

# I U C L I D

## Data Set

**Existing Chemical** : ID: 118-79-6  
**CAS No.** : 118-79-6  
**Common name** : 2,4,6-Tribromophenol  
**Molecular Formula** : C<sub>6</sub>H<sub>3</sub>Br<sub>3</sub>  
**Molecular Weight** : 330.8

**Producer Related Part**  
**Company** : GREAT LAKES CHEMICAL CORPORATION  
**Creation date** : 17.07.2001

**Substance Related Part**  
**Company** : GREAT LAKES CHEMICAL CORPORATION  
**Creation date** : 17.07.2001

**Memo** :

**Printing date** : 09.12.2002  
**Revision date** :  
**Date of last Update** : 24.09.2002

**Number of Pages** : 31

**Chapter (profile)** : Chapter: 1, 2, 3, 4, 5, 7  
**Reliability (profile)** : Reliability: without reliability, 1, 2, 3, 4  
**Flags (profile)** : Flags: without flag, confidential, non confidential, WGK (DE), TA-Luft (DE),  
Material Safety Dataset, Risk Assessment, Directive 67/548/EEC, SIDS

# 1. General Information

**Id** 118-79-6  
**Date** 09.12.2002

## 1.0.1 OECD AND COMPANY INFORMATION

**Type** :  
**Name** : Great Lakes Chemical Corp.  
**Partner** :  
**Date** :  
**Street** : One Great Lakes Blvd.  
**Town** : West Lafayette, IN  
**Country** : United States  
**Phone** : 765-  
**Telefax** :  
**Telex** :  
**Cedex** :  
01.08.2002

## 1.0.2 LOCATION OF PRODUCTION SITE

## 1.0.3 IDENTITY OF RECIPIENTS

## 1.1 GENERAL SUBSTANCE INFORMATION

### 1.1.0 DETAILS ON TEMPLATE

#### 1.1.1 SPECTRA

## 1.2 SYNONYMS

Great Lakes PH-73  
06.08.2002

## 1.3 IMPURITIES

**CAS-No** :  
**EINECS-No** :  
**EINECS-Name** : other brominated phenols  
**Contents** : < 1 % w/w  
06.08.2002

## 1.4 ADDITIVES

## 1.5 QUANTITY

### 1.6.1 LABELLING

## 1.6.2 CLASSIFICATION

## 1.7 USE PATTERN

**Type** : industrial  
**Category** : other: flame retardant  
06.08.2002

## 1.7.1 TECHNOLOGY PRODUCTION/USE

## 1.8 OCCUPATIONAL EXPOSURE LIMIT VALUES

## 1.9 SOURCE OF EXPOSURE

## 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

Type : EINECS  
Additional info :  
06.08.2002

Type : AICS  
Additional info :  
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Type : DSL  
Additional info :  
06.08.2002

Type : ECL  
Additional info :  
06.08.2002

Type : CHINA  
Additional info :  
06.08.2002

Type : PICCS  
Additional info :  
06.08.2002

Type : ENCS  
Additional info :  
06.08.2002

**2.1 MELTING POINT**

**Value** : = 95.5 °C  
**Sublimation** :  
**Method** :  
**Year** :  
**GLP** : no data  
**Test substance** :  
**Reliability** : (1) valid without restriction  
01.08.2002 (24)

**Value** : = 89 °C  
**Sublimation** :  
**Method** :  
**Year** :  
**GLP** : no data  
**Test substance** :  
**Reliability** : (1) valid without restriction  
01.08.2002 (2)

**2.2 BOILING POINT**

**Value** : = 290 °C at  
**Reliability** : (1) valid without restriction  
01.08.2002 (2)

**Value** : = 290 °C at  
**Reliability** : (1) valid without restriction  
01.08.2002 (2)

**2.3 DENSITY**

**Type** : relative density  
**Value** : = 2.55 at °C  
**Reliability** : (1) valid without restriction  
01.08.2002 (2)

**2.3.1 GRANULOMETRY****2.4 VAPOUR PRESSURE**

**Value** : = .0000572 at 25° C  
**Decomposition** :  
**Method** : other (measured): EST  
**Year** :  
**GLP** :  
**Test substance** :  
**Reliability** : (1) valid without restriction  
01.08.2002 (23)

**2.5 PARTITION COEFFICIENT**

**Log pow** : = 4.13 at ° C  
**Reliability** : (1) valid without restriction  
 01.08.2002 (24)

**Method**  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 2,4,6 -tribromophenol: phenyl -UL-14-C, 12.1 mCi/mM.  
**Method** : Partition coefficients were determined for six compounds, including 2,4,6-tribromophenol, using an n-octanol/water system. Two concentrations for each compound were studied using radiocarbon labeled compounds.  
**Result** : In the n-octanol/water system, the average partition coefficient for 2,4,6-tribromophenol was 2198.  
**Reliability** : (2) valid with restrictions  
 Study conducted prior to GLP.  
 01.08.2002 (26)

**2.6.1 WATER SOLUBILITY**

**Value** : = 70 mg/l at 15 ° C  
**Qualitative** :  
**Pka** : at 25 ° C  
**PH** : at and ° C  
**Reliability** : (1) valid without restriction  
 01.08.2002 (33)

**Value** : = 996 mg/l at 35 ° C  
**Qualitative** :  
**Pka** : at 25 ° C  
**PH** : at and ° C  
**Method** :  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 2,4,6 -Tribromophenol: phenyl-UL-14-C), 12.1 mCi/mM.  
**Method** : Excess amounts of 14-C labeled compounds in distilled water were shaken in a water bath at 35 degrees C overnight. After centrifugation at 15, 25 or 35 degrees C at 12,000 x G for 1 hour, water solubility was determined by radioassay.  
**Result** : The average solubility (ppm) of duplicate experiments at 15, 25 and 35 degrees C, respectively were 996, 969 and 884 for 2,4,6-tribromophenol.  
**Reliability** : (2) valid with restrictions  
 01.08.2002 (29)

**2.6.2 SURFACE TENSION****2.7 FLASH POINT****2.8 AUTO FLAMMABILITY****2.9 FLAMMABILITY**

## 2. Physico-Chemical Data

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### 2.10 EXPLOSIVE PROPERTIES

### 2.11 OXIDIZING PROPERTIES

### 2.12 ADDITIONAL REMARKS

### 3. Environmental Fate and Pathways

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#### 3.1.1 PHOTODEGRADATION

**Type** : air  
**Light source** : other: UV light (Chromato -Vue TLC viewing box, Ultra-Violet Products, Inc.)  
**Light spect.** : nm  
**Rel. intensity** : based on Intensity of Sunlight  
**Direct photolysis**  
**Halflife t1/2** : = 4.6 hour(s)  
**Degradation** : % after  
**Quantum yield** :  
**Deg. Product** :  
**Method** : other (calculated): not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 14-C 2,4,6-Tribromophenol.  
**Deg. Product** : 2,6-debromo-3,5-dihydroxy-p-quinimine  
**Method** : Photolysis of 14-C 2,4,6-tribromophenol was conducted on silica gel G TLC plates under UV light.  
**Result** : The half-life of tribromophenol under these conditions was 4.6 hours. A degradation product was tentatively identified as 2,6-dibromo-3,5-dihydroxy-p-quinimine by mass spectrometry.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.  
01.08.2002 (27)

