FOREWORD

INTRODUCTION

COPPER PHTHALOCYANINE
CAS N°: 147-14-8
Identifiers, Physical and Chemical Properties

**End Point** : IDENTIFIERS, PHYSICAL AND CHEMICAL PROPERTIES

**Chemical Name** : Copper, (29H,31H-phthalocyaninato(2-)-N29,N30,N31,N32)-, (SP-4-1)-

**Common Name** : Copper phthalocyanine

**CAS Number** : 147-14-8

### Synonyms
- Accesperse cyan blue GT
- Bahama blue BC
- Blue GLA
- Blue pigment
- BT 4651
- Ceres blue BHR
- Chromofine blue 4920
- C.I. Pigment blue 15
- Copper(II) phthalocyanine
- Copper .beta.-phthalocyanine
- .alpha.-Copper phthalocyanine
- Copper phthalocyanine blue
- Cromofine blue 4950
- Cupric phthalocyanine
- Cyanine blue BB and others
- Dainichi cyanine blue B
- Duratint blue 1001
- Euvinyl blue 702
- Fastolux blue
- Fenalac blue B disp
- Graphitol blue BL
- Helio fast blue B
- Hostaperm blue AFN
- Irgalite blue LGLD
- Irgaplast blue RBP

### Properties & Definitions
- **Molecular Formula** : C32H16CuN8
- **Molecular Weight** : 576.08
- **Melting Point** : 600C, DCP
- **State** : Solid
- **Density** : 1.62 (.alpha. Form)*
- **Vapour Pressure** : 375E-7kPa(295E-6mmHg) at 384C
- **Water Solubility** : Not soluble
- **Particle** : Microcrystals
- **Colour** : Bright blue with purple lustre
- **Impurities** : Water
- **General Comments** : Soluble in 98% H2SO4, stable toward heat. *Density for the .beta. form = 1.61-1.62

### Overall Evaluation

**SIDS INITIAL ASSESSMENT**

This chemical is presently of low priority for further work.
SHORT SUMMARY OF THE REASONS WHICH SUPPORT THE RECOMMENDATION

Phthalocyanine blue is non-volatile solid, and the production volume is ca. 12000 tonnes for 1985 and 10328 tonnes for 1991, respectively in Japan. This chemical is insoluble in water, and stable in neutral, acidic or alkaline solutions, and is classified as "not readily biodegradable" by the results of the biodegradation test conducted as SIDS testing. The chemical is non-toxic to fish and terrestrial plants.

The chemical showed no genotoxic effects, and NOAEL for repeated dose toxicity was 200mg/kg/day and NOAEL for reproductive toxicity was 1000mg/kg/day. Estimated Dose of Low Concern (EDLC) was calculated 0.2mg/kg/day and 10.0mg/kg/day for repeated dose toxicity and reproductive toxicity, respectively.

Daily intake of the chemical was estimated as 8.15E-4mg/day from calculation using MNSEM 145J exposure model.

In conclusion, although phthalocyanine blue is persistent and toxicological test showed moderate toxicity, no further testing is needed at present considering its exposure levels. However, international information on exposure is needed for more realistic analysis.
Production-Trade

Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8
Geographic Area : JPN

Production

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>12000 T - P</td>
<td>1985</td>
</tr>
<tr>
<td>10328 T - P</td>
<td>1991</td>
</tr>
</tbody>
</table>

General Comments : Data for 1985 include production and import levels.

References

!SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 1, (1993)
MITIR*
Uses

Chemical Name: Copper phthalocyanine
CAS Number: 147-14-8
Geographic Area: JPN

Use

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Year</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 %</td>
<td></td>
<td>Inks - 50% of produced quantity</td>
</tr>
<tr>
<td>25 %</td>
<td></td>
<td>Paint - 25% of produced quantity</td>
</tr>
<tr>
<td>20 %</td>
<td></td>
<td>Plastic - 20% of produced quantity</td>
</tr>
<tr>
<td>5 %</td>
<td></td>
<td>Unspecified uses - 5% of produced quantity</td>
</tr>
</tbody>
</table>

References

Secondary References: SIDSP* OECD/CIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 4, (1993)
Study

End Point : CONCENTRATION
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8

Test Method and Conditions

Test method description : Multi-phase non-steady state equilibrium model for evaluation of fate of chemicals in environment consisting of air, water, soil and sediment phases. Version 1.45J (presented by Kikuo Yoshida) (MNSEM 145J). All values are calculated.

