Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Chloropyridine

Date of issue: January 02, 2013

Date of Compilation: November 02, 2011
Date of Revision: January 02, 2013
Revision Number: 03
Version Number: 0021D03.Div.02 sds 3-cyanopyridine.docx
Supersedes date: November 02, 2011
Supersedes version: 0021D02.Div.03 sds 3-cyanopyridine
SECTION 1.: IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY

1.1 **Product identification:** 3-cyanopyridine; CAS RN 100-54-9; EC# 202-863-0

1.1.1. **Trade name:** 3-Cyanopyridine

1.1.2. **Systematic Name:** 3-Pyridinecarbonitrile, Nicotinonitrile

1.1.3. **Synonyms:** 3-Azabenzonitrile, 3-Cyanopyridine, Nicotinic acid nitrile
    3-Pyridinecarbonitrile, 3-Pyridinenitrile, 3-Pyridylcarbonitrile

1.1.4. **Other Languages:**
    De: Nicotinonitril
    Es: nicotinonitrilo
    Fr: nicotinonitrile

1.1.5 **Molecular Formula:** C₆H₄N₂

1.1.6 **Structural Formula:**

1.1.7. **Registration Status under REACH Regulation (EC) No. 1907/2006**

<table>
<thead>
<tr>
<th>EC Name</th>
<th>Submission Number</th>
<th>Registration Number</th>
<th>Name of the Organization (OR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nicotinonitrile</td>
<td>QP972328-05</td>
<td>01-2119542182-48-0001</td>
<td>Jubilant Pharmaceuticals NV</td>
</tr>
</tbody>
</table>

1.1.8 **Identified uses:** The primary use of 3-Cyanopyridine is as an intermediate in the manufacturing of Pharmaceuticals. It is also used as an intermediate in the agrochemical industries, as a cosmetic additive and as a food chemical in the manufacture of nicotinic acid and nicotinamide.

*Based on the identified uses a Chemical safety Assessment with the relevant Risk Management measures have been specified as an Annex in the end of Safety Data Sheet*

**Uses advised against:** None
Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Cyanopyridine 0021D03.Div.02 sds 3-cyanopyridine.docx

Date of issue: January 02, 2013

1.2 Company / supplier: FACTORY & REGISTERED OFFICE:
Jubilant Life Sciences Ltd.
Bhartiagram, Gajraula
District: Jyotiba Phuley Nagar
Uttar Pradesh-244223, India
PHONE NO: +91-5924-252353 unto 252360
Contact Department-Safety: Ext. 7424
FAX NO: 91-5924-252352

HEAD OFFICE:
Jubilant Life Sciences Ltd.
Plot 1-A, Sector 16-A,
Institutional Area, Noida,
Uttar Pradesh-201301 India.
PHONE NO: +91-120-4361000
FAX NO: +91-120-4234881 / 84 / 85 / 87 / 95 / 96
Email: support@jubl.com
Website: www.jubl.com

1.3 Emergency telephone: Medical and Transport Emergencies: +91-9997022412 (India)
Logistics emergencies: +91-120-4365441. (India).
SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance / preparation

2.1.1. Classification according to regulation (EC) no. 1272/2008, annex VI

Acute toxicity oral: Category 4
Serious eye damage/eye irritation: Category 1

2.2 Labeling elements according to regulation (EC) 1272/2008

Pictograms:

```
GHS05-Corrosive
GHS07-Exclamation
```

Signal word: Danger!

2.3 Other hazards

2.3.1 HAZARD AND PRECAUTIONARY STATEMENTS

Hazard Statements
- H302: Harmful if swallowed.
- H318: Causes serious eye damage.

Precautionary Statements
Prevention
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P270: Do not eat, drink or smoke when using this product.
- P264: Wash hands thoroughly after handling.

Response
- P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes Remove contact lenses, if present and easy to do. Continue rinsing.
Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Cyanopyridine 0021D03.Div.02 sds 3-cyanopyridine.docx

Date of issue: January 02, 2013

Disposal
- P501: Dispose of the container as per local norms and regulations.

