201-14818B

IUCLID

Data Set

Existing Chemical	:	ID: 2176-62-7
CAS No.	:	2176-62-7
Common name	:	2,3,4,5,6-Pentachloropyridine
Producer Related Part		
Company	:	The Dow Chemical Company
Creation date	:	20.05.2002
Substance Related Part		
Company	:	The Dow Chemical Company
Creation date	:	20.05.2002
Memo	:	
Printing date	:	26.09.2003
Revision date	:	
Date of last Update	:	26.09.2003
Number of Pages	:	4
Chapter (profile)	:	
Reliability (profile)	:	
Flags (profile)	:	???

1.0.1 OECD AND COMPANY INFORMATION

Type :
Name : Dow AgroSciences
Partner :
Date :
Street : 9330 Zionsville Road
Town : Indianapolis, IN 46268-1189
Country : United States
Phone :
Telefax :
Telex :
Cedex :
04.06.2002

Type :
Name : The Dow Chemical Company
Partner :
Date :
Street : 2020 Dow Center
Town : 48674 Midland, Michigan
Country : United States
Phone :
Telefax :
Telex :
Cedex :
20.05.2002

1.0.2 LOCATION OF PRODUCTION SITE

Name of Plant :
Street :
Town : Freeport, TX
Country : United States
Phone :
Telefax :
Telex :
Cedex :
04.06.2002

Name of Plant :
Street :
Town : Pittsburg, CA
Country : United States
Phone :
Telefax :
Telex :
Cedex :
04.06.2002

1.0.3 IDENTITY OF RECIPIENTS

Name of recipient : The Dow Chemical Company
Street :
Town : Freeport, TX
Country : United States

Phone :
Telefax :
Telex :
Cedex :
04.06.2002

1.1 GENERAL SUBSTANCE INFORMATION

Substance type : inorganic
Physical status : solid
Purity : > 99 % w/w
Test substance : Molecular formula = C5Cl5N
Molecular weight = 251.3
Substance Type = organic
Physical status = white solid
Odor = sharp pyridine-like

04.06.2002

1.1.0 DETAILS ON TEMPLATE

1.1.1 SPECTRA

1.2 SYNONYMS

:Pentachloropyridine
20.05.2002

PCP
04.06.2002

1.3 IMPURITIES

CAS-No :
EINECS-No :
EINECS-Name : 2,5,6-trichloro-3-pyridinecarboxylic acid
Contents : % w/w
04.06.2002

CAS-No : 2808-86-8
EINECS-No :
EINECS-Name : Tetrachloropyridine
Contents : = .4 % w/w
04.06.2002

1.4 ADDITIVES

1.5 QUANTITY

Production during the last 12 months :
Import during the last 12 months :

Quantity produced : 10 - 50 tonnes in
04.06.2002

1.6.1 LABELLING

1.6.2 CLASSIFICATION

1.7 USE PATTERN

Type : type
Category : Non dispersive use
Remark : 1) 75 % used in the manufacturing of Symtet
2) 24.9 % sent to Freeport, Texas
3) 0.1% sent to external customers
04.06.2002

Type : type
Category : Use in closed system
04.06.2002

Type : industrial
Category : Agricultural industry
04.06.2002

Type : industrial
Category : other: pharmaceutical industry
04.06.2002

Type : use
Category : Intermediates
04.06.2002

1.7.1 TECHNOLOGY PRODUCTION/USE

1.8 OCCUPATIONAL EXPOSURE LIMIT VALUES

Type of limit : other: Dow AgroSciences Industrial Hygiene Guide
Limit value : 7 mg/m3
04.06.2002

1.9 SOURCE OF EXPOSURE

Memo : Sources of Exposure
Remark : Sampling conducted using Proper Protective Equipment per the MSDS recommendation.
This chemical is produced in Pittsburg, California and is shipped to Freeport, Texas. Therefore, chemical is present at two sites. The chemical known as PCP is an intermediate in the production of Symtet and Starane Herbicide. Chlorine and Picolines are reacted in a vapor phase reactor followed by a series of liquid phase reactors. This material is then distilled with the PCP product stored in a tank prior to loading into a rail car. The unreacted material is recycled back to the reactors and reprocessed.

