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Chemical Category	PENTACHLOROPYRIDINE		

CODING FORM FOR GLOBAL INDEXING

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THE DOW CHEMICAL COMPANY

MIDLAND, MICHIGAN 48674

May 8, 1986



FYI-94-881134
INIT 07/26/94

IR-446

Dr. Louis Borghi
Dynamac Corporation
The Dynamac Building
11140 Rockville Pike
Rockville, MD 20852

Handwritten notes



84940000213

RE: PENTACHLOROPYRIDINE (CAS #2176-62-7)

94 JUL 26 PM 3:32

RECEIVED
OFFICE

This letter is in response to your April 30 request for information on behalf of the Interagency Testing Committee. Copies are being sent to Dr. Robert Brink, ITC Executive Secretary; to Jerry Vorbach of ET&D; and to the EPA Document Control Office.

Production Data

These data are provided as defined for Section 8(a) reporting. Dow produces pentachloropyridine at two sites as follows (all quantities in kg):

	<u>FREEPORT, TX</u>	<u>PITTSBURG, CA</u>
Manufactured for use		
Lost during manufacture	1,036,000	40,520
Lost to environment	0	20
In waste, treated to destroy	1,036,000	20,000
In waste, not treated	0	20,500
Total manufactured		
Total worker hours	69,486	1,272
Total workers	74	30

These values are for calendar year 1983.

In addition to the above workers, about 20 people in Freeport and 20 in Pittsburg work in the general vicinity of the plants with minimum potential exposure.

Use

Pentachloropyridine is used by us as a pesticide intermediate; very small quantities have been used outside the company on an exceptional and infrequent basis.

Dr. Louis Borghi
May 8, 1986
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The use in packaging adhesives cited on page three of the Information Review has been identified by you as a reference to a Dow antimicrobial, Dovicil* S-13. Our FIFRA registration file shows that the last activity on that product occurred in March of 1977.

Environmental Data

Our files list the following physical properties for this substance:

Molecular weight	251.3
Melting point	123-125°C
Boiling point	279-280°C @ 760 mm Hg
Vapor pressure	.007 mm Hg @ 25°C
Vapor density	8.4
Solubility in water	none
Specific gravity	1.64 @ 125°C

The vapor pressure value is for a liquid extrapolated back to 25°C from measurements taken at temperatures above the melting point. The vapor pressure of the solid will be lower.

The solubility of pentachloropyridine in water was determined to be <5 mg/L by Total Oxygen Demand (TOD) analysis. Because of this low solubility, the standard Biochemical Oxygen Demand (BOD) test was not applicable.

The log Kow octanol/water partition coefficient for pentachloropyridine was determined by High Performance Liquid Chromatography (HPLC) to be 5.07. Pentachloropyridine may have a tendency to bioconcentrate in aquatic organisms based on the low water solubility and log Kow value of 5.07.

Pentachloropyridine is moderately toxic to fish according to descriptive categories used by the EPA. The LC50 value for the emerald shiner (Notropis atherinoides Rafinesque) is 1.2 mg/L.

Unpublished Toxicity Data

The following is a summary of unpublished information in our files.

Dr. Louis Borghi
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The acute oral toxicity is moderate. The LD50 is between 126 and 1000 mg/kg in rats (1965).

SKIN EFFECTS--Rabbit testing indicates that repeated, prolonged skin contact could cause moderate irritation and possibly a burn. No dermal LD50 is available, but judging from the health of the rabbits on the irritation test, this material is not likely to be absorbed through skin in acutely toxic amounts (1965). A guinea pig sensitization test was positive (1968). Has been known to cause first and second degree burns in humans on single exposure--has also caused sensitization in humans (1983).

EYE EFFECTS--The material is essentially non-irritating to eyes as determined by a test on a rabbit (1965). Human experience indicates that the material may cause severe irritation and corneal damage to the eyes (1983).

ACUTE INHALATION EFFECTS--A solid material. Inhalation of vapors has been known to cause headaches and dizziness in humans (1983).