**Type** : water  
**Light source** : other: medium pressure mercury vapor lamp  
**Light spect.** : nm  
**Rel. intensity** : based on Intensity of Sunlight  
**Conc. of subst.** : 10.5 mg/l at degree C  
**Direct photolysis**  
**Halflife t1/2** : ca. 1- 11.5 hour(s)  
**Degradation** : ca. 27 % after 48 hour(s)  
**Quantum yield** :  
**Deg. Product** : yes  
**Method** : other (measured): not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 14-C-2,4,6-tribromophenol  
**Deg. Product** : 123433-20-5 3,5-dibromo-1,2-dihydroxybenzene  
124-38-9 204-696-9 carbon dioxide  
monobromodihydroxybenzene  
**Method** : An aqueous solution of 14-C 2,4,6-Tribromophenol was irradiated with light from a medium pressure mercury vapor lamp in a borosilicate glass photoreactor.  
**Result** : Degradation was rapid and biphasic, the first phase having a half-life of about 1 hr and the second phase of about 11.5 hr.  
Nine products were detected in the ether-extractable fractions. All appeared transitory, reached a maximum after a few hours of irradiation, then gradually decreased upon further exposure. A major product was identified as 3,5-dibromo-1,2-dihydroxybenzene by mass spectrometry and TLC analysis. A minor component was identified as a monobromodihydroxybenzene (the position of the substitution was not established). CO<sub>2</sub> was identified in the KOH trap as a degradation product. The polar water-soluble material increased steadily as irradiation time increased.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.  
01.08.2002 (28)

#### 3.1.2 STABILITY IN WATER

#### 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

|                       |   |   |
|-----------------------|---|---|
| <b>Type</b>           | : | aerobic   |
| <b>Inoculum</b>       | : | predominantly domestic sewage   |
| <b>Concentration</b>  | : | 100mg/l related to Test substance related to  |
| <b>Contact time</b>   | : | 29 day  |
| <b>Degradation</b>    | : | % after   |
| <b>Result</b>         | : |   |
| <b>Deg. Product</b>   | : |   |
| <b>Method</b>         | : | other: none reported  |
| <b>Year</b>           | : |   |
| <b>GLP</b>            | : | no data   |
| <b>Test substance</b> | : | other TS: tribromophenol  |
| <b>Method</b>         | : | 2,4,6-Tribromophenol (sodium salt) was spiked into various cultures of Ann Arbor sewage (approx. 99.5% water and domestic waste) at 100 ppm and incubated for 24 days. The decrease in Na+TBP was determined.   |
| <b>Result</b>         | : | 2,4,6-Tribromophenol (sodium salt) in the proper media is degraded by Ann Arbor waste water bacteria. This media being raw sewage which contains basically 99.5% water and domestic waste. In an enriched culture media, where other nutrients have been added, 2,4,6-Tribromophenol (sodium salt) is not biodegraded significantly. It is postulated that bacteria will degrade 2,4,6-Tribromophenol (sodium salt) significantly only when there is a scarcity of other nutrients present. |
| <b>Reliability</b>    | : | (2) valid with restrictions<br>Study conducted prior to GLP.  |

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(21)

|                       |   |  |
|-----------------------|---|--|
| <b>Type</b>           | : | aerobic                                  |
| <b>Inoculum</b>       | : | domestic sewage                          |
| <b>Contact time</b>   | : | 32 day                                   |
| <b>Degradation</b>    | : | % after                                  |
| <b>Result</b>         | : |  |
| <b>Deg. Product</b>   | : |  |
| <b>Method</b>         | : | other: not reported                      |
| <b>Year</b>           | : |  |
| <b>GLP</b>            | : | no data                                  |
| <b>Test substance</b> | : | other TS: sodium salt of tribromophenol. |

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**Method** : Biodegradation experiments on TBP were conducted using water from two treatment ponds at the Anderson Development Co. These water samples were spiked with nitrates and bacteria from the Ann Arbor Sewage treatment facility and from a commercially available source. The samples were then aerated for a number of days.

**Result** : Both bacterial sources proved ineffective in biodegrading TBP. This lack of degradation is attributed to the other materials in the waste water which the bacteria preferentially employ as a food source.

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

01.08.2002 (22)

#### 3.6 BOD5, COD OR BOD5/COD RATIO

#### 3.7 BIOACCUMULATION

**Species** : Lepomis macrochirus (Fish, fresh water)

**Exposure period** : 28 day at degree C

**Concentration** : .0092mg/l

**BCF** : = 20

**Elimination** :

**Method** : other: not reported

**Year** :

**GLP** : no data

**Test substance** : other TS: 14 -C-2,4,6-Tribromophenol

**Method** : The bluegill sunfish, Lepomis macrochirus, was exposed to 2,4,6-tribromophenol in a flow-through bioassay system. The compound was labeled with carbon-14 in the aromatic ring. Exposure was for a period of 28 days at 0.0092 ppm. This was followed by a 14 day withdrawal phase. Samples of water and both edible tissue and viscera of the fish were collected during the study for radiocarbon analysis.

**Remark** : Sponsor: Velsicol Chemical Corp.

**Result** : Bioaccumulation in the edible tissue was 20 fold over the 14-C concentration in the water while bioaccumulation in the viscera was 140 fold. These plateau levels in both the edible tissue and viscera were reached 3-7 days of beginning the exposure phase. Once the withdrawal phase had begun, the half-life for radiocarbon residues in the fish was less than 24 hours (both edible tissue and viscera).

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

02.08.2002 (25)

#### 3.8 ADDITIONAL REMARKS

## 4.1 ACUTE/PROLONGED TOXICITY TO FISH

**Type** : static  
**Species** : *Salmo gairdneri* (Fish, estuary, fresh water)  
**Exposure period** : 4 day  
**Unit** : mg/l  
**Analytical monitoring** : no data  
**NOEC** :  $m < .018$   
**TL50** :  $c = .24$   
**TL1** :  $c = .36$   
**TL99** :  $c = .17$   
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 2,4,6 -Tribromophenol, lot #3106.  
**Method** : 2,4,6-Tribromophenol was tested in a 4-day static aquatic toxicity study using rainbow trout (*Salmo gairdneri*). At 96 hours, the dissolved oxygen in the vessels with trout ranged from 5.4 to 8.8 ppm and pH ranged from 6.9 to 7.1.  
**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : The 4 day TL50 was 0.24 ppm, TL1 was 0.36 ppm and TL99 was 0.17 ppm.  
**Reliability** : (2) valid with restrictions  
 Study conducted prior to GLP.  
 02.08.2002 (4)

**Type** : static  
**Species** : *Lepomis* sp.  
**Exposure period** : 4 day  
**Unit** : mg/l  
**Analytical monitoring** : no data  
**NOEC** :  $m = .18$   
**TL50** :  $c = .28$   
**TL1** :  $c = .36$   
**TL99** :  $c = .22$   
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 2,4,6 -Tribromophenol, lot #3106.  
**Method** : 2,4,6-Tribromophenol was tested in a 4-day static aquatic toxicity study using bluegill sunfish (*Lepomis* sp.). At 96 hours, the dissolved oxygen in the vessels with bluegills ranged from 6.8 to 8.1 ppm and pH ranged from 7.1 to 7.2.  
**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : The 4 day TL50 was 0.28 ppm, TL1 was 0.36 ppm and TL99 was 0.22 ppm.  
**Reliability** : (2) valid with restrictions  
 Study conducted prior to GLP.  
 02.08.2002 (4)

## 4.2 ACUTE TOXICITY TO AQUATIC INVERTEBRATES

**Type** : flow through  
**Species** : *Daphnia magna* (Crustacea)  
**Exposure period** : 48 hour(s)  
**Unit** : mg/l  
**Analytical monitoring** : no data

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**TL50, 48 hr** : = 5.5  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 2,4,6-tribromophenol, Lot No. 3106.  
**Method** : 2,4,6-Tribromophenol, Lot No 3106 was tested in a 48-hour dynamic aquatic toxicity study using *Daphnia magna*. At 48 hours, the dissolved oxygen ranged from 7.6 to 8.1 ppm and pH ranged from 7.9 to 8.1.  
**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : The 48-hour TL50 was 5.5 ppm; 48-hour TL1 was 24.6 ppm and the 48-hour TL99 was 1.2 ppm.  
**Reliability** : (2) valid with restrictions Study conducted prior to GLP.  
Study conducted prior to GLP.