The system is fully contained with no atmospheric vents. Vents are collected and sent to a vent condenser followed by thermal incineration or caustic scrubber. The scrubber effluent is sent to a Chlorinolysis facility for treatment and disposal. We have in process flow meters that perform material balances to ensure and track that PCP volumes do not escape into the environment. PCP is present in the Symtet intermediate at the 0.1 - 0.6 wt% level. PCP is not present in the end-use products of Garlon (Triclopyr) or Chlorpyrifos. PCP is also present in N-Serve 24 at the 0.2 - 0.44 wt% levels. This is an end use product.

04.06.2002

1.10.1 RECOMMENDATIONS/PRECAUTIONARY MEASURES

1.10.2 EMERGENCY MEASURES

1.11 PACKAGING

1.12 POSSIB. OF RENDERING SUBST. HARMLESS

1.13 STATEMENTS CONCERNING WASTE

1.14.1 WATER POLLUTION

1.14.2 MAJOR ACCIDENT HAZARDS

1.14.3 AIR POLLUTION

1.15 ADDITIONAL REMARKS

1.16 LAST LITERATURE SEARCH

1.17 REVIEWS

1.18 LISTINGS E.G. CHEMICAL INVENTORIES

2.1 MELTING POINT

Value : = 125 - 126 ° C
Sublimation :
Method :
Year : 1982
GLP :
Test substance : as prescribed by 1.1 - 1.4
Remark : Measured value
04.06.2002 (1)

2.2 BOILING POINT

Value : = 273 ° C at
Decomposition :
Method : other: calculated
Year : 2002
GLP :
Test substance :
04.06.2002 (2)

2.3 DENSITY

2.3.1 GRANULOMETRY

2.4 VAPOUR PRESSURE

Decomposition :
Method other (measured)
Year : 1967
GLP : no data
Test substance : as prescribed by 1.1 - 1.4
Remark : 0.014 mm Hg at 25 0C
04.06.2002 (3)

2.5 PARTITION COEFFICIENT

Log pow : = 3.53 at ° C
Method other (measured)
Year : 1967
GLP : no data
Test substance : as prescribed by 1.1 - 1.4
04.06.2002 (3)

2.6.1 WATER SOLUBILITY

Value : = 8.5 mg/l at 25 ° C
Qualitative : slightly soluble (0.1-100 mg/L)
Pka : at 25 ° C
PH : at and ° C

Method	**:**	other: measured
Year	**:**	1982
GLP	**:**	no data
Test substance	**:**	as prescribed by 1.1 - 1.4
Remark	**:**	Dissociation Constant: Not applicable. Does not ionize within environmentally relevant pH ranges.

04.06.2002 (4)

2.6.2 SURFACE TENSION

2.7 FLASH POINT

2.8 AUTO FLAMMABILITY

2.9 FLAMMABILITY

2.10 EXPLOSIVE PROPERTIES

2.11 OXIDIZING PROPERTIES

2.12 ADDITIONAL REMARKS

3.1.1 PHOTODEGRADATION

Indirect photolysis

Sensitizer	:	OH
Conc. of sens.	:	1500000 molecule/cm3
Rate constant	:	= .000000000000011 cm3/(molecule*sec)
Degradation	:	ca. 50 % after 974 day
Source	:	The Dow Chemical Company, Midland, MI.

05.06.2002 (5)

3.1.2 STABILITY IN WATER

Type	:	abiotic
t1/2 pH4	:	at degree C
t1/2 pH7	:	at degree C
t1/2 pH9	:	at degree C
Deg. Product	:	
Method	:	other (calculated)
Year	:	2002
GLP	:	no
Test substance	:	as prescribed by 1.1 - 1.4
Remark	:	Because the test material does not ionize at environmentally relevant pH ranges, no rate constants could be calculated for stability in water.
Reliability	:	(1) valid without restriction

12.09.2003 (6)

3.1.3 STABILITY IN SOIL

3.2 MONITORING DATA

3.3.1 TRANSPORT BETWEEN ENVIRONMENTAL COMPARTMENTS

3.3.2 DISTRIBUTION

3.4 MODE OF DEGRADATION IN ACTUAL USE

3.5 BIODEGRADATION

3.6 BOD5, COD OR BOD5/COD RATIO

COD

Method	:	other: ThOD
Year	:	1975
GLP	:	no
COD	:	= .64 mg/g substance
Method	:	The theoretical oxygen demand is computed by assuming all carbon is oxidized to CO2 and the hydrogen to H2O. TODs are values obtained

using the Dow Total Oxygen Demand Analyzer (Clifford, 1968). The oxygen demand is obtained by comparing peak heights of the sample to those of a known standard solution (standard potassium acid phthalate). TOD values are usually very close to the theoretical oxygen demand of the material.