Test Results

<table>
<thead>
<tr>
<th>Matrix</th>
<th>Concentrations</th>
<th>Spec.</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR</td>
<td>1.67E-12 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In air. 7.09E-11ppm also reported. Steady state mass was 3.34E+00g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AQ</td>
<td>3.74E-4 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In water. Steady state mass was 7.48E+06g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOIL</td>
<td>2.43E-5 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In soil. Steady state mass was 3.89E+04g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SED</td>
<td>1.03E-3 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In sediment. Steady state mass was 1.03E+05g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLANT</td>
<td>1.7E-4 mg/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In vegetation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FOOD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In meat : 1.25E-10mg/l. In milk : 1.20E-10mg/l</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

References

Primary Reference : #EAMIT*
Exposure Estimation conducted by MITI and Environmental Agency (EA), Japan, (1993)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
Study

End Point : HUMAN INTAKE AND EXPOSURE
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8

Test Subject

Organism Medium Specification Route Lifestage Sex

AIR
WATER
FOOD

Test Method and Conditions

Test method description : Multi-phase non-steady state equilibrium model for evaluation of fate of chemicals in environment consisting of air, water, soil and sediment phases version 145J by Kikuo Yoshida (abbreviated as MNSEM 145J). All values are calculated.

Test Results

Intake Spec. Date

3.29E-8 mg/d
Through inhalation of air (estimated value)

7.48E-04 mg/d
Through drinking water (estimated value)

3.59E-06 mg/d
Through ingestion of fish (estimated value)

9.28E-12 mg/d
Through ingestion of meat (estimated value)

1.46E-11 mg/d
Through ingestion of milk (estimated value)

6.36E-05 mg/d
Through ingestion of vegetables (estimated value)

8.15E-04 mg/d
Total estimated exposure dose

References

Primary Reference : #EAMIT*
Exposure Estimation conducted by MITI and Environmental Agency (EA), Japan, (1993)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
Study

End Point: BIODEGRADATION
Chemical Name: Copper phthalocyanine
CAS Number: 147-14-8
Study type: LAB

Species/strain/system: Standard activated sludge seed

Test Substance

Purity Grade: 94%

Test Method and Conditions

Test method description: OECD Guideline 301C. The sludge samples were mixed by stirring in a single container and then cultured (at 25°C for one month).
Temperature: 25°C

Exposure

Exposure Period: 1 mo

Test Results

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Time</th>
<th>Comments on result</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 %</td>
<td>AV</td>
<td>14d-BOD</td>
</tr>
<tr>
<td>1 %</td>
<td></td>
<td>Biodegradation from ultraviolet spectrophotometry (UV)</td>
</tr>
</tbody>
</table>

General Comments: Not readily biodegradable.

References

Primary Reference: #MITIT*
Test conducted by the Ministry of International Trade and Industry (MITI), Japan, (1993)

Secondary Reference: !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
### Study

- **End Point**: PHOTODEGRADATION
- **Chemical Name**: Copper phthalocyanine
- **CAS Number**: 147-14-8

### Test Results

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Time</th>
<th>Comments on result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Estimated photochemical degradation rate: 1.06E-10 mol/l/s estimated T/2 for photolysis: 1.04E-2 years.</td>
</tr>
</tbody>
</table>

### References

- **Primary Reference**: #MITIT*
  Test conducted by the Ministry of International Trade and Industry (MITI), Japan, (1993)

- **Secondary Reference**: #SIDSP*
  OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
Study

End Point : BIOCONCENTRATION
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8
Study type : LAB

Species/strain/system : Strain not specified

Test Substance

Purity Grade : 94%

Test Method and Conditions

Test method description : OECD Guideline 305C. A flow-through test. GLP specified.

Exposure

Exposure Period : 6 wk

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Bioconcent. Factor</th>
<th>Calc Basis</th>
<th>Time</th>
<th>State</th>
<th>Comments on result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Log BCF: level 1 exposure</td>
</tr>
<tr>
<td>&lt;-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Log BCF: level 2 exposure</td>
</tr>
</tbody>
</table>

References

Primary Reference : #MITIT*
Test conducted by the Ministry of International Trade and Industry (MITI), Japan, (1993)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
Study

End Point: MAMMALIAN ACUTE TOXICITY
Chemical Name: Copper phthalocyanine
CAS Number: 147-14-8

Test Results

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Spec.</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Effect</th>
<th>Effect Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAT</td>
<td>ORL</td>
<td></td>
<td>LD50</td>
<td></td>
<td></td>
<td></td>
<td>Oral LD50 for rats was established as &gt;10000mg/kg/body weight.</td>
</tr>
</tbody>
</table>