2.3 Other Hazards
- Substance is not classified as PBT nor as vPvB. For further details see section 12.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Chemical</th>
<th>CAS #</th>
<th>EC#</th>
<th>Purity</th>
<th>Classification according to Reg (EC) No. 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3-Cyanopyridine</td>
<td>100-54-9</td>
<td>202-863-0</td>
<td>&gt;98%</td>
<td>Acute toxicity oral: Category 4&lt;br&gt;Serious eye damage/eye irritation: Category 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Hazard classes and categories</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GHS 05, GHS 07</td>
</tr>
</tbody>
</table>
Classification and labeling acc. to dir. 67/548/EEC and dir. 1999/45/EC

<table>
<thead>
<tr>
<th>Classification</th>
<th>Symbol</th>
<th>Risk Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xn Harmful</td>
<td></td>
<td>R 22; R36</td>
</tr>
<tr>
<td>Xi Irritant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

4.1.1 Route of exposure: (Such as inhalation, skin, eye and ingestion)
- **Eyes:** If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek medical attention.
- **Skin:** Immediately take off all contaminated clothing. Wash thoroughly with water for at least 15 minutes. Wash contaminated clothes before reuse. Seek immediate medical attention.
- **Inhalation:** Remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell.
- **Ingestion:** If swallowed call a poison center if you feel unwell. Rinse mouth. Do NOT induce vomiting by use of emetics. Seek medical attention.

4.1.2 Advice
- **IF SWALLOWED:** Rinse mouth. Do NOT induce vomiting.
- **IF ON SKIN (or hair):** Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- **IF INHALED:** Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- **IF IN EYES:** Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- In case of fire, use ... for extinction ... appropriate media specified by the manufacturer/supplier or the competent authority - if water increases risk.

4.2. Most important symptoms and effects, both acute and delayed.
- **Acute effects:**
  - It causes serious eye damage. It is harmful if swallowed. Symptoms of overexposure include weakness, dizziness, headache, nausea, loss of appetite and unconsciousness. Extended exposure may lead to irritation and possibly systemic poisoning.
Chronic effects:
Chronic effects of this product were not fully investigated.

4.3. Indication of any immediate medical attention and special treatment needed.

- **Eyes:** Symptoms: Lachrymator, redness, severe burns. If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek immediate medical attention.
- **Skin:** Corrosive. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
- **Inhalation:** Symptoms: Symptoms of overexposure include weakness, dizziness, headache, nausea, loss of appetite and unconsciousness. Extended exposure may lead to irritation and possibly systemic poisoning. Cough. Laboured breathing. Shortness of breath. Sore throat. Symptoms may be delayed. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media.
- Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water may also be used. Water sprays can be effective in cooling down the fire-exposed containers and knocking down the vapors. Water jets may be used to flush spills away and dilute the same to non-flammable mixtures.

5.2. Special hazards arising from the substance or mixture.
- Vapor may flow long distance to distant ignition sources and flash back. Forms explosive mixtures in air. Emits toxic fumes under fire conditions. Toxic vapors may be released upon thermal decomposition (cyanides, nitrogen oxides, carbon monoxide).
- Consider isolating the fire when it involves the material and permitting it to burn itself out. Do not allow water to enter container, because of exothermic reaction.
- Flashback along vapor trail may occur. Closed container exposed to heat may explode. Irritating vapors and toxic fumes of carbon monoxide may be released in fore conditions.
- Consider isolating the fire when it involves the material and permitting it to burn itself out. Move all personnel out of the fire area. Move away in event of any explosion. Keep at safe distance.

5.3. Advice for firefighters.
- Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Do not breathe vapors.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
Always stay away from tanks engulfed in fire.
• For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
• If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.
• Fire fighters must wear Self Contained Breathing Apparatus (SCBA) and full protective clothing. The chemical is harmful in contact with skin.
• Report any run-off of fire waters contaminated with this chemical as per local and federal procedures applicable.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures.
6.1.1 For non-emergency personnel
• Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
• Avoid breathing vapors and contact with skin and eyes.
• Shut off leak source if possible.
• Shut off all possible sources of ignition.
• Wipe up.
• Decontaminate all equipment.
• Use non-sparking tools.

6.1.2 For emergency personnel
• Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
• Alert Emergency Responders and tell them location and nature of hazard.
• Shut off all possible sources of ignition and increase ventilation.
• Stop leaks if possible.
• Clean up all spills immediately following relevant Standard Operating Procedures.
• Avoid breathing vapors and contact with skin and eyes.
• Use non-sparking tools.