12.09.2003 (7) (8)

3.7 BIOACCUMULATION

3.8 ADDITIONAL REMARKS

4.1 ACUTE/PROLONGED TOXICITY TO FISH

Type	**:**	flow through
Species	**:**	Pimephales promelas (Fish, fresh water)
Exposure period	**:**	96 hour(s)
Unit	**:**	mg/l
Analytical monitoring	**:**	yes
NOEC	**:**	m = .28
LC50	**:**	c = .47
LC100	**:**	m = .66
Method	**:**	other
Year	**:**	1985
GLP	**:**	no data
Test substance	**:**	as prescribed by 1.1 - 1.4
Method	**:**	Test Chemical

Test chemical was supplied by Aldrich Chemical Co., with a purity of 98% as determined by gas-liquid chromatography/mass spectrometry (GC/MS).

Analytical Technique

Gas-liquid chromatography was used to analyze toxicants in water samples from the fish exposure tanks. All compound analyses included one spike and one duplicate sample for every 6-12 water samples. Calibration curves were established by linear regression analysis of from 3-5 standards. Peak areas were used.

All test chambers were sampled at approximately mid-depth at 0, 24, 48, 72, and 96 hours in all exposure chambers. All samples were analyzed immediately or adequately preserved for later analysis.

Water Quality

Five water quality parameters were routinely measured. They were: water temperature, dissolved oxygen, total hardness, total alkalinity, and pH.

Water temperature was determined using a partial immersion thermometer. Measurements were made in each exposure chamber daily. The desired test temperature was 25 +/- 1 degree C.

Dissolved oxygen was determined in high, medium, low, and control exposure chambers at least once during the test. Daily measurements were taken in five treatments and the control exposure chambers during a 96-hour test if surviving fish existed in those chambers. Determinations were made with an oxygen-sensitive electrode (Yellow Springs Instrument, Yellow Springs, OH, Model 54 polarograph) which was calibrated weekly using the azide modification of the Winkler method.

Total hardness and total alkalinity measurements were made on the control (~45 mg/L as CaCO3) and low, medium and high chambers were sampled once during the exposure duration.

pH was measured daily in the control and five treatment chambers. Measurements were made with a meter, calibrated prior to each test.

The test was conducted at the USEPA Environmental Research Laboratory-Duluth, using Lake Superior water which was filtered through sand and a cotton fiber filter.

Test Fish

Fathead minnows used in the test were cultured at the USEPA Environmental Research Laboratory-Duluth. Adults were held at 25 degrees C. in flowing water with a 16-hour light-controlled photoperiod and fed frozen adult brine shrimp (Artemia sp.) They were provided with asbestos pipes (cut in half longitudinally) as spawning substrates. The naturally spawned and fertilized embryos became attached to the underside of the spawning substrates. The substrates, with intact embryos, were removed daily and placed in another 25 degree C. bath where hatching occurred.

Fish were reared in flow-through tanks in the lab's culture units using water from the same source as that used in the test. Larvae were fed 40-48 hour old brine shrimp nauplii in excess two times daily (once on weekend days).

Fish approximately 26 to 37 days old were used in the toxicity test. Only groups of fish having a healthy appearance and no history of unusual thermal exposure or abnormally high mortality rate were used for toxicant exposure. Test fish were not fed 24 hours before or during a test.

Fish were randomly assorted to treatment chambers from a pooled group. Dose levels tested were 0, 0.28, 0.43, 0.66, 1.02, and 1.57 mg/L.

Death was the major test endpoint. The number of dead fish were noted every 24 hours after the beginning of a test, at which time they were also removed. Observations of fish behavior and toxic signs were made at 2-8, 24, 48, 72, and 96 hours. Unique behavior was also recorded using a color video camera and 0.5" tape recorder.

Individual control fish were weighed (wet weight) and measured (standard length). Four surviving fish each from the control, the lowest concentration and the concentration nearest the LC50 were preserved in 10% buffered formalin for histological examination.