References

Primary Reference: CTCPG*

Secondary Reference: SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 10, (1993)

Study

End Point: MAMMALIAN ACUTE TOXICITY
Chemical Name: Copper phthalocyanine
CAS Number: 147-14-8

Species/strain/system: Rabbits

Test Results

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Spec.</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Effect</th>
<th>Effect Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBT</td>
<td>ORL</td>
<td></td>
<td>LD50</td>
<td></td>
<td></td>
<td></td>
<td>Oral LD50 for rabbits was established as &gt;16000mg/kg/body weight.</td>
</tr>
</tbody>
</table>

References

Primary Reference: #HRCUR*
Huntington Research Centre, Unpublished Report, 813D TKI83-80

Secondary Reference: SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 10, (1993)
Study

**End Point**: MAMMALIAN TOXICITY  
**Chemical Name**: Copper phthalocyanine  
**CAS Number**: 147-14-8  
**Study type**: LAB

Test Subject

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Specification</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Number exposed</th>
<th>Number controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOUSE</td>
<td>ORL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Exposure

**Dose / Concentration**: >5000 mg/kg BW  
**Exposure comments**: 13-week feeding study in mice with dosage of 5000mg/kg/BW/d.

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEF</td>
<td>NEF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No toxic signs or pathological changes were found after 13-week of testing.

References

**Primary Reference**: #URACN*  

**Secondary Reference**: !SIDSP*  
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 11-12, (1993)

Study

**End Point**: MAMMALIAN TOXICITY  
**Chemical Name**: Copper phthalocyanine  
**CAS Number**: 147-14-8  
**Study type**: LAB

Test Subject

<table>
<thead>
<tr>
<th>Species/strain/system</th>
<th>ORL</th>
<th>M</th>
<th>10/GROUP</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAT</td>
<td></td>
<td>F</td>
<td>10/GROUP</td>
<td>10</td>
</tr>
</tbody>
</table>

Test Method and Conditions

**Test method description**: OECD Repeated Dose Toxicity Guideline.
Exposure

**Exposure Period** : 28 d
**Dose / Concentration** : 40-1000 mg/kg BW
**Exposure comments** : 28-day Repeated Dose Toxicity Test with dose levels of: 0, 40, 200 and 1000mg/kg per day administered in oral gavage.

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Exposed - Controls</th>
<th>Affected in</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOOD</td>
<td>STRUC</td>
<td>----</td>
<td>---------------</td>
<td>-----</td>
<td>--------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>RBC</td>
<td>BIOCH</td>
<td>----</td>
<td>---------------</td>
<td>-----</td>
<td>--------------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>

After 28-days administration of test substance significant decrease of red blood cells count and tendency to decrease of hemoglobin and packed cell volume were detected in 200 and 1000mg/kg groups of male rats.

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Sex</th>
<th>Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>BONE</td>
<td>INCR</td>
<td>M</td>
<td></td>
</tr>
</tbody>
</table>

After recovery period there was slight increase of erythroblasts in 1000mg/kg dose group of female rats.

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Sex</th>
<th>Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>LUNG</td>
<td>SIZE</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>SPLEN</td>
<td>SIZE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADREN</td>
<td>SIZE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There was increase of organ weight in lungs, spleen, adrenals and salivary glands of the 1000mg/kg dose group of male rats.

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Sex</th>
<th>Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBC</td>
<td>STRUC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHNG</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Copper phthalocyanine affects slightly the differentiation of red blood cells.

**NOAEL** for rats was established as 200mg/kg/day.

**General Comments** : Estimated dose of low concern for repeated dose toxicity in rats was calculated as 0.2mg/kg per day.

References

**Primary Reference** : #MOMHW*
Chemical Report submitted by the Ministry of Health and Welfare, Japan

**Secondary Reference** : #SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 11-12, (1993)

Study

**End Point** : MAMMALIAN TOXICITY
**Chemical Name** : Copper phthalocyanine
**CAS Number** : 147-14-8
**Study type** : LAB
**Geographic Area** : USA

Test Subject

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Specification</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Number exposed</th>
<th>Number controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOUSE</td>
<td>ORL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Test Method and Conditions

Test method description: Feeding Study

Exposure

Dose / Concentration: 0.3-5.0 %
Exposure comments: 13-week feeding study in rats and mice with the test substance dosage level of 0.3% to 5% in food.

