, all contaminated clothing, including shoes, should be removed immediately and the affected skin area flushed thoroughly with water from a safety shower or other suitable device and cleansed with soap and plenty of water. Medical attention should be obtained.

A corrosive material is one that causes irreversible change or destruction

DISTRIBUTION

to the intact skin of an albino rabbit after an exposure period of four hours. The test procedure to be used is described in Paragraph 1500.41 of the Code of Federal Regulations, Part 1500. Brominated phenol derivatives is corrosive.

There was no treatment-related alteration in appearance, demeanor, food consumption or survival in any of the four albino rats exposed to the saturated atmosphere (nominal concentration: 0.319 mg/l) for seven hours at room temperature. No problem is anticipated from a single, short-term exposure to the dusts of the test material at room temperature.

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BIOMEDICAL AND COMPARATIVE
TOXICOLOGY RESEARCH LABORATORY

DOW CHEMICAL U.S.A.

FREEPORT, TEXAS

DATA SHEET OF PROPERTIES, HEALTH HAZARDS, AND PRECAUTIONS FOR SAFE HANDLING OF MATERIALS

MOLECULAR FORMULA	NAME: Brominated Phenol Derivatives	
MOLECULAR WEIGHT / INDUSTRIAL HYGIENE STANDARD	SYNONYMS: Tetrabromobisphenol A Waste	FILE
STRUCTURAL FORMULA - OR COMPOSITION		

Waste stream from the reaction of p-bisphenol A and bromine

PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT	EXPLOSIVE LIMITS (% VOL IN AIR)	FLASH POINT	IGNITION TEMP.	MELTING POINT	VAPOR PRESS. mmHg. 25°C.
100°C 5 mmHg.		°C	°C	°C	

CORROSIVENESS (To Common Metals)	PHYSICAL STATE	COLOR
	Semi-solid	Black

CHEMICAL REACTIVITY	ODOR (Include Concentration in Air)

STABILITY (To pH Change, Heat, Light)

TOXIC PROPERTIES

TYPE OF CONTACT	CLASSIFICATION OF TOXIC PROPERTIES	
EYE *	☐ May cause no response or no more than very slight to slight transitory pain and/or slight transient corneal injury and/or irritation of the eyelids.	☐ May cause some permanent loss of vision (this includes damage to cornea or internal injury which is incompletely healed in one week.)
	☐ May cause sufficient injury to the eye to result in loss of time from work. (This includes damage to the cornea which heals or nearly heals in a week and/or considerable conjunctival irritation with edema.)	☐ Vapor exposure may cause severe pain, lacrymation or serious injury to the eyes.
SKIN	☐ Single prolonged exposure (hours) causes no effect. Several repeated prolonged exposures may or may not cause the development of some slight irritation.	☐ Single short exposure (minutes) may cause considerable irritation and/or single prolonged or frequently repeated short exposures cause a burn and/or may cause systemic injury, even death.
	☐ Single prolonged exposure may cause some reddening of the skin. Repeated prolonged contacts may cause appreciable irritation, possibly a mild burn and/or may cause appreciable systemic injury due to absorption.	☒ An exposure [redacted] causes severe burns and/or serious systemic injury, [redacted]
INHALATION — DUST OR MIST ☐	☐ No systemic injury expected. No irritation to nose and throat in dusty or misty atmospheres.	☐ Dusty or misty atmosphere painful to nose and throat (intolerable to most people) and/or exposure may cause serious systemic injury, even death.
	☐ Throat and nose irritation in a dusty or misty atmosphere is painful but not intolerable and/or prolonged or repeated exposures may cause systemic injury.	☐ Short exposure (minutes) may cause death or serious systemic injury.
INHALATION — VAPOR (Tested at room temperature unless otherwise indicated.)	☒ Exposures do not cause any effects other than some very slight irritation or pain to the eyes or respiratory passages at the most.	☐ Exposures may cause extreme drowsiness, and/or serious systemic injury, and/or may cause intolerable irritation to the respiratory passages.
	☐ Single exposures exceeding ½ hour, or frequently repeated exposures of shorter duration, may cause slight anesthesia and/or slight systemic injury, and/or cause appreciable, but not intolerable, irritation of respiratory passages.	☐ Short exposures may cause unconsciousness, and/or serious systemic injury, including death.
		☐ Even very short exposure will cause serious systemic injury or death.
INGESTION	☒ Amounts which may be swallowed incidental to industrial handling will not cause injury. However, if substantial quantities should be swallowed, more or less serious effects may occur.	☐ Amounts which may be swallowed incidental to industrial handling and use may cause serious injury.