Result : The 96 hour LC50 was approximately 0.47 mg/L, with confidence limits of 0.44-0.50. Affected fish lost schooling behavior and swam near the tank surface. They were hypoactive and underreactive to external stimuli, had increased respiration, were hemmorhagic and deformed, had rigid musculature, and lost equilibrium prior to death.
Source : The Dow Chemical Company, Midland, MI.
Reliability : (1) valid without restriction
19.09.2003 (9)

Type : static
Species : Notropis atherinoides
Exposure period : 72 hour(s)
Unit : mg/l
Analytical monitoring : no
LC0 : m = 1
LC50 : c = 1.23
LC100 : m = 2
Method : other
Year : 1972
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Method : Lake Emerald shiners were exposed to 1.0, 1.5, or 2.0 mg/L PCP for 72 hours in dechlorinated Lake Huron water at 50 deg. F. under static conditions.
04.06.2002 (10)

4.2 ACUTE TOXICITY TO AQUATIC INVERTEBRATES

Type	:	static
Species	:	Crangon septemspinosa (Crustacea)
Exposure period	:	43 hour(s)
Unit	:	mg/l
Analytical monitoring	:	yes
EC50	:	= 1.8
Method	:	other
Year	:	1979
GLP	:	no data
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Shrimp, collected locally in St. Andrews, New Brunswick, Canada, were held in running sea water at 10 degrees C and 30 ppt salinity for at least a week before tests. They were fed brine shrimp and clams at 2-day intervals. They ranged in length from 6.4 to 8.3 cm (2.4 to 4.5 g). A lethality test of 96 hours duration was carried out on three shrimp in 4 liters of aerated sea water at 10 degrees C, with the solution changed at 48 hours. A stock solution was prepared in either ethanol or dimethyl sulfoxide. From the stock solution, 5 dilutions were prepared such that 1 ml added to 4 L sea water produced the required test concentration. The control test contained 1 ml of ethanol or dimethyl sulfoxide in 4 liters of sea water, as appropriate. Concentration of the test material was measured by UV spectrophotometry at the beginning and immediately after the solution change at 48 hours. In addition, the concentration of one solution of intermediate nominal concentration was measured at 2, 4, 6, 12, 24, and 48 hours. The time to 50% mortality (LT50) at a particular concentration of a chemical was read from a plot of percentage mortality against time to death (logarithmic scales). Lethality lines were drawn from plots of LT50 against test concentration (logarithmic scales). The 96 hour threshold was taken as the geometric mean of the highest concentration with no deaths and the next higher concentration (step by a factor of 2) at which all three shrimp died.
Result	:	The measured concentration of the test material remained practically constant throughout the 48 hours. The highest dose level tested was 6 mg/l. The LC50 was calculated as 1.8 mg/l at 43 hours.
Source	:	The Dow Chemical Company, Midland, MI
Reliability	:	(1) valid without restriction

26.09.2003 (11)

Type	:	static
Species	:	other aquatic mollusc: soft-shelled clam (Mya arenaria)
Exposure period	:	96 hour(s)
Unit	:	mg/l
Analytical monitoring	:	yes
NOEC	:	m = 6
EC50	:	m > 6
Method	:	other
Year	:	1979
GLP	:	no data
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Clams, collected locally in St. Andrews, New Brunswick, Canada, were held in running sea water at 4 degrees C and 30 ppt salinity for at least a week before tests. They were uniform in size, measuring about 5 cm in length (20 g). A lethality test of 96 hours duration was carried out on three clams in 4

liters of aerated sea water at 10 degrees C, with the solution changed at 48 hours. A stock solution was prepared in either ethanol or dimethyl sulfoxide. From the stock solution, 5 dilutions were prepared such that 1 ml added to 4 L sea water produced the required test concentration. The control test contained 1 ml of ethanol or dimethyl sulfoxide in 4 liters of sea water, as appropriate.

Concentration of the test material was measured by UV spectrophotometry at the beginning and immediately after the solution change at 48 hours. In addition, the concentration of one solution of intermediate nominal concentration was measured at 2, 4, 6, 12, 24, and 48 hours.

The time to 50% mortality (LT50) at a particular concentration of a chemical was read from a plot of percentage mortality against time to death (logarithmic scales). Lethality lines were drawn from plots of LT50 against test concentration (logarithmic scales). The 96 hour threshold was taken as the geometric mean of the highest concentration with no deaths and the next higher concentration (step by a factor of 2) at which all three clams died.