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

No signs of toxicity could be observed after 13-week of feeding, the diets containing from 0.3%-5% of the test substance.

References

Primary Reference: !NTPSE3

Secondary Reference: !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 11-12, (1993)
Carcinogenicity

Study

End Point : CARCINOGENICITY
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8

Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls
MOUSE ORL

Exposure

Exposure Period : 8 mo
Exposure comments : Carcinogenicity potential was tested in mice during 8-month period.

Test Results

Organ Effect Rev. OnSet Sex Exposed - Controls
--------- ----------- ------- ------------------- ------- -----------------------------
NEF

No tumors were found after 8-months administration of the test substance to mice.

References

Primary Reference : NCIMAV
Haddow, A. and Horning, E. S. National Cancer Institute Monograph, 24(109), (1960)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 11-12, (1993)
Study

End Point : MUTAGENICITY
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8
Study type : LAB

Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

<table>
<thead>
<tr>
<th>BACT</th>
<th>VTR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species/strain/system : Salmonella typhimurium, strains: TA98, TA100, TA102, TA97</td>
<td></td>
</tr>
</tbody>
</table>

Exposure

Exposure comments : Preincubation assay with and without metabolic activation.

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEF</td>
<td>NEF</td>
<td>NEF</td>
<td>NEF</td>
<td>NEF</td>
<td>NEF</td>
</tr>
</tbody>
</table>

All variants of the test were negative for mutagenicity, both with and without metabolic activation.

References

Primary Reference : #MOMHW*

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 14-15, (1993)
**Test Results**

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEF</td>
<td>NEF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Negative results, with and without metabolic activation

**References**

*Primary Reference*: JTEHD6

*Secondary Reference*: SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 14-15, (1993)

**Study**

*End Point*: MUTAGENICITY

*Chemical Name*: Copper phthalocyanine

*CAS Number*: 147-14-8

*Study type*: LAB

**Test Subject**

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Specification</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Number exposed</th>
<th>Number controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACT</td>
<td>VTR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Species/strain/system*: Salmonella typhimurium, strains: TA98, TA100,

**Exposure**

*Exposure comments*: Suspension assay with and without metabolic activation.

**Test Results**

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEF</td>
<td>NEF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Negative for mutagenicity, with and without activation

**References**

*Primary Reference*: MUREAV
Hayatsu et al. Mutation Research, 124, 1, (1983)

*Secondary Reference*: SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 14-15, (1993)
Study

<table>
<thead>
<tr>
<th>End Point</th>
<th>MUTAGENICITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Name</td>
<td>Copper phthalocyanine</td>
</tr>
<tr>
<td>CAS Number</td>
<td>147-14-8</td>
</tr>
<tr>
<td>Study type</td>
<td>LAB</td>
</tr>
<tr>
<td>Geographic Area</td>
<td>JPN</td>
</tr>
</tbody>
</table>

Test Subject

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Specification</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Number exposed</th>
<th>Number controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAMST</td>
<td>VTR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Species/strain/system: Chinese hamster, CHL cells

Test Substance

Vehicle - Solvent: Dimethylsulfoxide

Test Method and Conditions

Test method description: Japanese Guideline for Screening Mutagenicity Testing of Chemicals; GLP: NO

Exposure

<table>
<thead>
<tr>
<th>Dose / Concentration</th>
<th>0.75-3.0 mg/ml</th>
</tr>
</thead>
</table>

Exposure comments: Cells were incubated with doses of: 0, 0.75, 1.50, 3.0mg/ml with and without metabolic activation (S9), 2 plates/test. Positive controls: benzo(a)pyrene.

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>CELL</td>
<td>UNS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The test substance was negative for the mutagenic effect under the test conditions used. (No chromosomal aberrations were observed).

General Comments: The lowest concentration producing cell toxicity: with metabolic activation >2.0mg/ml, without metabolic activation = 1.3mg/ml.

References

Primary Reference: #MOMHW*

Secondary Reference: !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 14-15, (1993)
Study

End Point : IRRITATION
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8
Geographic Area : GBR

Test Subject

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Specification</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Number exposed</th>
<th>Number controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Species/strain/system : Animal not specified

Test Method and Conditions


Exposure

Exposure comments : Skin irritation potential was tested.

General Comments : The test substance was classified as negative for skin irritation potential under the test condition.