COMMENTS *Direct contact resulted in tissue destruction leading to permanent loss of vision.

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DOW

ACUTE ORAL TOXICITY

TEXAS DIVISION TOXICOLOGY LABORATORY

MATERIAL: BROMINATED

SPECIES: PHENOL DERIVATIVES

40 % SOLUTION IN:

☐ UNDILUTED ☐ WATER ☑ CORN OIL

☑ RAT ☐ CAVY ☐ RABBIT ☐ MOUSE

SEX: ☐ MALE ☑ FEMALE

☐ WEIGH OUT ☐ (OTHER)

CAGE	DATE FED	ANIMAL MARKING	WEIGHT GM.	DOSE GM./KG.	DOSE CC.	ANIMAL WEIGHT (GM.) 4/1/76	4-7-76	4/13/76	DATE
25	3/31/76	No Color	268	0.5	.335	274	274	295	
		black	274		.342	290	298	303	
		red	276		.345	290	300	308	
		blue	280		.350	288	292	300	
26		No Color	282	1.0	.705	300	312	318	
		black	336		.840	348	355	368	
		red	292		.730	310	310	312	
		blue	298		.745	310	318	320	
27		No Color	278	2.0	1.39	280	300	300	Severe diarrhea
		black	272		1.36	248	276	288	
		red	306		1.53	300	320	326	severe diarrhea
		blue	264		1.32	263	288	288	

OBSERVATION BY: JB JB JB

SIGNED: Michael N. Pinkerton

DATE: 4/27/76

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91328D

DOW

EYE CONTACT TEST

TEXAS DIVISION TOXICOLOGY LABORATORY

MATERIAL: Brominated Phenol Derivatives

RABBIT NO.

SEX: ☑ MALE ☐ FEMALE

CAGE NO.

CONCENTRATION % W/V ☐ UNDILUTED

SOLVENT:

☐ WATER ☐ PROPYLENE GLYCOL ☐ OTHER

RESPONSE	NOT WASHED (LEFT)	WASHED (RIGHT)	DATE AND INITIALS	COMMENTS
PAIN	3+	3+	4-7-76 JRP	IMMEDIATE:
CONJUNCTIVA	3	3		
CORNEA	4	4		
CONJUNCTIVA	6	6	4-7-76 JRP	AFTER ONE HOUR (OR____HOURS)
CORNEA BEFORE STAIN	6	6		
CORNEA AFTER STAIN	6	6		
INTERNAL EFFECTS*	6	6		
CONJUNCTIVA	6	6	4/8/76 MNP	AFTER 24 HOURS
CORNEA BEFORE STAIN	6	6		
CORNEA AFTER STAIN	6	6		
INTERNAL EFFECTS*	6	6		
CONJUNCTIVA	6	6	4/9/76 MNP	AFTER 48 HOURS
CORNEA BEFORE STAIN	—	—		cannot evaluate
CORNEA AFTER STAIN	—	—		
INTERNAL EFFECTS*	—	—		
CONJUNCTIVA	6	6	4-12-76 JRP	AFTER____DAYS
CORNEA BEFORE STAIN	6	6		
CORNEA AFTER STAIN	6	6		
INTERNAL EFFECTS*	6	6		

* DESCRIBE UNDER COMMENTS

SIGNED Michael N. Pinkerton

DATE 4/27/76

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Midland, Mich.