6.2. Environmental precautions.
• Clean up all spills immediately following relevant Standard Operating Procedures.
• Inform authorities in event of contamination of any public sewers, drains or water bodies.
• Wipe up.
• Prevent, by any means available, spillage from entering drains or water and watercourses.
• Collect recoverable product into labeled containers for recycling, recovery or disposal.
• Contain spill with sand, earth or vermiculite.

Jubilant Life Sciences Limited
Spread area with lime or absorbent material, and leave for at least 1 hour before washing.

6.3. Methods and material for containment and cleaning up.
6.3.1: Containment of the spill.
(a) Bunding, covering of drains.
- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Stop leaks if possible.
- Prevent, by any means available, spillage from entering drains or water and watercourses.
- Collect recoverable product into labeled containers for recycling, recovery or disposal.
- Contain spill with sand, earth or vermiculite.
- Clean up all tools and equipment.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.

(b) Capping procedure.
- Clean up all spills immediately following relevant Standard Operating Procedures.
- Avoid breathing vapors and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.
- Wipe up.
- Decontaminate all equipment.
- Use non-sparking tools.

6.3.2 Cleanup procedure ( Any of the following)
(a) Neutralization techniques;
(b) Decontamination techniques;
(c) Adsorbent material;
(d) Spread area with lime or absorbent material, and leave for at least 1 hour before washing.
(e) Cleaning Techniques;
(f) Vacuuming techniques;
(g) Equipment required for containment/Cleanup (include the use of non-sparking tools and equipment where applicable)

6.4. Reference to other sections.
- Referred to section 8 and 13.
SECTION 7:  HANDLING AND STORAGE

7.1. Precautions for safe handling
- Do not breathe vapor or mist.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Ground and secure containers when dispensing or pouring product.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Launder contaminated clothing before re-use.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Use in a well ventilated place/Use protective clothing commensurate with exposure levels.

7.2. Conditions for safe storage, including any incompatibilities
- Store in a cool, well ventilated place.
- Store away from incompatible materials.
- Keep only in original container.
- Keep securely closed when not in use.
- Store in flame-proof area.

7.3. Specific end use(s)
- The use of 3-Cyanopyridine is as an intermediate in the manufacturing of Pharmaceuticals. It is also used as an intermediate in the agrochemical industries.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters
8.1.1 Exposures Limits Values

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>WEL 8hr TWA (ppm)</th>
<th>STEL (ppm)</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Cyanopyridine</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

8.1.2 Derived No-Effect-Levels (DNEL) / Predicted No-effect-concentration (PNEC)
- DNEL and PNEC data not available.
- **Overview of typical dose descriptors for all endpoints**
  Available dose-descriptor(s) per endpoint for the substance as a result of its hazard assessment.
Acute Toxicity (Oral/Dermal/Inhalation)

- It causes serious eye damage. It is harmful if swallowed. Symptoms of overexposure include weakness, dizziness, headache, nausea, loss of appetite and unconsciousness. Extended exposure may lead to irritation and possibly systemic poisoning

Irritation/Corrosivity (Skin/eyes/Resporatorys tract):

- Although in modern skin or eye studies have been conducted, the weight of evidence indicates that the material is likely to be a severe eye irritant, It is irritant to the eyes and skin. In humans severe irritation of the eyes and skin resulted from exposure. The material is harmful if swallowed.

Repeated dose Toxicity, sub acute/sub chronic/chronic(Oral/Dermal/Inhalation):

- Chronic Exposure
  No chronic exposure data were located.

8.2. Exposure controls

3-Cyanopyridine has been registered as a Transported Isolated Intermediate under REACH registration. The Safety Data Sheet is consistent with the specific conditions relied on to justify the REACH registration in accordance with Article 18 of Regulation (EC) 1907/2006.

a) The substance is rigorously contained by technical means during its whole life cycle including use, purification, cleaning, maintenance of equipment, sampling, analysis, loading and unloading of equipment vessels, waste disposal or purification and storage

b) Procedural and control technologies are used that minimize emission and any resulting exposure

c) Only properly trained and authorized personnel handle this substance.

d) In the case of cleaning and maintenance works, special procedures such as purging and washing are applied before the system is opened and entered.

8.2.1 Appropriate Engineering Controls:

- Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. Local ventilation is usually preferred. Ensure that eyewash stations and safety showers are close to the workstation location.

8.2.2. Personal Protection:

- Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

- Hands: Wear appropriate protective gloves to prevent skin exposure.