SUBCHRONIC EFFECTS--In a 90-day dietary study, female rats ingesting after ingesting low doses had no adverse effects. Male rats had slight kidney effects in the low dose group but no adverse effects in the low dose group or below (1968). A possible testicular effect observed in the first 90-day study (1968) was investigated by feeding much higher doses to male rats for 14 to 242 days. No testicular effect occurred in this second study indicating that the possible effect in the first study was not related to ingestion of pentachloropyridine. Even at the high doses used in the second study, no liver lesions occurred in those rats, however, SCPT levels were depressed (1969).

Occupational Exposure

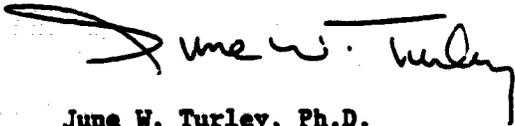
The 1980-83 National Occupational Exposure Survey conducted by NIOSH erroneously states that 676 workers at 15 plants were potentially exposed to pentachloropyridine in the workplace in 1980. This is almost five times higher than our present estimate of approximately 100 workers with a potential minimal exposure.

Enclosed is a copy of a Health Effects, Handling, and First Aid report used by our plants for hazards communication and training. I have also enclosed a 1978 MSD sheet which is currently undergoing revision and which will be available by the end of May.

Dr. Louis Borghi
May 8, 1986
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The third document attached is a table of work exposure data which was provided to EPA at the "pyridine chemistry" meeting last July in Washington.

Sincerely,



June W. Turley, Ph.D.
Regulatory and Legislative Issues
Health and Environmental Sciences
1803 Building

lkr

enclosures

PENTACHLOROPYRIDINE

Latest Revision: 09/04/84

This information applies to the stated material and may not apply to dilutions or formulations of the material.

SYNONYMS: PYRIDINE, PENTACHLORO-

CHEMICAL AND PHYSICAL PROPERTIES

This data compiled from various sources and not verified. Additional information is available through your site's Reactive Chemical Program.

APPEARANCE: SOLID CRYSTALS

MOLECULAR WEIGHT: 251.3

BOILING POINT: 279-280 DEG. C @ 760 MMHG

MELTING POINT: 123-125 DEG. C

STABILITY/REACTIVITY: REACTS WITH ACID

POTENTIAL HEALTH EFFECTS

(REVISED: 09/16/83)

This section includes possible adverse effects which could occur if this material is not handled in the recommended manner.

EYE

- May cause severe irritation with corneal injury.

SKIN

- Prolonged exposure may cause skin burns.
- May cause allergic skin reaction in susceptible individuals.
- A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts.
- The dermal LD50 has not been determined.

INGESTION

- Single dose oral toxicity is moderate.
- The oral LD50 for rats is between 126 and 1000 mg/kg.
- Amounts ingested incidental to industrial handling are not likely to cause injury; however ingestion of larger amounts may cause injury.

ACUTE INHALATION EFFECTS

- Single exposure to dust is not likely to be hazardous.
- Exposure to vapors has caused headaches and dizziness in humans.

SUBCHRONIC EFFECTS

- Excessive exposure may cause kidney and possible liver effects.

CHRONIC EFFECTS / CARCINOGENICITY

- No relevant information found.

PENTACHLOROPYRIDINE

TERATOGENIC EFFECTS

- No relevant information found.

REPRODUCTIVE EFFECTS

- No relevant information found.

MUTAGENICITY

- No relevant information found.

PHARMACOKINETICS

- No relevant information found.

EXPOSURE GUIDELINES

- Dow IHG is 7 mg/m³ for pentachloropyridine.

HANDLING PRECAUTIONS AND PROTECTIVE EQUIPMENT (REVISED: 09/04/84)

These recommended precautions are intended for use during normal operating conditions; emergency conditions could require additional precautions. (For an explanation of the low, moderate and high potential exposure categories or specific recommendations for your specific operation contact your industrial hygienist.)

EYE

- LOW - Use safety glasses.
- MOR. RATE - Use chemical goggles.
- HIG. - Use chemical goggles.

SKIN

- LOW - Wear clean, long-sleeved, body-covering clothing.
- MODERATE - Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation.
 - Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.
- HIGH - Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation.
 - Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

PENTACHLOROPYRIDINE

INHALATION

- LOW - When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator.
- MODERATE - When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator.
- HIGH - When airborne exposure guidelines and/or comfort levels may be exceeded, use an approved air-purifying respirator.