02.08.2002

(4)

### 4.3 TOXICITY TO AQUATIC PLANTS E.G. ALGAE

### 4.4 TOXICITY TO MICROORGANISMS E.G. BACTERIA

**Type** : other: sewage and topsoil  
**Species** :  
**Exposure period** : 96 hour(s)  
**Unit** : mg/l  
**Analytical monitoring** : no data  
**Method** :  
**Year** :  
**GLP** :  
**Test substance** : other TS: 2,4,6-Tribromophenol  
**Method** : The purpose of the study was to measure oxygen uptake by microorganisms in the presence of the test compound. Oxygen exchange was determined with the conventional Warburg respirometer. The biological seed culture was prepared from fresh sewage and topsoil. The test material was tested at 9 concentrations (1, 10 and 100 ppb; 1, 10 and 100 ppm and 0.1, 1.0 and 10 percent). Incubation of the samples was performed at ambient temperature (approx. 23 C) with constant shaking, for 96 hours. Pressure change readings were obtained at 1, 6, and 22 hours and at 24 hour intervals.  
Oxygen exchange values were calculated as O<sub>2</sub> uptake in mg/L sample employing appropriate equations and flask constant values.  
**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : The test samples containing 2,4,6-Tribromophenol at concentrations of 100 ppm, 0.1, 1.0 and 10 percent exhibited slight inhibition of microbial respiration due to the presence of the test material. Following 96 hours of incubation, the rate of oxygen uptake in test samples with concentrations ranging from 1 ppb to 10 ppm amounted to 26.5 mg O<sub>2</sub> per liter media (average). The amount of oxygen utilized in a control sample (seeded dilution water without test material) was 21.2 mg/L. It is possible that the test compound in the lower concentrations (10 ppm and less) provided an additional carbon source. The highest value of absorbed oxygen was observed in a reaction flask containing 1 part tribromophenol per million parts of microbial seed culture.  
Oxygen uptake in the positive control (glucose) exceeded the rate of all test flasks by a significant amount, indicating utilization of a readily available carbon source.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

01.08.2002

(3)

### 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

12.09.2001

## 5.1.1 ACUTE ORAL TOXICITY

**Type** : LD50  
**Species** : rat  
**Strain** :  
**Sex** : male  
**Number of animals** : 15  
**Vehicle** : other: corn oil  
**Value** : 500 - 5000 mg/kg bw  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol, ref. #L-6327.  
**Method** : Three groups of five male rats were administered 2,4,6-tribromophenol at 50, 500 or 5000 mg/kg as a single gavage dose suspended in corn oil.  
**Remark** : Sponsor: Great Lakes Chemical Corp.  
**Result** : None of the rats at the 50 and 500 mg/kg dosage died during the 14 day observation period, and they exhibited normal body weight gains. At the 5000 mg/kg dose all five rats were dead within 24 hours.  
 Tribromophenol would be considered a toxic but not highly toxic material by the oral route of administration.  
**Reliability** : (2) valid with restrictions  
 Study conducted prior to GLP.  
 24.09.2002 (11)

**Type** : LD50  
**Species** : rat  
**Strain** : other: Spartan  
**Sex** : male/female  
**Number of animals** : 60  
**Vehicle** : other: 0.5% Methocel  
**Value** : = 4178 - 6013 mg/kg bw  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol, Lot #812-141.  
**Method** : Male and female rats of the Spartan strain were used for an acute oral toxicity (LD50) study of Tribromophenol, Lot No. 812-141. The compound was administered to 6 groups of 10 fasted rats each (5 male and 5 female) at dosage levels of 1585, 2512, 3980, 6308, 10,000 and 15,848 mg/kg.  
**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : Necropsy findings on animals that died during the study included grey foci, red foci, focal hemorrhage and congestion of the lungs; compound mixed with ingesta, congestion and hemorrhage of the mucosal tissue of the stomach; compound in the intestinal tract; congestion of the liver and petechiation of the thymus.  
 Mortality  

| Dose<br>mg/kg | Number Dead/Total |        |
|---------------|-------------------|--------|
|               | Male              | Female |
| 1585          | 0/5               | 0/5    |
| 2512          | 1/5               | 0/5    |
| 3980          | 0/5               | 1/5    |
| 6308          | 5/5               | 4/5    |
| 10000         | 4/5               | 5/5    |
| 15848         | 4/5               | 5/5    |

The acute oral toxicity (LD50) values for tribromphenol, Lot No. 812-141 were calculated as:

Male rats: 5012 (4034-6227) mg/kg,

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Female rats: 5012 (3863-6503) mg/kg,  
Combined male and female rats: 5012 (4178-6013) m g/kg.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.  
06.08.2002 (15)

**Type** : LD50  
**Species** : rat  
**Strain** :  
**Sex** : male/female  
**Number of animals** : 60  
**Vehicle** : other: corn oil  
**Value** : = 1905 mg/kg bw  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol, lot #3277.  
**Method** : Thirty male and 30 female rats were used. Tribromophenol was administered orally by gavage as a suspension in corn oil at 631, 1000, 1585, 2512, 3980 and 6308 mg/kg to groups of 5 males and 5 females. Rats were observed for a total of 14 days following dosing.  
**Remark** : Sponsor: Velsicol Chemical Corp.  
**Result** : The acute oral LD50 values and 95% confidence limits were calculated as:

Male rats: 1995 (1728 - 2304) mg/kg,  
Female rats: 1819 (1513 - 2187) mg/kg,  
Combined male and female rats: 1905 (1738 - 2089) mg/kg.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.  
06.08.2002 (17)

**Type** : LD50  
**Species** : rat  
**Strain** : Sprague-Dawley  
**Sex** : male/female  
**Number of animals** : 60  
**Vehicle** : other: DMSO and corn oil.  
**Value** : = 2963 mg/kg bw  
**Method** : other (calculated): computer program based on Litchfield and Wilcoxon.  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol Distillation Residue, 609-137A, Ref. No. 013190H, 9-9-80.  
**Method** : Tribromophenol Distillation Residue, 609-137A, Ref. No. 013190H, 9-9-80 was administered orally at five dose levels and one vehicle control group each containing ten rats (5 males and 5 females). Dosing solutions were prepared by dissolving the test material in DMSO and further diluting with corn oil. Doses administered were 0, 1, 50, 500, 2500 and 5000 mg/kg.  
**Remark** : Sponsor: Great Lakes Chemical Corp.  
**Result** : Systemic signs occurred at all dose levels.