- Eyes: Wear impact resistance eye protection with side shields or goggles. Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances. Safety goggles/ Chemical Safety glasses and Face shield.

- Clothing: Boots and Impervious clothing to prevent contact.

- Respirator: Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.
## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### 9.1. Information on basic physical and chemical properties.

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Parameter</th>
<th>Typical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Appearance</td>
<td>3-Cyanopyridine is a liquid or, when cool, a waxy solid which is not available to be inhaled as particles. It is used as a liquid in all post-manufacturing applications</td>
</tr>
<tr>
<td>2.</td>
<td>Odor</td>
<td>Characteristic</td>
</tr>
<tr>
<td>3.</td>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>4.</td>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>5.</td>
<td>Melting point/Freezing point</td>
<td>51 °C</td>
</tr>
<tr>
<td>6.</td>
<td>Boiling point</td>
<td>206.9 deg C @ 760.00mmHg</td>
</tr>
<tr>
<td>7.</td>
<td>Flash point</td>
<td>84°C</td>
</tr>
<tr>
<td>8.</td>
<td>Evaporation rate (n-BuAc=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>9.</td>
<td>Flammability (Solid, gas)</td>
<td>Not available</td>
</tr>
<tr>
<td>10.</td>
<td>Upper/lower flammability or Explosive limits</td>
<td>Not available</td>
</tr>
<tr>
<td>11.</td>
<td>Vapor pressure</td>
<td>0.296 mm Hg, or 0.395 hPa, at 25 °C.</td>
</tr>
<tr>
<td>12.</td>
<td>Vapor density (air=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>13.</td>
<td>Relative density</td>
<td>1.159</td>
</tr>
<tr>
<td>14.</td>
<td>Solubility</td>
<td>Soluble in water, alcohol, benzene, ether, hot</td>
</tr>
</tbody>
</table>
9.2. Other information.

pKa (@25°C): 1.39@24°C; **Refractive Index**: 1.525 @ 50°C.; **Molecular Weight**: 104.11; **Koc**: 37.

### SECTION 10: STABILITY AND REACTIVITY

**10.1. Reactivity**
- 3-Cyanopyridine may react with oxidizing materials. Neutralizes acids in exothermic reactions to form salts plus water. May be incompatible with strong acid and base and strong reducing agents. Heat may decompose to the material.

**10.2. Chemical stability**
- Stable under normal temperature and pressure.

**10.3. Possibility of hazardous reactions**
- Thermal decomposition may produce Cyanide, nitrogen oxides and carbon monoxide.

**10.4. Conditions to avoid**
- Keep away from heat, sparks, flame, high temperature and incompatible chemicals.

**10.5. Incompatible materials**
- Acids and acid chlorides, Oxidizing materials like hydrogen peroxide and sulphuric acid and Chloroformates.
10.6. Hazardous decomposition products

- Thermal decomposition may produce Cyanide, nitrogen oxides and carbon monoxide.


SECTION 11: TOXICOLOGICAL INFORMATION

11.1. INFORMATION ON TOXICOLOGICAL EFFECTS

a) ACUTE TOXICITY

- Oral

<table>
<thead>
<tr>
<th>Method</th>
<th>Result</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rat (Sherman-Wistar) male</td>
<td>LD50: 1100 mg/kg bw (male) based on: test mat</td>
<td>Karnatz, R. A., R. A. Kattau and P. Mackell (1973)</td>
</tr>
<tr>
<td>oral: gavage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no information on method</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Dermal

<table>
<thead>
<tr>
<th>Method</th>
<th>Result</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rabbit (Albino) male/female</td>
<td>LD50: 2 gm/kg (male) based on: test mat.</td>
<td>Gabriel KL (1978)</td>
</tr>
<tr>
<td>Coverage: occlusive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>not stated</td>
<td>LD50: 2 — 4 gm/kg (female) based on: test mat.</td>
<td></td>
</tr>
</tbody>
</table>

b) SKIN CORROSION/IRRITATION

<table>
<thead>
<tr>
<th>Method</th>
<th>Result</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>rabbit (Albino)</td>
<td>not irritating</td>
<td>FitzGerald GB (1991)</td>
</tr>
<tr>
<td>Coverage: occlusive</td>
<td>qualitative assessment of corrosion: (mean)</td>
<td></td>
</tr>
<tr>
<td>52 FR 42964; U.S. Department of Transportation</td>
<td>(Time point: 48 h) (qualitative assessment for skin corrosion)</td>
<td></td>
</tr>
</tbody>
</table>