References

Primary Reference : #HRCUR*
Huntington Research Centre, Unpublished Report, 86859D/TKI

Study

End Point : REPRODUCTION
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8
Study type : LAB
Geographic Area : JPN

Test Subject

Organism | Medium | Specification | Route | Lifestage | Sex | Number exposed | Number controls
--------- | ------ | -------------- | ----- | --------- | ---- | -------------- | ------------------
RAT | ORL | M | 12/GROUP | 12

Species/strain/system : Crj, CD(SD) strain

Test Substance

Purity Grade : 99.5%

Test Method and Conditions

Test method description : OECD preliminary reproduction toxicity test; GLP: YES

Exposure

Dose / Concentration : 40-1000 mg/kg BW
Exposure comments : Groups of 12 males and 12 females per dose were given 0, 40, 200, 1000mg/kg/day in oral gavage to test reproductive / developmental toxicity, duration of testing was 42-days for male rats; 14-days before mating to day 3 of lactation for female rats.

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEF</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

NOAEL for parental generation was 1000mg/kg/day.

OFSPR       NEF
NOAEL for F1 generation was 1000mg/kg/day of maternal exposure.

FECES  COLOR
Blue discoloration of feces in groups of >40mg/kg and blue-green or grayish blue discoloration of contents of the stomach and intestines were noted in few animals on 200mg/kg and almost all animals on 1000mg/kg dose group both sexes.

Estimated dose of low concern was calculated as: 10mg/kg/day.

General Comments : The substance was negative for reproductive toxicity observed in parental animals (fertility, gestation, reproductive organ toxicity etc.).
References

Primary Reference : #MOMHW*
Chemical Report submitted by the Ministry of Health and Welfare, Japan

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 15-16, (1993)
Study

**End Point** : TERATOGENICITY

**Chemical Name** : Copper phthalocyanine

**CAS Number** : 147-14-8

**Study type** : LAB

Test Subject

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Specification</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Number exposed</th>
<th>Number controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Species/strain/system** : Crj, CD(SD) strain pregnant rats

Test Substance

**Purity Grade** : 99.5%

Test Method and Conditions

**Test method description** : OECD Guideline; Reproductive Developmental Toxicity.

Exposure

**Exposure comments** : In utero exposure in combined studies of reproductive / developmental toxicity was carried out with maternal dose level of : 0, 40, 200, 1000mg/kg/day through day 3 of lactation.

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NEF</td>
</tr>
</tbody>
</table>

No teratogenic effects observed under the test conditions used.

References

**Primary Reference** : #MOMHW* 
Chemical Report submitted by the Ministry of Health and Welfare, Japan

**Secondary Reference** : !SIDSP* 
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, 15-17, (1993)
Aquatic Acute Toxicity

Study

End Point : AQUATIC ACUTE TOXICITY
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8

Species/strain/system : Orange-red killifish (Oryzias latipes)

Test Method and Conditions

Test method : Static test
description

Test Results

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Spec.</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Effect</th>
<th>Effect Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>FISH</td>
<td>AQ</td>
<td>ESTUA</td>
<td></td>
<td></td>
<td></td>
<td>LC50</td>
<td>LC50 = &gt;100mg/l for 48h (reported as 100ppm w/v)</td>
</tr>
</tbody>
</table>

References

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
Terrestrial Acute Toxicity

Study

End Point : TERRESTRIAL ACUTE TOXICITY

Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8

Species/strain/system : Rice (Coryza sativa) Toyonishiki

Test Method and Conditions

Test method description : OECD Guideline

Test Results

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Spec.</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Effect</th>
<th>Effect Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLANT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LC50</td>
<td>LC50 = &gt;100mg/l (reported as &gt;100ppm (w/v))</td>
</tr>
</tbody>
</table>

General Comments : Practically insoluble.

References

Primary Reference : #URTEA*
Unpublished Toxicity Test conducted by the Environmental Agency, (EA), Japan, (1993)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point : TERRESTRIAL ACUTE TOXICITY

Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8

Species/strain/system : Turnip (Brassica rapa Hikari)

Test Method and Conditions

Test method description : OECD Guideline

Test Results

<table>
<thead>
<tr>
<th>Organism</th>
<th>Medium</th>
<th>Spec.</th>
<th>Route</th>
<th>Lifestage</th>
<th>Sex</th>
<th>Effect</th>
<th>Effect Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLANT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LC50</td>
<td>LC50 = &gt;100mg/l (reported as &gt;100ppm (w/v))</td>
</tr>
</tbody>
</table>

General Comments : Practically insoluble. The substance stained the roots of the test plant at concentration of 100mg/l.
References

Primary Reference : #URTEA*
Unpublished Toxicity Test conducted by the Environmental Agency, (EA), Japan, (1993)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point : TERRESTRIAL ACUTE TOXICITY

Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8

Species/strain/system : Lettuce (Lettuca sativa)

Test Method and Conditions

Test method description : OECD Guideline

Test Results

Organism Medium Spec. Route Lifestage Sex Effect Effect Comments

PLANT

LC50 LC50 = >100mg/l (reported as >100ppm (w/v))

General Comments : Practically insoluble. The substance stained the roots of the test plant at concentration of 100mg/l.