INGESTION

- Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

VENTILATION

- Control airborne concentrations below the exposure guideline.
- Local exhaust ventilation may be necessary for some operations.

PROTECTIVE EQUIPMENT INFORMATION

- The following should be effective protective clothing materials: cloth
- The following should be effective types of air-purifying respirators: organic vapor, agricultural.

EMERGENCY TREATMENT AND MEDICAL NOTES Revised: 09/16/83

EYE

- Irrigate immediately with water for at least 5 minutes.

SKIN

- In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call physician if irritation persists. Wash clothing before reuse. Destroy contaminated shoes.
- Avoid prolonged or repeated contact with skin. Wash thoroughly after handling.

INGESTION

- Induce vomiting if large amounts are ingested. Consult medical personnel.

INHALATION

- Remove to fresh air if effects occur. Consult a physician.

NOTES TO PHYSICIAN

- If burn is present, treat as any thermal burn, after decontamination.
- No specific antidote.
- Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 58858 Page: 2
PRODUCT NAME: PENTACHLOROPYRIDINE /IDT/

Effective Date: 06/01/78 Date Printed: 05/05/86 MSD: 000504

5. ENVIRONMENTAL AND DISPOSAL INFORMATION: (CONTINUED)

methane-air to give HCl and CO₂; incineration should provide control to prevent HCl discharge into the atmosphere.

6. HEALTH HAZARD DATA:

EYE: Minimal effect on eyes.

SKIN CONTACT: Single prolonged exposure may cause some reddening of the skin. Repeated prolonged exposure may cause irritation, possibly a mild burn. This material may cause skin sensitization or allergenic response.

SKIN ABSORPTION: Not likely to be absorbed - considered low in toxicity by absorption.

INGESTION: Amounts which may be swallowed incidental to industrial handling not likely to cause injury. Single dose oral LD50 rats in range of 500 to 1000 mg/kg of body weight.

INHALATION: No TLV recommended. Very low v.p. at room temperature. (10⁵ mm) dusts not considered to be hazardous.

SYSTEMIC & OTHER EFFECTS: May cause skin sensitization.

7. FIRST AID:

EYES: Irrigation of the eye immediately with water for five minutes is good safety practice. Consult medical.

SKIN: Wash in flowing water or shower fifteen minutes. Consult medical. Decontaminate clothing and accessories before reuse.

INGESTION: Toxic by ingestion. Induce vomiting immediately. Consult medical.

INHALATION: No effect expected.

NOTE TO PHYSICIAN: Known or suspected skin sensitizer. Dusts, vapors, or mists may be toxic if produced. Anesthetic or narcotic effect may occur. May cause kidney damage. May cause liver damage. May cause abdominal cramps and/or diarrhea.

M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 58858

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PRODUCT NAME: PENTACHLOROPYRIDINE /IDT/

Effective Date: 06/01/78

Date Printed: 05/05/86

MSD: 000504

8. HANDLING PRECAUTIONS:

VENTILATION: Good room ventilation usually adequate for most operations.

RESPIRATORY PROTECTION: None likely to be needed. Use an approved dust type respirator if dusty atmospheres are encountered.

SKIN PROTECTION: Clean, body-covering clothing. In addition, impervious gloves, boots, apron, depending upon the extent and severity of exposure likely.

EYE PROTECTION: Safety glasses without side shields.
Eye fountain and washing facilities near work area.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Practice reasonable care and good housekeeping to avoid prolonged or repeated skin contact. Avoid breathing dusts if generated.

MSDS STATUS:

SUMMARY OF PENTACHLOROPYRIDINE
 WORK EXPOSURE DATA, WESTERN DIVISION,
 PITTSBURG PLANT

	# OF SAMPLES SAMPLES	CONCENTRATION, MG/M ³ RANGE
Workshift samples	40	.001 - 1.2, 48% < .07, 95% < 1.0
Task-related samples	6	.01 - .05

Dow Industrial Hygiene Guide: 7 MG/M³

Source:	<u>Process</u>	<u>Year</u>
	Dowicil S-13	1976
	Sym-Tet Semi Plant	1978
	Sym-Tet/ N-Serve	1983, 1984