Data waiving

Reason: study scientifically unjustified

Justification: According to Regulation (EC) No.1907/2006, Annex XI, Section 1, the testing regime may be adapted because testing does not appear scientifically necessary. The conduct of in vitro testing for skin irritation is not scientifically indicated. Existing data on skin irritation generated in vivo indicates that this substance is not irritating to the skin.

c) SERIOUS EYE DAMAGE/IRRITATION

<table>
<thead>
<tr>
<th>Method</th>
<th>Result</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>equivalent or similar to no</td>
<td>irritating</td>
<td>International Labour Office</td>
</tr>
<tr>
<td>information on method</td>
<td>(mean) (qualitative assessment)</td>
<td>(1983)</td>
</tr>
</tbody>
</table>
Data waiving
Reason: study scientifically unjustified
Justification: According to Regulation (EC) No.1907/2006, Annex XI, Section 1, the testing regime may be adapted because testing does not appear scientifically necessary. The conduct of in vitro testing for eye irritation is not scientifically indicated. Existing data on eye irritation generated in vivo indicates that this substance is irritating to the eye.

Summary: 3-Cyanopyridine was found to be non-irritating to the skin of rabbits after 3 or 60 minutes, and 4 hours. However, application of 0.1 ml into the eyes of rabbits resulted in severe damage which persisted throughout 21 days. There is no data available for respiratory irritation.

d) RESPIRATORY OR SKIN SENSITIZATION;

   ● Skin

<table>
<thead>
<tr>
<th>Method</th>
<th>Result</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>guinea pig (Hartley HsdPOC: DH) female Buehler test Induction: epicutaneous, occlusive Challenge: epicutaneous, occlusive OECD Guideline 406 (Skin Sensitisation) (Also EC Guideline 96/54/EEC)</td>
<td>not sensitising No. with positive reactions: 1st reading: 0 out of 10 (negative control); 24 h after chall.; dose: 0.5 ml water 2nd reading: 0 out of 10 (negative control); 48 h after chall.; dose: 0.5 ml water 1st reading: 0 out of 20 (test group); 24 h after chall.; dose: 0.5 ml 2nd reading: 0 out of 20 (test group); 48 h after chall.; dose: 0.5 ml</td>
<td>Berthold K</td>
</tr>
</tbody>
</table>

   ● Respiratory: No data is available

3-Cyanopyridine is not a dermal sensitiser when tested in vivo in OECD guideline procedures. There is no indication that it is a respiratory sensitiser. It is thus not classified.

e) GERM CELL MUTAGENICITY

<table>
<thead>
<tr>
<th>Method</th>
<th>Results</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>bacterial reverse mutation assay (e.g. Ames test) (gene mutation) S. typhimurium TA 1535, TA 1537, TA 98 and TA 100 (met. act.: with and without)</td>
<td>Evaluation of results: negative Test results: negative for S.</td>
<td>Mizuno, F, Enomoto Y, Ishige Y (2001)</td>
</tr>
</tbody>
</table>
**f) CARCINOGENICITY**
- Not listed by ACGIH, NTP, IARC and OSHA.

**g) REPRODUCTIVE TOXICITY**
- No information is available.

**h) STOT-SINGLE EXPOSURE**
- No information is available.

**i) STOT- REPEATED EXPOSURE**
- No information available.

**j) ASPIRATION HAZARD.**
- No information available.

### 11.2 Other Information

**ACUTE EFFECTS**

11.1.1 It causes severe eye damage. Harmful if swallowed.

**11.1.2 CHRONIC EFFECTS:**
- Damage to the liver and kidneys
- **Target Organs:** Liver and Kidney.

### SECTION 12: ECOLOGICAL INFORMATION

**12.1. Toxicity**

12.1.1 Ecotoxicity:
- No firm data available.

12.1.2 **Chronic Toxicity to Fish:**
- No information is available.

**12.2. Persistence and degradability**
- A vapor pressure of 0.296 mm Hg at 25 deg C suggests that 3-cyanopyridine will exist solely as a vapor in the ambient- atmosphere.
Vapor-phase 3-pyridinecarbonitrile will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals. The half-life for this reaction in air is estimated to be 246 days.

12.3. Bioaccumulative potential
- An estimated BCF of 3 suggests that the potent bioconcentration in aquatic organisms is low.
- Chemical hydrolysis is expected to be low.