Mortality occurred at the 2500 and 5000 mg/kg dose levels. Deaths occurred on day 0 (day of dosing) and day 1.

| Dose (mg/kg) | Number dead/total |        |
|--------------|-------------------|--------|
|              | Male              | Female |
| 0            | 0/5               | 0/5    |
| 1            | 0/5               | 0/5    |
| 50           | 0/5               | 0/5    |
| 500          | 0/5               | 0/5    |
| 2500         | 3/5               | 2/5    |
| 5000         | 5/5               | 5/5    |

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|                                  |  |
|----------------------------------|--|
| <b>Conclusion</b>                | : Positive gross pathologic findings occurred at the 500, 2500 and 5000 mg/kg dose levels. From the data presented the LD50 of Tribromophenol Distillation Residue, 609-137A, Ref No 013190H, 9-9-80 is 2963 mg/kg for both sexes.   |
| <b>Reliability</b><br>06.08.2002 | : (1) valid without restriction (31)   |
| <b>Type</b>                      | : LD50   |
| <b>Species</b>                   | : rat  |
| <b>Strain</b>                    | : Sprague-Dawley   |
| <b>Sex</b>                       | : male/female  |
| <b>Number of animals</b>         | : 60   |
| <b>Vehicle</b>                   | : other: in DMSO and corn oil.   |
| <b>Value</b>                     | : = 2500 mg/kg bw  |
| <b>Method</b>                    | : other (calculated): computer program based on Litchfield and Wilcoxon  |
| <b>Year</b>                      | : 1949   |
| <b>GLP</b>                       | : yes  |
| <b>Test substance</b>            | : other TS: Tribromophenol Distillation Residue, 609-137B, ref. #013190H, 9-9-80.  |
| <b>Method</b>                    | : Tribromophenol Distillation Residue, 609-137B, Ref. No. 013190H, 9-9-80 was administered orally at five dose levels and one vehicle control group each containing ten rats (5 males and 5 females).  |
| <b>Remark</b>                    | : Sponsor: Great Lakes Chemical Corp.  |
| <b>Result</b>                    | : Systemic signs occurred at all dose levels. Mortality and positive gross pathologic findings occurred at the 2500 and 5000 mg/kg dose levels. From the data presented, the LD50 of Tribromophenol Distillation Residue is 2500 mg/kg for both sexes.   |
| <b>Reliability</b><br>01.08.2002 | : (1) valid without restriction (32)   |
| <b>Type</b>                      | : LD50   |
| <b>Species</b>                   | : rat  |
| <b>Strain</b>                    | : Sprague-Dawley   |
| <b>Sex</b>                       | : male/female  |
| <b>Number of animals</b>         | : 30   |
| <b>Vehicle</b>                   | : CMC  |
| <b>Value</b>                     | : = 3704 mg/kg bw  |
| <b>Method</b>                    | : OECD Guide-line 401 "Acute Oral Toxicity"  |
| <b>Year</b>                      | :  |
| <b>GLP</b>                       | : yes  |
| <b>Test substance</b>            | : other TS:PH-73, lot #637149C2  |
| <b>Method</b>                    | : The acute oral toxicity potential of PH-73 was evaluated. Test material was administered once orally via gastric intubation to groups of 5 male and 5 female albino rats at dose levels of 2924, 3824 and 5000 mg/kg.  |
| <b>Result</b>                    | : All deaths were noted at one or three hours post-dosing on day 0. There 2/10, 5/10, and 9/10 deaths for rats dosed at 2924, 3824, and 5000 mg/kg, respectively.<br>Clinical findings included various external material, hypoactivity, convulsions, clear ocular discharge, tremors and rales. There were no other clinical findings. All animals appeared normal by day 6 or earlier and throughout the remainder of the study.<br>Gastrointestinal abnormalities were noted for all 16 rats that died. Findings noted for one or two animals found dead included dark red lungs, dilated renal pelves, a reddened and prolapsed penis and distended ureters. Various external matting was observed on eight rats. There were no other gross necropsy findings for animals that died during the study. There were no findings for any examined tissues at the terminal necropsy. The LD50 of PH-73 was calculated to be 3704 mg/kg with 95% confidence limits of 3163-4339 mg/kg when administered once orally via gastric intubation to fasted male and female rats. |

gastric intubation to fasted male and female rats.  
**Reliability** : (1) valid without restriction (30)  
 06.08.2002

### 5.1.2 ACUTE INHALATION TOXICITY

**Type** : LC50  
**Species** : rat  
**Strain** :  
**Sex** : male  
**Number of animals** : 20  
**Vehicle** :  
**Exposure time** : 1 hour(s)  
**Value** : > 200 mg/l  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS:Tribromophenol, Ref #L-6327  
**Method** : Two groups of 10 male rats each were exposed to 2,4,6-tribromophenol. Each group was placed in a sealed 59.1 liter glass chamber and exposed for 1 hour to a dynamic atmosphere. Addition of the test compound to the test chamber atmosphere was controlled by a Wright Dust Feeder. The calculated atmospheric concentrations administered were approximately 2 and 200 mg/l of the test compound.  
 (No additional details available.)  
**Remark** : Sponsor: Great Lakes Chemical Corp.  
**Result** : All rats exposed to the 2 mg/L atmospheric concentration survived through the 14 day observation period. Signs seen during the exposure included eye squint, increased followed by decreased respiratory rates, nasal discharge, increased followed by decreased motor activity, prostration, salivation, lacrimation and erythema. At 24 hours 9 rats appeared normal and one showed decreased motor activity. From day 2 to 6 corneal opacity and drying of the corneal surface were observed in a few rats. From day 7 to 14 all rats appeared normal except on day 10 when one exhibited nasal porphyrin discharge. All rats exhibited normal body weight gains.  
 All rats exposed to the 200 mg/L atmospheric concentration survived through the 14 day observation period. Signs seen during the exposure period included nasal discharge, eye squint, increased followed by decreased respiratory rates, prostration, salivation, lacrimation, erythema and an increase followed by a decrease in motor activity. Immediately following exposure ocular nasal porphyrin discharge was observed. A few rats exhibited decreased motor activity and nasal discharge through day 6. At day 7 all 10 rats appeared normal and remained so for the duration of the 14 days.  
 Tribromophenol would not be considered a toxic substance by the inhalation route of administration.  
**Reliability** : (2) valid with restrictions  
 24.09.2002 Study conducted prior to GLP.

(11)

**Type** : LC50  
**Species** : rat  
**Strain** : other: Spartan  
**Sex** : male/female  
**Number of animals** : 10  
**Vehicle** : other: air  
**Exposure time** : 4 hour(s)  
**Value** : > 50 mg/l  
**Method** : other: not reported