Result : The measured concentration of the test material remained practically constant throughout the 48 hours. The highest dose level tested was 6 mg/l. No mortality was observed throughout the 96 hour test period, so the LC50 was greater than 6 mg/l.
Source : The Dow Chemical Company, Midland, MI
Reliability : (1) valid without restriction
26.09.2003 (11)

Type : static
Species : other: ciliate protozoan, Tetrahymena pyriformis
Exposure period :
Unit :
Analytical monitoring :
Method :
Year : 1989
GLP :
Test substance :
04.06.2002 (12)

4.3 TOXICITY TO AQUATIC PLANTS E.G. ALGAE

4.4 TOXICITY TO MICROORGANISMS E.G. BACTERIA

4.5.1 CHRONIC TOXICITY TO FISH

4.5.2 CHRONIC TOXICITY TO AQUATIC INVERTEBRATES

4.6.1 TOXICITY TO SOIL DWELLING ORGANISMS

4.6.2 TOXICITY TO TERRESTRIAL PLANTS

4.6.3 TOXICITY TO OTHER NON-MAMM. TERRESTRIAL SPECIES

4.7 BIOLOGICAL EFFECTS MONITORING

4.8 BIOTRANSFORMATION AND KINETICS

4.9 ADDITIONAL REMARKS

5.1.1 ACUTE ORAL TOXICITY

Type : LD50
Species : rat
Strain : Fischer 344
Sex : male
Number of animals : 12
Vehicle : other: corn oil
Value : = 435 mg/kg bw
Method : other
Year : 1987
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Method : Young adult male rats were fasted overnight. They were administered the material as a solution in corn oil at a dose volume of 10 ml/kg bw at dose levels of 100, 250, 500, or 750 mg/kg bw. Animals were observed closely for two weeks, then submitted for pathological examination. All animals which died prior to scheduled necropsy were also submitted for pathological examination. Body weights were recorded on the day of treatment (Study Day 0), and Study Days 1, 8, and 15.
Result : Acute oral toxicity was characterized as moderate. The acute oral LD50 for male rats was approximately 435 mg/kg, when calculated using the moving average method.

Dose (mg/kg)	Number Treated	Number Dead
100	3	0
250	3	0
500	3	2
750	3	3

In-life signs of toxicity were observed only in rats receiving 500 or 750 mg/kg, and included lethargy, tremors/muscle spasms, lacrimation, palpebral closure, and death on the day of treatment. No clinical evidence of treatment-related effects were seen at 100 or 250 mg/kg. All surviving rats gained weight over the 2-week observation period.
Source : The Dow Chemical Company, Midland, MI.
Reliability : (1) valid without restriction
Study conducted in accordance with generally accepted scientific principles.
GLP not compulsory at time study was performed.
05.06.2002 (13)

Type : LD50
Species : rat
Strain : no data
Sex : female
Number of animals : 3
Vehicle : other: rodent chow
Value : = 126 - 1000 mg/kg bw
Method : other
Year : 1963
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Source : The Dow Chemical Company, Midland, MI.
Reliability : (2) valid with restrictions
05.06.2002 (14)