12.4. Mobility in soil
- If released to soil, 3-pyridinecarbonitrile is expected to have very high mobility based upon an estimated Koc of 37.
- Volatilization from surfaces is not expected to be an important fate process based upon Henry's Law constant of 2.74X10^-7 atm-cu m/mole.
- Log Pow=0.36@25°C
- Based on a classification scheme(1), an estimated value of 37 (SRC), determined from a measured log Kow of 0.36 indicates that 3-Cyanopyridine is expected to have very high mobility in soil.

12.5. Results of PBT and vPvB assessment
- The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII.

12.6. Other adverse effects
- No information is available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
- Burn in a chemical incinerator equipped with an afterburner and scrubber.
- Exert extra care in igniting, as this material is highly flammable.
- Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws. Note that disposal regulations may also apply to empty containers and equipment rinsates.

SECTION 14: TRANSPORT INFORMATION

- This substance is considered to be non hazardous for transport by Air/Rail/Road and Sea and is not regulated by IATA/ICAO/ARD/RID/IMO/IMDG.
Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Cyanopyridine  0021D03.Div.02 sds 3-cyanopyridine.docx

Date of issue: January 02, 2013

14.1. UN number
- Not available

14.2. UN proper shipping name
- Not available

14.3. Transport hazard class(es)
- Not available

14.4. Packing group
- Not available

14.5. Environmental hazards
- A vapor pressure of 0.296 mm Hg at 25 deg C suggests that 3-cyanopyridine will exist solely as a vapor in the ambient atmosphere. Vapor-phase 3-pyridinecarbonitrile will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals. The half-life for this reaction in air is estimated to be 246 days.

If released to soil, 3-pyridinecarbonitrile is expected to have very high mobility based upon an estimated Koc of 37. Volatilization from surfaces is not expected to be an important fate process based upon Henry's Law constant of 2.74X10^-7 atm-cu m/mole.

An estimated BCF of 3 suggests that the potent bioconcentration in aquatic organisms is low. Chemical hydrolysis is expected to be low. Based on a classification scheme(1), an estimated value of 37 (SRC), determined from a measured log Kow of 0.36 indicates that 3-Cyanopyridine is expected to have very high mobility in soil.

Since this is an estimated result, it is recommended that the material should be disposed into the environment. The material should never be disposed into the sewage.

14.6. Special precautions for user
- Wear protective gloves/protective clothing/eye protection/face protection.
- Do not eat, drink or smoke when using this product.
- Wash hands thoroughly after handling.
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture.
- European/International Regulations.
- European Labelling in Accordance with EC Directives.
Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Cyanopyridine 0021D03.Div.02 sds 3-cyanopyridine.docx

Date of issue: January 02, 2013

**Classification (as per Regulation (EC) No 1272/2008):**

**Hazards Class and Category:** Acute toxicity oral Cat.4; Serious eye damage Cat.1

- **Hazard Statements:** H302; H318

**Classification as per directive 67/548/EEC**

- Xn; R/22 - Xi; R36/37/38
  - Xn= Harmful; Xi= Irritant

**RISK PHRASES**

- R 22: Harmful if swallowed.
- R36: Irritating to eyes

**SAFETY PHRASES**

- S39 - wear eye/face protection
- S3/14.1 - keep in a cool place away from acids
- S26 - in case of contact with eyes, rinse immediately with plenty of water and seek medical advice

**US information**

- **TSCA**
  - CAS# 100-54-9 is listed on the TSCA inventory.

- **Health & Safety Reporting List**
  - CAS# 100-54-9: Effective Date: June 1, 1987; Sunset Date: December 29,1988

- **Chemical Test Rules**
  - None of the chemicals in this product are under a Chemical Test Rule.

- **Section 12b**
  - None of the chemicals are listed under TSCA Section 12b.

- **TSCA Significant New Use Rule**
  - None of the chemicals in this material have a SNUR under TSCA.

- **SARA**
  - Section 302 (RQ)
    - None of the chemicals in this material have an RQ.

- **Section 302 (TPQ)**
  - None of the chemicals in this product have a TPQ.

- **Section 313**
  - No chemicals are reportable under Section 313.

- **Clean Air Act:**
  - This material does not contain any hazardous air pollutants.
  - This material does not contain any Class 1 Ozone depletors.
  - This material does not contain any Class 2 Ozone depletors.