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|                          |   |  |
|--------------------------|---|--|
| <b>Year</b>              | : |  |
| <b>GLP</b>               | : | no data  |
| <b>Test substance</b>    | : | other TS: Tribromophenol, Lot No. 812-141.   |
| <b>Method</b>            | : | A group of 10 rats was placed in a sealed 59.1 liter glass chamber and exposed for 4 hours to a dynamic atmosphere containing the dust of Tribromophenol, Lot No. 812-141. Addition of the test compound to the test chamber was controlled by a Wright Dust Feeder. The calculated atmospheric concentration administered was approximately 50 mg/l of tribromophenol.<br>(No additional details available.)  |
| <b>Remark</b>            | : | Sponsor: Michigan Chemical Corp.   |
| <b>Result</b>            | : | No deaths occurred during the 4 hour exposure period or during the subsequent 14 day period of observation. Necropsy of all rats following the 14 day observation period failed to reveal any compound related findings. Based upon the results obtained, the acute inhalation toxicity in albino rats for Tribromophenol, Lot No. 812-141 is greater than 50 mg/L.  |
| <b>Reliability</b>       | : | (2) valid with restrictions  |
| 24.09.2002               |   | (13)   |
| <b>Type</b>              | : | LC50   |
| <b>Species</b>           | : | rat  |
| <b>Strain</b>            | : | other: Charles River   |
| <b>Sex</b>               | : | male/female  |
| <b>Number of animals</b> | : | 10   |
| <b>Vehicle</b>           | : | other: air   |
| <b>Exposure time</b>     | : | 4 hour(s)  |
| <b>Value</b>             | : | > 1.63 mg/l  |
| <b>Method</b>            | : | other: not reported  |
| <b>Year</b>              | : |  |
| <b>GLP</b>               | : | no data  |
| <b>Test substance</b>    | : | other TS: 2,4,6 -Tribromophenol, Lot No. 3106.   |
| <b>Method</b>            | : | A dust of Tribromophenol, Lot No. 3106, was produced by passing a stream of air through a dust shaking mechanism. Five male and five female rats were exposed for 4 hours in inhalation chambers to the dust at a concentration of 1.63 mg/l of air. Animals were observed for the following 14 days.<br>A sample of airborne dust was collected to determine the particle size distribution microscopically.  |
| <b>Remark</b>            | : | Sponsor: Michigan Chemical Corp.   |
| <b>Result</b>            | : | Particle size distribution of the dust indicated 65% of the particles were 1-5 microns, 13% were 6-10 microns, 11% were 11-25 microns and 11% were >25 microns. There were no deaths during the exposure or the 14 day observation period. Ptosis was observed after 10 minutes of exposure, and subsided immediately after the animals were removed from the exposure chamber. Red nasal discharge was noted among all animals at the end of the exposure period and subsided between 8 and 18 hours post-exposure.<br>The acute 4 hour LC50 for rats exposed to a dust of tribromophenol was >1.63 mg/l air. |
| <b>Reliability</b>       | : | (2) valid with restrictions<br>Study conducted prior to GLP.   |
| 24.09.2002               |   | (8)  |

### 5.1.3 ACUTE DERMAL TOXICITY

|                          |   |                   |
|--------------------------|---|-------------------|
| <b>Type</b>              | : | LD50              |
| <b>Species</b>           | : | rabbit            |
| <b>Strain</b>            | : | New Zealand white |
| <b>Sex</b>               | : | male/female       |
| <b>Number of animals</b> | : | 4                 |

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**Vehicle** :  
**Value** : > 2000 mg/kg bw  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS:tribromophenol, ref. #L-6327.  
**Method** : Two groups of two male and two female New Zealand White rabbits were used for the study. Tribromophenol was applied once to the clipped backs of the animals at 200 or 2000 mg/kg body weight and the area occluded and wrapped with a gauze bandage. Twenty-four hours later the sites were washed with tepid water and the animals observed for 14 days.

**Remark** : Sponsor: Great Lakes Chemical Corp.  
**Result** : None of the rabbits at either dose died during the study. All rabbits in the 200 mg/kg group and 2/4 in the 2000 mg/kg group exhibited body weight gains.  
Two of the four at 2000 mg/kg showed weight losses of 209 and 474 g. Tribromophenol would not be considered a toxic material by the dermal route of administration.

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

24.09.2002

(11)

**Type** : LD50  
**Species** : rabbit  
**Strain** : New Zealand white  
**Sex** : male/female  
**Number of animals** : 4  
**Vehicle** : other: none  
**Value** : > 8000 mg/kg bw  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol, Lot No. 812-141.  
**Method** : Tribromophenol, Lot No. 812-141, was examined for acute dermal toxicity in male and female albino rabbits. Backs of rabbits were clipped and the sites on one male and one female were abraded. Tribromophenol was applied to each rabbit at a dosage of 8000 mg/kg. The backs were wrapped with a gauze bandage and occluded with Saran Wrap. Twenty four hours later the bandages were removed and the backs washed with tepid water. Animals were observed for mortality for 14 days.

**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : None of the rabbits used in the study died during the 14 day study period. Gross necropsy examination following 14 days failed to reveal any findings which were considered related to compound application.  
Based on the results obtained, the acute dermal toxicity for Tribromophenol, Lot No. 812-141, in male and female albino rabbits is greater than 8000 mg/kg.

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

06.08.2002

(14)

### 5.1.4 ACUTE TOXICITY, OTHER ROUTES

#### 5.2.1 SKIN IRRITATION

**Species** : rabbit  
**Concentration** : undiluted  
**Exposure** : Occlusive

## 5. Toxicity

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**Exposure time** : 24 hour(s)  
**Number of animals** : 6  
**PDII** : .3  
**Result** : not irritating  
**EC classification** : not irritating  
**Method** : other: Federal Hazardous Substances Act  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol, Lot No. 812-141.  
**Method** : Tribromophenol, Lot No. 812-141 was examined for primary skin irritation in albino rabbits in accordance with the regulations of the Federal Hazardous Substances Act. The backs of 3 male and 3 female rabbits were clipped and the sites on three rabbits were abraded. 500 mg Tribromophenol was applied to the back of each rabbit, the area wrapped with a gauze bandage and occluded with Saran Wrap. Twenty-four hours later bandages were removed and the area washed with tepid water and examined for skin irritation.

**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : At 24 hours, very slight erythema was observed on 2 abraded and 2 intact sites and at 72 hours on only one abraded site (total of 6 sites). No edema was noted on any of the sites. The Primary Irritation Score was 0.3. Tribromophenol, Lot No 812-141, based upon a computed primary irritation score of 0.3, would not be considered a primary skin irritant nor would this material present a corrosive hazard to the skin when employed in the manner described.

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

24.09.2002 (10)

**Species** : rabbit  
**Concentration** : 100 %  
**Exposure** : Occlusive  
**Exposure time** : 24 hour(s)  
**Number of animals** : 6  
**PDII** : .3  
**Result** : not irritating  
**EC classification** : not irritating  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: tribromophenol, ref. #L-6327.  
**Method** : Three male and three female New Zealand White rabbits were used for the study. The application sites on three of the rabbits were abraded. Tribromophenol (500 mg) was applied to the backs of the rabbits, occluded and wrapped with a gauze bandage. Twenty-four hours later the bandages were removed and the sites washed with tepid water.

**Remark** : Sponsor: Great Lakes Chemical Corp.  
**Result** : One intact site and two abraded sites exhibited very slight erythema at 24 hours. No edema was noted at any time. The calculated primary irritation score was 0.3. Tribromophenol would not be considered a primary skin irritant.