5.1.2 ACUTE INHALATION TOXICITY

5.1.3 ACUTE DERMAL TOXICITY

5.1.4 ACUTE TOXICITY, OTHER ROUTES

5.2.1 SKIN IRRITATION

Species	**:**	rabbit
Concentration	**:**	undiluted
Exposure	**:**	Occlusive
Exposure time	**:**	24 hour(s)
Number of animals	**:**	1
PDII	**:**	
Result	**:**	moderately irritating
EC classification	**:**	
Method	**:**	other
Year	**:**	1965
GLP	**:**	no
Test substance	**:**	as prescribed by 1.1 - 1.4
Method	**:**	Neat Material: A male rabbit was prepared by shaving the hair from the entire abdomen with a straight razor and barber soap. The animal was then rested for several days to allow any abrasions to heal completely and to be sure skin was suitable for use. Two sites on the abdomen were used for applications: one intact, the other cross-hatched with a sharp hypodermic needle to penetrate the stratum corneum but not to produce more than a trace of bleeding. Ten applications were made to the intact abdominal site over a period of 14 days. Three consecutive daily applications were made to the abraded site. Both abdominal sites were covered with 1X1 cotton pads and held place with a single cotton cloth taped to remaining body hair. Applications were discontinued upon production of a substantial skin burn, or if the animal died. 10% Dilution in Dowanol* DPM: A male rabbit was prepared by shaving the hair from the entire abdomen with a straight razor and barber soap. The animal was then rested for several days to allow any abrasions to heal completely and to be sure skin was suitable for use. Ten applications (unoccluded) were made to the ear over a period of 14 days. Two sites on the abdomen were used for applications: one intact, the other cross-hatched with a sharp hypodermic needle to penetrate the stratum corneum but not to produce more than a trace of bleeding. Ten applications were made to the intact abdominal site over a period of 14 days. Three consecutive daily applications were made to the abraded site. Both abdominal sites were covered with 1X1 cotton pads and held place with a single cotton cloth taped to remaining body hair. Applications were discontinued upon production of a substantial skin burn, or if the animal died.
Result	**:**	Neat Material: At the intact abdominal site, slight to moderate hyperemia and slight edema was observed during the first week of application. Slight necrosis appeared after the 5th application. All signs of irritation resolved within 21 days. Similar results were seen at the abraded abdominal site, with the exception that necrosis was first observed after the 4th application. 10% Dilution in Dowanol* DPM: The site at the rabbit ear had no signs of irritation. Both the intact and abraded abdominal sites had slight to moderate hyperemia and edema appear within the first week. All signs of

irritation resolved within 21 days.

Source : The Dow Chemical Company, Midland, MI.
05.06.2002 (15)

5.2.2 EYE IRRITATION

Species : rabbit
Concentration : undiluted
Dose : .1 ml
Exposure Time : 24 hour(s)
Comment :
Number of animals : 1
Result : not irritating
EC classification : not irritating
Method : other
Year : 1965
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Method : Both eyes of a white rabbit were stained with 5% fluorescein dye and examined for evidence of injury or alterations. The rabbit was then allowed to rest for 24 hours before test.

Two drops of the material were introduced into the right eye. The eye was washed within 30 seconds for 2 minutes in a flowing stream of tepid water. Two drops of material were introduced in a similar fashion to the left eye, but this eye was left unwashed.

Immmediately after instillation into each eye, the rabbit was examined for signs of discomfort. Within 2-3 minutes after the unwashed eye was treated, each eye was observed for conjunctival and corneal response. Similar observations were made on both eyes at 1 hour, 24 hours, 48 hours, and 6-8 days post-treatment. Examinations were conducted both with and without fluorescein dye.

Result : In both washed and unwashed eyes, the material caused very slight discomfort and very slight conjunctival irritation which resolved within 1 hour.
Source : The Dow Chemical Company, Midland, MI.
05.06.2002 (15)

5.3 SENSITIZATION

Type : Split adjuvant test
Species : guinea pig
Concentration : Induction 5 % intracutaneous
Challenge 5 % open epicutaneous

Number of animals : 8
Vehicle : other: Dowanol* DPM/Tween* 80, 9/1
Result : sensitizing
Classification :
Method : other
Year : 1965
GLP : no
Test substance : as prescribed by 1.1 - 1.4
Source : The Dow Chemical Company, Midland, MI.
05.06.2002 (15)