DOW

SKIN CONTACT – IRRITATION

TEXAS DIVISION TOXICOLOGY LABORATORY

MATERIAL: Brominated Phenol Derivatives

RABBIT NO.

CAGE NO.

TEST BY REPEATED APPLICATION

AS 100 % MATERIAL ~~SOLUTION IN:~~

DATE 4-5-76		4/8	4/9	[illegible]					
DAYS ON EXPOSURE		1	2						
ON EAR	APPLICATION NO.	—	—	-	—	—	—	-	—
	HYPEREMIA	6	6						
	EDEMA	6	6						
	NECROSIS	5	5						
	EXFOLIATION	1	1						
	HAIR LOSS	1	1						
	SCAB	1	5						
	SCAR	1	1						

severe chem burn

sacrificed 4/13/76

ON ABDOMEN INTACT	APPLICATION NO.	—	—	—	—	—	—	—	—
	HYPEREMIA	6	6						
	EDEMA	6	6						
	NECROSIS	5	5						
	EXFOLIATION	1	1		-				
	SCAB	1	5						
	SCAR	1	1						

"

ON ABDOMEN ABRADED	APPLICATION NO.	—	-	—	—	—	—	-	—
	HYPEREMIA	6	6						
	EDEMA	6	6						
	NECROSIS	6	6						
	EXFOLIATION	1	1						
	SCAB	1	5						
	SCAR	1	1						
WEIGHT IN KG		2165 2146	1						
OBSERVATION BY		MMP	MMP						

"

SIGNED Michael N. Princenton

DATE 4/27/76

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DOW

878216065

SINGLE VAPOR EXPOSURE RECORD

TEXAS DIVISION TOXICOLOGY LABORATORY

MATERIAL: BROMINATED PHENOL DERIVATIVES | MOLECULAR WEIGHT | SPECIES: RAT; OR: | SEX: ☐ MALE ☑ FEMALE | CAGE NO. 7

CONDITIONS OF EXPOSURE

VAPOR OR GAS CONC. P.P.M. | SAT. VAPOR AT 25 °C | HOURS | PUMP HOUSE TEMP. °C | ROOM TEMP. °C

☐ LIQUID AEROSOL ☐ DUST | Mg.M³ | ☐ 19 L. GLASS JAR | CHAMBER NO. 2 | METHOD ☐ A ☐ B ☐ C

CONDITIONS OF OPERATION

SINGLE SYRINGE PUMP	DUAL SYRINGE PUMP	AIR FLOW
SYRINGE NO.	☐ GAS BAG RESERVOIR ☐ LIQUID RESERVOIR	ROTAMETER NO. 4
SPEED SETTING	DELIVERY ML/HR. R.P.M. MOTOR	SETTING CM.
DELIVERY ML./MIN.	DRIVE GEAR TEETH / CHANGE GEAR TEETH	DELIVERY 5 L/MIN.

ANIMAL MARK →		Color	Black	red	Line						
DATE	OBSERVATION BY	BODY WEIGHT, GRAMS									
4/7/76	VB	314	312	282	300						
4/8/76	MH	310	308	280	292						
4/14/76	VB	318	315	302	294						
4/20/76	V.B.	323	320	294	290						

REMARKS

TIME AIRFLOW STARTED	7:48
TIME EXPOSURE STARTED	
TIME EXPOSURE ENDED	2:48
TOTAL RUNNING TIME	7: HRS
WT. BUBBLER BEFORE	73613 G.
WT. BUBBLER AFTER	73546 G.
AMOUNT USED	.067 G.
CALC. APPROX. SATURATED VAPOR CONC.	.319 mg/l

SIGNED Michael N. Pinkerton DATE 4/27/76

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