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

24.09.2002 (11)

### 5.2.2 EYE IRRITATION

**Species** : rabbit  
**Concentration** : undiluted  
**Dose** : 100 other: mg

## 5. Toxicity

Id 118-79-6

Date 09.12.2002

**Exposure Time** :  
**Comment** : not rinsed  
**Number of animals** : 6  
**Result** : irritating  
**EC classification** : irritating  
**Method** : other: Federal Hazardous Substances Act  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol, Lot No. 812-141.  
**Method** : Tribromophenol, Lot No. 812-141, was evaluated for eye irritation in accordance with the regulations under the Federal Hazardous Substances Act. 100 mg of the test material was instilled into the conjunctival sac of the right eye of each rabbit. Examinations were made for ocular irritation at 24, 48 and 72 hours and at 7 days.  
**Remark** : Sponsor: Michigan Chemical Corp.  
**Result** : Examination at 72 hours revealed slight corneal damage in 5/6 rabbits. Based on the results obtained, Tribromophenol, Lot No. 812-141, would be considered an eye irritant.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

24.09.2002

(16)

**Species** : rabbit  
**Concentration** : undiluted  
**Dose** : 100 other: mg  
**Exposure Time** :  
**Comment** :  
**Number of animals** : 6  
**Result** : moderately irritating  
**EC classification** : irritating  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: tribromophenol, ref. #L-6327.  
**Method** : Three male and three female New Zealand White rabbits were used. 100 Milligrams of tribromophenol was instilled into the cupped conjunctival sac and examinations were made at 24, 48, and 72 hours and 7 days.  
**Remark** : Sponsor: Great Lakes Chemical Corp.  
**Result** : Very slight corneal opacity was noted in one eye at 24 hours. Iris scores were 0.3 at 24 hours and 0.5 at 48 hours. Conjunctival scores were 11.8 at 24 hours, 5.0 at 48 hours and 3.8 at 72 hours and 0.8 at 7 days. Tribromophenol would be considered a moderate eye irritant.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

24.09.2002

(11)

### 5.3 SENSITIZATION

**Type** : no data  
**Species** : guinea pig  
**Concentration** : Induction .1 % other: intradermal  
Challenge .1 % other: intradermal  
**Number of animals** : 12  
**Vehicle** : physiol. saline  
**Result** : sensitizing  
**Classification** : sensitizing  
**Method** : other: not reported  
**Year** :  
**GLP** : no data

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|                       |   |
|-----------------------|---|
| <b>Test substance</b> | : other TS: Tribromophenol, Lot No. 812-141.  |
| <b>Method</b>         | : Tribromophenol was evaluated for dermal sensitization in the albino guinea pig.<br>Each control and test compound was injected intradermally into a prepared area on the back and flanks of the respective guinea pigs. Injections were made every other day three times each week for a total of 10 sensitizing doses. The volume for the first dose was 0.5 ml and thereafter was 0.10 ml. Two weeks after the last sensitizing dose, a challenge dose, at a volume of 0.05 ml was given by intradermal injection. Reactions to the challenge dose were read and scored at 24 and 48 hours. |
| <b>Remark</b>         | : Sponsor: Michigan Chemical Corp.  |
| <b>Result</b>         | : Four of the eight guinea pigs responded to the challenge dose of tribromophenol by exhibiting a flare response slightly greater than that obtained in the sensitizing doses. The other four exhibited essentially negative responses. No significant effect was noted in the wheal response to the challenge dose, when compared to the response obtained in the sensitizing doses.<br>Based on the results obtained, the test compound would be considered a possible sensitizing agent in man which could produce slight sensitization in the occasionally susceptible individual.          |
| <b>Reliability</b>    | : (2) valid with restrictions<br>Study conducted prior to GLP.  |
| 24.09.2002            | (9)   |

### 5.4 REPEATED DOSE TOXICITY

|                               |  |
|-------------------------------|--|
| <b>Species</b>                | : rat  |
| <b>Sex</b>                    | : male/female  |
| <b>Strain</b>                 | :  |
| <b>Route of admin.</b>        | : inhalation   |
| <b>Exposure period</b>        | : 6 hours/day  |
| <b>Frequency of treatment</b> | : 5 days/week, 3 weeks   |
| <b>Post obs. period</b>       | : none   |
| <b>Doses</b>                  | : Dust at 0.00, 0.10 and 0.92 mg/l (analytical determination).   |
| <b>Control group</b>          | : yes  |
| <b>NOAEL</b>                  | : < .1 mg/l  |
| <b>LOAEL</b>                  | : = .1 mg/l  |
| <b>Method</b>                 | : other: not reported  |
| <b>Year</b>                   | :  |
| <b>GLP</b>                    | : no data  |
| <b>Test substance</b>         | : other TS: 2,4,6-tribromophenol.  |
| <b>Method</b>                 | : A subacute dust inhalation toxicity study was conducted. Two groups of 10 albino rats each were exposed to either a low (T-I) concentration or a high (T-II) of dust of 2,4,6-Tribromophenol for 6 hours per day, 5 days per week, for 3 weeks. An additional 10 rats served as untreated control animals for comparison and received no dust exposure. Target, gravimetric and analytical dust concentrations were all 0.00 for the control, 0.10, 0.15 and 0.10 for T-I, respectively, and 1.00, 0.98 and 0.92 for T-II, respectively.<br>At the end of the 21 day period, all surviving animals were sacrificed and subjected to gross necropsy.                              |
| <b>Remark</b>                 | : Sponsor: Michigan Chemical Corp.   |
| <b>Result</b>                 | : There were no deaths among the T-I rats. One T-II male and one T-II female died after 10 and 11 exposures, respectively. Untoward reactions noted in both groups included hypoactivity, salivation, lacrimation and red nasal discharge. One T-II animal exhibited hyperpnea on day 11. Body weight gains for male animals in T-I compared favorably with those of the control males. However, T-I females and both the males and females in T-II exhibited lower weight gains than did their respective control groups. There were no significant differences between test and control animals with respect to hematologic, clinical chemistry or urinalysis values obtained at |

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|                               |  |     |
|-------------------------------|--|-----|
|                               | respect to hematologic, clinical chemistry or urinalysis values obtained at either interval of investigation. Gross and histopathologic changes involving the liver and kidneys were noted among the T-II rats.  |     |
| <b>Reliability</b>            | : (2) valid with restrictions  |     |
| 01.08.2002                    | Study conducted prior to GLP.  | (5) |
| <b>Species</b>                | : rabbit   |     |
| <b>Sex</b>                    | : male/female  |     |
| <b>Strain</b>                 | : New Zealand white  |     |
| <b>Route of admin.</b>        | : dermal   |     |
| <b>Exposure period</b>        | : 28 days  |     |
| <b>Frequency of treatment</b> | : 5 days/week, 4 weeks   |     |
| <b>Post obs. period</b>       | : 2 days   |     |
| <b>Doses</b>                  | : 0, 100, 300, and 1000 mg/kg  |     |
| <b>Control group</b>          | : yes, concurrent vehicle  |     |
| <b>NOAEL</b>                  | : = 300 mg/kg bw   |     |
| <b>Method</b>                 | : other: not reported  |     |
| <b>Year</b>                   | :  |     |
| <b>GLP</b>                    | : no data  |     |
| <b>Test substance</b>         | : other TS: 2,4,6 -Tribromophenol, Lot No. 3106.   |     |
| <b>Method</b>                 | : A 28 day subacute dermal toxicity study was conducted with 2,4,6-Tribromophenol, Lot No. 3106. Four groups of 4 male and 4 female New Zealand white rabbits were administered Tribromophenol at doses of 0, 100, 300 or 1000 mg/kg. Skin sites on 2 males and 2 females in each group were abraded. The test material was ground to a fine powder and suspended (1% w/v) in aqueous methylcellulose prior to application. Doses were applied dermally to the clipped, unoccluded skin sites 5 days/week for 4 weeks.   |     |
| <b>Remark</b>                 | : Sponsor: Michigan Chemical Corp.   |     |
| <b>Result</b>                 | : One rabbit in the 1000 mg/kg group died after receiving 15 dermal applications; the cause of death could not be determined from the tissues examined. 2,4,6-Tribromophenol was slightly irritating to the skin upon repeated exposure. No pharmacotoxic symptoms were observed at any time during the study. No treatment related effects were noted on body weight, hematology, clinical blood chemistry or urinalysis. Treatment-related lesions were noted on the test skin sites of all animals. All of the other gross and microscopic lesions were compatible with those of naturally occurring diseases or related to the method of sacrifice. There were no statistically significant inter-group differences in organ weight or ratio data. |     |
| <b>Reliability</b>            | : (2) valid with restrictions  |     |
| 01.08.2002                    | Study conducted prior to GLP.  | (6) |