5.4 REPEATED DOSE TOXICITY

Species	:	rat
Sex	:	male/female
Strain	:	no data
Route of admin.	:	oral feed
Exposure period	:	90 days
Frequency of treatment	:	continuous
Post obs. period	:	none
Doses	:	0, 0.3, 1, 3, 10, 30 mg/kg/day
Control group	:	yes, concurrent vehicle
NOAEL	:	= 10 mg/kg bw
LOAEL	:	= 30 mg/kg bw
Method	:	other
Year	:	1968
GLP	:	no
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Groups of 10-15 45-day old rats/sex/dose group were treated with 0, 0.3, 1, 3, 10, or 30 mg/kg/day via diet. Rats were randomly assigned to treatment groups. Vehicle for the test material and feed for the controls was Purina ground rodent chow. Diets designed to deliver the nominal dose were mixed weekly on the basis of rat body weight and feed consumption. Body weights and feed consumption were collected once/week for the duration of the study. All animals were observed frequently for clinical signs of toxicity. Blood samples were collected from 5 rats/sex/dose from the 0, 10, and 30 mg/kg/day levels via orbital sinus puncture during weeks 3 and 12, and at termination. Hematological parameters examined included Hgb, crit, RBC, WBC, and differential counts. Blood urea nitrogen determinations were run on 10 rats/sex/dose at termination, and SGPT determinations were run for 5 rats/sex/dose at 0 and 30 mg/kg/day levels on days 1, 3, 7, 14, 30, and termination (10 rats/sex/dose). A complete necropsy examination, including both gross pathological and histopathological examinations, was conducted on a standard set of tissues, including reproductive organs. Weights were collected for lungs, heart, liver, kidneys, spleen, testes, and brain. In an effort to clarify testicular findings among dosed rats, additional studies were undertaken. Repeated intubation: Groups of 10 male rats/dose were given 0, 62.5, 125, or 250 mg/kg/day via gavage 5 days/week for 2 weeks. Rats were necropsied 3 and 18 days after the last dose Body weights and testicular weights were recorded, and testes, prostate, seminal vesicles, coagulating gland, and epididymis were examined for microscopic lesions. SGPT determinations were conducted at necropsy. Dietary: Groups of 30 male rats were given diets at dose levels of 0, 62.5, 125, or 250 mg/kg/day. 5 rats/dose were necropsied on test days 49, 119, 175, and 242. Body weights and testicular weights were recorded, and testes, prostate, seminal vesicles, coagulating gland, and epididymis were examined for microscopic lesions. Livers were also examined on rats killed on days 175 and 242. SGPT determinations were conducted at necropsy.
Result	:	There were no treatment-related morphological changes observed at any level in females. Male rats given 30 mg/kg/day had increased relative liver and kidney

weights and mild focal hyaline droplet degeneration of the convoluted tubules of the renal cortex. No histological changes were observed in livers.

Testicular tubal atrophy of varying degrees was observed at all dose levels in the male rats. Not all animals within a dose level were affected, and severity was not dose-related.

In the follow-up studies, no treatment-related differences were observed for final body weight, testicular weight, gross pathology and histopathology. There was a marked degeneration of SGPT values at all dose levels. In the repeated intubation experiment, values were moderately depressed 3 days after final dosing, but returned to normal by the 18 day kill. In the dietary experiment, SGPT values were severely depressed at 49 and 119 days. Values at 175 and 242 days improved, but were still markedly lower than controls. Testicular effects observed in the earlier study could not be replicated, even at these much higher dose levels.

Histopathology Peer Review of Two Pentachloropyridine 90-Day Dietary Feeding Studies in Rats:

In the first study ten adult rats per sex per dose level were provided dose concentrations of 0 (controls), 0.3, 1, 3, 10 or 30 mg pentachloropyridine (PCP) per kilogram body weight per day in the feed for 90 days. The histopathologic peer review of this study consisted of microscopic evaluation of both testes from all male rats at all dose levels. The peer review was conducted by a Diplomate of the American College of Veterinary Pathologists. Results of the peer review histopathologic evaluation showed that there were no treatment-related testicular effects. This was in agreement with the final conclusions of the original pathologist. There were comparable numbers of rats at all dose levels, including the control group, with very slight or slight degeneration of testicular seminiferous tubules. The quality of the microscopic slides from this study was less than optimal, with artifacts of poor fixation or processing methods, and evidence of rough physical handling of some testicular specimens. Some of the histopathologic diagnoses made by the original pathologist were determined to be reflective of artifactual changes, based on examination by the peer review pathologist. The diagnoses that were attributed to poor fixation or rough tissue handling consisted of interstitial edema, vacuoles in seminiferous tubules, and the presence of primary or secondary spermatocytes in the lumens of seminiferous tubules.

In the second study groups of 30 male rats per dose level were provided dose concentrations of 0 (controls) 62.5, 125 or 250 mg PCP per kilogram body weight per day in the feed. Five rats per dose group were necropsied after 49, 119, 175 and 242 days on the diet. The histopathologic peer review of this study consisted of microscopic evaluation of both testes from all male rats at all dose levels. The peer review was conducted by a Diplomate of the American College of Veterinary Pathologists. Results of the peer review histopathologic evaluation showed that there were no treatment-related testicular effects. This was in agreement with the original pathologist. As with the previous 90-day study, there were comparable numbers of rats at all dose levels, including the control group, with very slight or slight degeneration of testicular seminiferous tubules. The quality of microscopic slides in the second study was optimal, with no significant artifacts related to fixation, processing, or tissue handling.