References

Primary Reference : #URTEA*
Unpublished Toxicity Test conducted by the Environmental Agency, (EA), Japan, (1993)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
Study

End Point : TERRESTRIAL TOXICITY
Chemical Name : Copper phthalocyanine
CAS Number : 147-14-8
Study type : LAB

Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

PLANT

Species/strain/system : Lettuce-Top mark (lettuca sativa)

Test Method and Conditions

Test method description : OECD Guideline

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------</td>
<td>--------</td>
<td>------</td>
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<td>--------------------------------</td>
</tr>
<tr>
<td>EC50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Effect concentration EC50 = &gt;100mg/l (reported as &gt;100ppm (w/v))</td>
</tr>
</tbody>
</table>

General Comments : Practically insoluble. The substance stained the roots of the plant at concentration of 100mg/l.

References

Primary Reference : #URTEA*
Unpublished Toxicity Test conducted by the Environmental Agency, (EA), Japan, (1993)

Secondary Reference : !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
Test Method and Conditions

Test method description: OECD Guideline

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in Exposed - Controls</th>
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</thead>
<tbody>
<tr>
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<td></td>
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</tr>
<tr>
<td><strong>EC50</strong></td>
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<tr>
<td>EC50 = &gt;100mg/l.</td>
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</tr>
</tbody>
</table>

General Comments: Practically insoluble. The substance stained the roots of the test plant at concentration of 100mg/l.

References

Primary Reference: #URTEA*
Unpublished Toxicity Test conducted by the Environmental Agency, (EA), Japan, (1993)

Secondary Reference: !SIDSP*
OECD/SIDS, Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)

Study

End Point: TERRESTRIAL TOXICITY
Chemical Name: Copper phthalocyanine
CAS Number: 147-14-8
Study type: LAB

Test Subject

Organism Medium Specification Route Lifestage Sex Number exposed Number controls

PLANT

Species/strain/system: Turnip (Brassica rapa Hikari)

Test Method and Conditions

Test method description: OECD Guideline

Test Results

<table>
<thead>
<tr>
<th>Organ</th>
<th>Effect</th>
<th>Rev.</th>
<th>OnSet</th>
<th>Sex</th>
<th>Affected in Exposed - Controls</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>EC50</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC50 = &gt;100mg/l (reported as &gt;100ppm (w/v))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

General Comments: Practically insoluble. The substance stained the roots of the test plant at concentration of 100mg/l.
References

Primary Reference: #URTEA*
Unpublished Toxicity Test conducted by the Environmental Agency, (EA), Japan, (1993)

Secondary Reference: !SIDSP*
OECD/SIDS. Screening Information Data Set (SIDS) of OECD High Production Volume Chemicals Programme, (1993)
### Substance

**Chemical Name**: COPPER PHTHALOCYANINE  
**CAS Number**: 147-14-8

#### Area Type Subject Spec | Description | Level / Summary Information |
|---------------------------|-------------|-----------------------------|
| RUS REG AIR OCC MAC CLASS | CLV: 5.0MG/M3 (AEROSOL) HAZARD CLASS: III | Effective Date: 01JAN1989  
Reference: GOSTS*, 12.1.005, 1988  
Entry / Update: MAY1990  
Last Amendment: GOSUDARSTVENNYI STANDART SSSR (STATE STANDARD OF USSR) |

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### Substance

**Chemical Name**: COPPER PHTHALOCYANINE  
**CAS Number**: 147-14-8

#### Area Type Subject Spec | Description | Level / Summary Information |
|---------------------------|-------------|-----------------------------|
| RUS REG AIR OCC MAC CLASS | CLV: 5.0MG/M3 (AEROSOL)(APPLIES TO DYE-STUFFS BASED ON THIS SUBSTANCE); HAZ. CLASS: III | Effective Date: 01JAN1989  
Reference: GOSTS*, 12.1.005, 1988  
Entry / Update: MAY1990  
Last Amendment: GOSUDARSTVENNYI STANDART SSSR (STATE STANDARD OF USSR) |