### 5.5 GENETIC TOXICITY 'IN VITRO'

|                             |  |  |
|-----------------------------|--|--|
| <b>Type</b>                 | : Ames test  |  |
| <b>System of testing</b>    | : Plate incorporation.   |  |
| <b>Concentration</b>        | : 1, 10, 100, 500, 1000 ug/plate   |  |
| <b>Cycotoxic conc.</b>      | : 1000 ug/plate  |  |
| <b>Metabolic activation</b> | : with and without   |  |
| <b>Result</b>               | : negative   |  |
| <b>Method</b>               | : other: not reported  |  |
| <b>Year</b>                 | :  |  |
| <b>GLP</b>                  | : no data  |  |
| <b>Test substance</b>       | : other TS: 2,4,6 -tribromophenol, lot #3287.  |  |
| <b>Method</b>               | : 2,4,6-Tribromophenol was tested for mutagenic activity in Salmonella and Saccharomyces in the absence and presence of liver microsomal enzyme preparations from Aroclor-induced rats. The dose range was from 1.0 ug |  |

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preparations from Aroclor-induced rats. The dose range was from 1.0 ug to 1000 ug/plate. The test compound exhibited toxicity at 1000 ug/plate with all the strains except TA-1535.

**Remark** : Sponsor: Velsicol Chemical Corp.

**Result** : Results of tests conducted in the absence of and in the presence of a rat liver activation system were negative. 2,4,6-Tribromophenol did not demonstrate genetic activity in any of the assays conducted and was considered not mutagenic under these test conditions.

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

01.08.2002 (18)

### 5.6 GENETIC TOXICITY 'IN VITRO'

**Type** : Micronucleus assay

**Species** : mouse

**Sex** : male/female

**Strain** : ICR

**Route of admin.** : i.p.

**Exposure period** : single dose

**Doses** : 75, 150 and 300 mg/kg

**Result** : negative

**Method** : other: not reported

**Year** :

**GLP** : yes

**Test substance** : other TS: 2,4,6 -Tribromophenol, 100% pure.

**Method** : 2,4,6-Tribromophenol, in corn oil, was administered by i/p. injection to groups of male and female mice at doses of 75, 150 or 300 mg/kg body weight. At 24 hours post-dosing 5 mice per sex per dose were sacrificed and bone marrow cells prepared and scored for micronuclei. At 48 hours post-dosing 5 mice per sex administered 300 mg/kg were sacrificed and micronuclei scored.

**Remark** : Sponsor: Great Lakes Chemical Corp.

**Result** : No mortality was observed at any dose level. Clinical signs following dose administration included lethargy and piloerection in males and females at 150 and 300 mg/kg. Statistically significant reductions in the number of polychromatic erythrocytes were observed in male mice treated with 150 and 300 mg/kg 24 hours after dose administration relative to the respective vehicle control groups. No significant increase in micronucleated polychromatic erythrocytes in test article-treated groups relative to the respective vehicle control groups was observed in male or female mice at 24 or 48 hours after dose administration.

2,4,6-Tribromophenol did not induce a significant increase in micronucleated polychromatic erythrocytes in either male or female mice. 2,4,6-Tribromophenol was negative in the mouse micronucleus assay.

**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

01.08.2002 (1)

### 5.7 CARCINOGENITY

### 5.8 TOXICITY TO REPRODUCTION

### 5.9 DEVELOPMENTAL TOXICITY/TERATOGENICITY

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**Species** : rat  
**Sex** : female  
**Strain** :  
**Route of admin.** : gavage  
**Exposure period** : Days 6 through 15 of gestation.  
**Frequency of treatment** : Daily  
**Duration of test** : To day 20 of gestation.  
**Doses** : 0, 10, 30, 100, 300, 1000 and 3000 mg/kg/day.  
**Control group** : yes  
**NOAEL Maternal.** : = 1000 mg/kg bw  
**NOAEL Fetotoxicity** : = 300 mg/kg bw  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: Tribromophenol, FM 246, lot #3287.  
**Method** : A pilot study with mated Charles River CD female rats was performed to determine dosage levels for a teratology study. Tribromophenol was administered by gavage at 10, 30, 100, 300, 1000 and 3000 mg/kg/day from gestation day 6 through 15. A control group received the vehicle, corn oil, at 10 mg/kg/day.  
During gestation the females were observed for clinical signs of effect, mortality and body weight changes. The rats were sacrificed on gestation day 20 and uterine contents examined for viable and nonviable fetuses, early and late resorptions and total implantations.  
**Remark** : Sponsor: Velsicol Chemical Corp.  
**Result** : There were no changes in appearance or behavior, which were attributed to Tribromophenol for those females receiving 1000 mg/kg/day or less. There were no compound related differences in the number of viable or nonviable fetuses, resorptions, implantations, corpora lutea or maternal body weights for those females receiving 300 mg/kg/day or less when compared to the control group. There were slight decreases in body weight gains between gestation days 6 and 12, an increase in post-implantation losses, and a slight decrease in the number of viable fetuses in the 1000 mg/kg/day group which may be attributed to treatment. All animals in the 3000 mg/kg/day group died after one day of treatment. The maximum suggested dosage level for a teratology study is 1000 mg/kg/day.  
**Reliability** : (2) valid with restrictions  
Study conducted prior to GLP.

01.08.2002

(12)

**Species** : rat  
**Sex** : male/female  
**Strain** : Wistar  
**Route of admin.** : other: inhalation and per os  
**Exposure period** : Days 0 through 20 of gestation. Inhalation: 4 hr/day; per os: once per day.  
**Frequency of treatment** : Daily  
**Duration of test** : through Day 60 post-partum.  
**Doses** : Inhalation: 0, 0.03, 0.1, 0.3 or 1.0 mg/m<sup>3</sup>.  
Per os: 0.2, 1.2, 2.0 mg/m<sup>3</sup> and 10.9 mg/kg.  
**Control group** : yes  
**LOAEL Maternal Toxicity** : = .3 mg/m<sup>3</sup>  
**other:LOAEL developmental toxicity** : = .1 mg/m<sup>3</sup>  
**Method** : other: not reported  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 2,4,6 -Tribromophenol  
**Method** : Pregnant Wistar rats were exposed to 2,4,6-tribromophenol by whole body inhalation at concentrations of 0, 0.03, 0.1, 0.3 or 1.0 mg/m<sup>3</sup> 4