Source : The Dow Chemical Company, Midland, MI.
Reliability : (2) valid with restrictions
26.09.2003 (16)

Species : rat
Sex : no data

Strain	:	other: Alderly Park
Route of admin.	:	inhalation
Exposure period	:	6 hours
Frequency of treatment	:	16 exposures
Post obs. period	:	none
Doses	:	saturated vapor; ~1 ppm (0.01 mg/L)
Control group	:	no data specified
NOAEL	:	= 1 ppm
Method	:	other
Year	:	1970
GLP	:	no
Test substance	:	no data
Result	:	No rats died, no toxic signs were observed, and no organs were affected at necropsy.
Source	:	The Dow Chemical Company, Midland, MI.
Reliability	:	(2) valid with restrictions

05.06.2002 (17)

5.5 GENETIC TOXICITY 'IN VITRO'

Type	:	Cytogenetic assay
System of testing	:	Mouse bone marrow cells
Concentration	:	11.75, 100 mg/kg
Cycotoxic conc.	:	Not indicated
Metabolic activation	:	no data
Result	:	negative
Method	:	other
Year	:	1993
GLP	:	no data
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Ten male CFLP mice weighing approximately 30 g were used in each experimental group. The animals were given single oral doses of 11.75 mg/kg (1/20 of the i.p. LD50 in mouse) and 100 mg/kg PCP in pharmaceutically pure sunflower oil (Oleum helianthi); parallel to these experiments the solvent (0.1 ml Oleum helianthi per mouse), the positive control (100 mg/kg cyclophosphamide), and the untreated control group were studied. The bone marrow preparation was carried out 24 and 48 hours after treatment (cyclophosphamide: 24 hours after treatment). Following band technique staining, 20 mitoses in metaphase per mouse were evaluated using the technique of Datta et al. (1970). Significance calculations were made by the Fisher probe.
Result	:	No significant increase in the number of cells showing alterations as well as in the frequency of numerical and structural chromosome aberrations could be observed, neither 24 nor 48 hours after treatment with PCP. When the chromosomes of cyclophosphamide-treated animals were examined 24 hours after treatment, total aberrations in bone marrow cells were 78.5% ($p<0.001$). Thus, PCP cannot be regarded as a mutagen in the chosen test system.
Source	:	The Dow Chemical Company, Midland, MI.
Reliability	:	(2) valid with restrictions Study does not satisfy the requirements of SIDS-level endpoints.

19.09.2003 (18) (19)

5.6 GENETIC TOXICITY 'IN VIVO'

5.7 CARCINOGENITY

5.8 TOXICITY TO REPRODUCTION

5.9 DEVELOPMENTAL TOXICITY/TERATOGENICITY

Species	:	mouse
Sex	:	female
Strain	:	DBA
Route of admin.	:	gavage
Exposure period	:	Days 6-15 of gestation
Frequency of treatment	:	Daily during treatment period
Duration of test	:	Until gestation day 18
Doses	:	100 mg/kg
Control group	:	no
Method	:	other
Year	:	1993
GLP	:	no data
Test substance	:	as prescribed by 1.1 - 1.4
Method	:	Embryotoxic effects were studied following oral administration of 100 mg/kg PCP in sunflower oil (Oleum helianthi) daily to pregnant Halle:DBA and Halle:AB mice on days 6-15 of gestation. On day 18 of gestation the mice were killed and the reproductive status was determined (number of corpora lutea and dead and live fetuses; the latter were examined for gross malformations). The data were analyzed statistically using the Chi quadrate test.
Result	:	There were no significant changes in the number of fetal deaths, the weight of live embryos and the rate of malformations after PCP treatment.
Source	:	The Dow Chemical Company, Midland, MI
Reliability	:	(2) valid with restrictions No examinations for visceral or skeletal malformations were conducted.

19.09.2003 (19)

5.10 OTHER RELEVANT INFORMATION

5.11 EXPERIENCE WITH HUMAN EXPOSURE

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7.1 END POINT SUMMARY

7.2 HAZARD SUMMARY

7.3 RISK ASSESSMENT