- **Clean Water Act:**
  - None of the chemicals in this product are listed as Hazardous Substances under the CWA.
  - None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

- **OSHA:**
  None of the chemicals in this product are considered highly hazardous by OSHA.

- **STATE:**
  3-Cyanopyridine, 98% is not present on state lists from CA, PA, MN, MA, FL, or NJ.

- **California**
  No Significant Risk Level:
  None of the chemicals in this product are listed.

- **WGK (Water Danger/Protection)**
  CAS# 100-54-9: 1

- **CANADA**
  None of the chemicals in this product are listed on the DSL/NDSL list.
  This product does not have a WHMIS classification.
  CAS# 100-54-9 is not listed on Canada's Ingredient Disclosure List.

### SECTION 16: OTHER INFORMATION

(a) **Compilation information of safety data sheet**

SDS data
- **Chemical:** 3-cyanopyridine
- **CAS #:** 108-99-6
- **File Name:** 0021D03.Div.03 sds 3-Cyanopyridine
- **Revision Number:** 03
- **Date of Issue of SDS:** January 02, 2013
- **Revision Due Date:** December, 2013

(b) **A key or legend to aberrations and acronyms used in the safety data sheet;**

- **PBT =** Persistent Bioaccumulative and Toxic
- **vPvB =** Very Persistent and Very Bioaccumulative
- **SCBA =** Self Contained Breathing Apparatus
- **NIOSH REL =** National Institute for Occupational Safety and Health Recommended Exposure Limit
- **OSHA PEL =** Occupational Safety and Health Administration Permissible Exposure Limit
- **OELTWA =** Occupational Exposure Limit Time Weighted Averages
- **IDLH =** Immediately Dangerous to Life or Health
- **UEL =** Upper Explosive Limit
- **LEL =** Lower Explosive Limit
- **CMR =** Carcinogenic, Mutagenic or toxic to Reproduction
Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Cyanopyridine

Date of issue: January 02, 2013

Key Literature reference and sources for data

Biographical reference and data sources

- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009
- DIR 67/548/EWG, last modification by DIR 2009/2/EC

Jubilant Life Sciences Limited
Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Cyanopyridine 0021D03.Div.02 sds 3-cyanopyridine.docx

Date of issue: January 02, 2013


Internet
- RTECS
- ESIS

( d) List of Risk Phrases, Hazard statements, safety Phrases and/or precautionary statements.

<table>
<thead>
<tr>
<th>Risk Phrases</th>
<th>R/22; R36</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R 22: Harmful if swallowed</td>
</tr>
<tr>
<td></td>
<td>R 36: Irritating to eyes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazards Statements</th>
<th>H302; H318</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H 302: Harmful if swallowed</td>
</tr>
<tr>
<td></td>
<td>H318: Causes serious eye damage</td>
</tr>
</tbody>
</table>

| Safety Phrases | S39 - wear eye/face protection |
|               | S3/14.1 - keep in a cool place away from acids |
|               | S26 - in case of contact with eyes, rinse immediately with plenty of water and seek medical advice |

| Precautionary Statements | P280; P270; P264; P301+P312; P305+P351+P338; P501 |

Company’s Declaration:

Information contained in this SDS is believed to be correct but no representation, guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. This SDS shall be used as a guide only. Jubilant Life Sciences Limited makes no warranties expressed or implied of the adequacy of this document for any particular purpose.

Annex

All identified uses summarized below take place in closed system.

Uses by workers in industrial settings

<table>
<thead>
<tr>
<th>IU number</th>
<th>Identified Use (IU) name</th>
<th>Substance supplied to that use</th>
<th>Use descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use as an intermediate</td>
<td>as such (substance)</td>
<td>Process category (PROC):</td>
</tr>
</tbody>
</table>
Safety Data Sheet
According to REG(EC) no.453/2010

Product Identification: 3-Cyanopyridine

Date of issue: January 02, 2013

PROC 1: Use in closed process, no likelihood of exposure
PROC 2: Use in closed, continuous process with occasional controlled exposure
PROC 3: Use in closed batch process (synthesis or formulation)
PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises

Market sector by type of chemical product:
PC 19: Intermediate

Environmental release category (ERC):
ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates)

Sector of end use (SU):
SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)
SU 9: Manufacture of fine chemicals

Subsequent service life relevant for that use?: no

End of SDS