## 5. Toxicity

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**Result** : body inhalation at concentrations of 0, 0.03, 0.1, 0.3 or 1.0 mg/m<sup>3</sup> 4 hr/day (4 hr group) and 0.2, 1.2, 2.0 or 10.9 mg/kg, per os once/day (per os group). Exposures were daily from day 0 to 20 of gestation. [This is a verbatim transcription of the abstract. The last sentence was deleted as it was speculative and unsubstantiated.] Effects reported in pregnant dams included significant decreases in emotionality in the open field at concentrations of 0.3 and 1.0 mg/m<sup>3</sup>, significant increasing of total amino nitrogen in blood at concentration of 0.3 mg/m<sup>3</sup> and electrical impulsion skin pain threshold (SPT) at highest tested concentration were revealed in pregnant dams. Significant decreases in orientation reactions, increasing of SPT, MetHb and urea in blood of mothers at dose of 10.9 mg/kg; decreasing of emotionality and increasing of amino nitrogen levels in blood and urine in pregnant dams exposed per os to TBP at doses of 10.9 and 2 mg/kg were found. Postimplantation loss at concentrations of 0.3 and 1.0 mg/m<sup>3</sup> (4 hr group) and at the dose of 2 mg/kg (per os group) have been significantly increased. Fetal body weight has been significantly reduced at concentration of 0.1 mg/m<sup>3</sup> and at dose of 2 mg/kg. An increase in the incidents of visceral and subcutaneous hematomas, ossification retardation were statistically significant at concentrations of 0.3 and 0.1 mg/m<sup>3</sup>; increasing of the incidents of hematomas and the numbers of fetuses with 2 and more variants at doses of 2 and 10.9 mg/kg was observed. In pups prenatally exposed to TBP evidence of ear unfolding (1 mg/m<sup>3</sup>, 4 hr group and 2 mg/kg, per os group) and incisor eruption (0.3 mg/m<sup>3</sup>, 4 hr group and 2 mg/kg, per os) was significantly delayed. Behavioral reactions of the 30 day offspring (1 mg/m<sup>3</sup>) and 60 day old progeny (0.3 mg/m<sup>3</sup>) and of 30 and 60 day old offspring at doses of 10.9 and 2 mg/kg were significantly decreased. SPT increasing in 60 days of age pups was observed in both 4 hr (1 mg/m<sup>3</sup>) and per os (2 mg/kg) groups. Thus, the LOELs of TBP were 0.3 mg/m<sup>3</sup> for maternal toxicity and 0.1 mg/m<sup>3</sup> for developmental toxicity in 4 hr group and they were equal to 2 mg/m<sup>3</sup> for both effects in per os group.

**Reliability** : (3) invalid  
Study was conducted in Eastern European laboratory. There is no indication of GLP standards. Only an English abstract is available and this contains inconsistencies and unexplained statements.

24.09.2002

(19)

**Species** : rat  
**Sex** : female  
**Strain** : Wistar  
**Route of admin.** : inhalation  
**Exposure period** : Days 1-21 of gestation  
**Frequency of treatment** : 24 hr/day  
**Duration of test** : Through Day 60 postpartum.  
**Doses** : 0.03, 0.1, 0.3, 1.0 mg/m<sup>3</sup>  
**Control group** : yes  
**other: NOEL Maternal toxicity** : = .3 mg/m<sup>3</sup>  
**other: NOEL Developmental neurotoxicity** : < .03 mg/m<sup>3</sup>  
**Method** :  
**Year** :  
**GLP** : no data  
**Test substance** : other TS: 2,4,6 -Tribromophenol  
**Method** : Pregnant Wistar rats were exposed to 2,4,6-Tribromophenol by whole body inhalation (0, 0.03, 0.1, 0.3, 1.0 mg/m<sup>3</sup>, 24 hr/day, 7 days/week, from day 1 to 21 of gestation). Fifteen rats in each group were sacrificed on the 21st day of pregnancy and developmental parameters assessed. Ten females in each group delivered naturally and the offspring were observed for 2 months. On post-natal day 60 the pups were sacrificed.  
The influence of TBP on the CNS was monitored by assessing skin pain

|                    |   |
|--------------------|---|
|                    | <p>The influence of TBP on the CNS was monitored by assessing skin pain threshold (SPT) using the method of Speranskiy and by observing behavior reactions in a modified open field device.</p> <p>Pregnant animals on the 21st gestation day and pups on the 30th and 60th postnatal days, were tested for 2 min in a square open field apparatus. The number of segments entered with all four feet was a measure of horizontal movement, the number of peeps into the holes (i.e., vertical head movement) was a measure of orientation reaction, and grooming and the number of defecations were a measure of emotionality.</p>   |
| <b>Result</b>      | <p>: Significant decreases in orientation reactions were reported at concentrations of 1.0 mg/m(3) (<math>p &lt; 0.05</math>) in the open field test. Nonsignificant trends (<math>p &lt; 0.05</math>) toward decreased horizontal movement and emotionality in the open field and increased electrical impulse skin pain threshold (SPT) were reported. No significant exposure-related differences in the nonspecific immunological status (phagocytosis and blood anti-microbe activity) of pregnant rats were seen after exposure. Preimplantation and postimplantation embryo losses were significantly increased in a dose-dependent manner and were seen in all treated groups except the lowest concentration (0.03 mg/m(3)) group. Signs of retarded fetal skeletal development and increased frequencies of visceral abnormalities were found at concentrations of 0.1 and 1.0 mg/m(3). Significant effects were found for lower incisor eruption and ear unfolding at a concentration of 0.3 mg/m(3). The grooming behavior of 30 day old progeny was significantly less than control in all experimental groups. Grooming behavior in female subjects exposed to a concentration of 0.3 mg/m(3) and emotionality in subjects exposed to a concentration of 1 mg/m(3) were decreased significantly. At 60 days of age emotional reactions were significantly decreased in female subjects from the 0.03, 0.3 and 1.0 mg/m(3) groups. SPT was significantly increased in the 1 mg/m(3) group for both male and female pups. Thus, the evidence of CNS depression influence of TBP both in maternal and offspring groups was found. The NOEL for developmental neurotoxicity is thus <math>&lt; 0.03</math> mg/m(3), and the NOEL for maternal neurotoxicity is 0.3 mg/m(3).</p> |
| <b>Reliability</b> | <p>: (2) valid with restrictions</p> <p>Study was conducted in Eastern European laboratory. There is no indication of GLP standards. Article is in English.</p>   |
| 24.09.2002         | (20)  |

#### 5.10 OTHER RELEVANT INFORMATION

|               |   |
|---------------|---|
| <b>Type</b>   | : other: bioaccumulation  |
| <b>Method</b> | : 2,4,6-Tribromophenol (Lot No. 877.96) was tested for bioaccumulation in brown fat tissue in male albino rats. Forty eight male Charles River rats were randomly assigned to 6 groups (3 control and 5 test rats/group). Group I animals were sacrificed after 7 days of testing and samples of fat were collected and analyzed for test material residue. Groups II and IV were removed from testing after 7 days and allowed a 7 and 14 day recovery period, respectively. The animals were sacrificed and fat samples collected. After 21 days of feeding, Group III animals were removed and sacrificed. Groups V and VI were allowed a 14 and 42 day recovery period, respectively, following 21 days of feeding and then sacrificed. |
| <b>Remark</b> | : Sponsor: Michigan Chemical Corp.  |
| 24.09.2002    | (7)   |
| <b>Type</b>   | : other: pharmacokinetics   |
| 17.07.2001    |   |

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**5.11 EXPERIENCE WITH HUMAN EXPOSURE**

## 6. References

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## 6. References

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**7.1 END POINT SUMMARY**

**7.2 HAZARD SUMMARY**

**7.3 RISK ASSESSMENT**