SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING.

1.1 Product identifier.

Product Name: N-(n-Butyl)-thiophosphoric triamide (NBPT)
Chemical Name: N-(n-Butyl)thiophosphoric triamide
CAS No: 94317-64-3

1.2 Relevant identified uses of the substance and uses advised against.

Uses advised against:
Uses other than those recommended.

1.3 Details of the supplier of the safety data sheet.

Company: Kingenta Australia AG PTY LTD
Address: Level 2 - 414 Hunter Street
City: Newcastle 2300 New South Wales
Telephone: +61 2 4929 4972
Fax: +61 2 4929 6358
E-mail: au@kingenta.com

1.4 Emergency telephone number: (As Above)

SECTION 2: HAZARDS IDENTIFICATION.

2.1 Classification of the substance.
In accordance with Regulation (EU) No 1272/2008:
Eye Dam. 1 : Causes serious eye damage.
Repr. 2 : Suspected of damaging fertility or the unborn child.
Skin Sens. 1 : May cause an allergic skin reaction.

2.2 Label elements.

Labelling in accordance with Regulation (EU) No 1272/2008:
Pictograms:

Signal Word: Danger
H statements:
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H361f Suspected of damaging fertility.

P statements:
P201 Obtain special instructions before use.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor/...
P321 Specific treatment (see ... on this label).
P501 Dispose of contents/container to ...
Contains:
N-(n-Butyl)-thiophosphoric triamide

2.3 Other hazards.
In normal use conditions and in its original form, the product itself does not involve any other risk for health and the environment.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

3.1 Substances.
Chemical Name: N-(n-Butyl)-thiophosphoric triamide
CAS No: 94317-64-3

3.2 Mixtures.
Not Applicable.

SECTION 4: FIRST AID MEASURES.

4.1 Description of first aid measures.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

Inhalation.
Take the victim into open air; keep them warm and calm. If breathing is irregular or stops, perform artificial respiration.

Eye contact.
Wash eyes with plenty of clean and cool water for at least 10 minutes while pulling eyelids up, and seek medical assistance. Do not let the person to rub the affected eye.

Skin contact.
Remove contaminated clothing. Wash skin vigorously with water and soap or a suitable skin cleaner. NEVER use solvents or thinners.

Ingestion.
If accidentally ingested, seek immediate medical attention. Keep calm. NEVER induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed.
Corrosive Product, contact with eyes or skin can cause burns; ingestion or inhalation can cause internal damage, if this occurs immediate medical assistance is required.
Long-term chronic exposure may result in injury to certain organs or tissues.
Contact with eyes may cause irreversible damage.
It may cause an allergic reaction, dermatitis, redness or inflammation of the skin.

4.3 Indication of any immediate medical attention and special treatment needed.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious. Keep the person comfortable. Turn him/her over to the left side and stay there while waiting for medical care.

SECTION 5: FIREFIGHTING MEASURES.

The product is NOT classified as flammable, in case of fire the following measures should be taken:

5.1 Extinguishing media.
Suitable extinguishing media:
Extinguisher powder or CO2. In case of more serious fires, also alcohol-resistant foam and water spray.

Unsuitable extinguishing media:
Do not use a direct stream of water to extinguish. In the presence of electrical voltage, you cannot use water or foam as extinguishing media.

5.2 Special hazards arising from the substance.
Special risks.

-Continued on next page.-
Fire can cause thick, black smoke. As a result of thermal decomposition, dangerous products can form: carbon monoxide, carbon dioxide. Exposure to combustion or decomposition products can be harmful to your health.

5.3 Advice for firefighters.
Use water to cool tanks, cisterns, or containers close to the heat source or fire. Take wind direction into account. Prevent the products used to fight the fire from going into drains, sewers, or waterways.

Fire protection equipment.
According to the size of the fire, it may be necessary to use protective suits against the heat, individual breathing equipment, gloves, protective goggles or facemasks, and boots.

SECTION 6: ACCIDENTAL RELEASE MEASURES.

6.1 Personal precautions, protective equipment and emergency procedures.
For exposure control and individual protection measures, see section 8.

6.2 Environmental precautions.
Prevent the contamination of drains, surface or subterranean waters, and the ground.

6.3 Methods and material for containment and cleaning up.
The contaminated area should be immediately cleaned with an appropriate de-contaminator. Pour the decontaminator on the remains in an opened container and let it act various days until no further reaction is produced.

6.4 Reference to other sections.
For exposure control and individual protection measures, see section 8.
For later elimination of waste, follow the recommendations under section 13.

SECTION 7: HANDLING AND STORAGE.

7.1 Precautions for safe handling.
For personal protection, see section 8.
In the application area, smoking, eating, and drinking must be prohibited.
Follow legislation on occupational health and safety.

7.2 Conditions for safe storage, including any incompatibilities.
Store according to local legislation. Observe indications on the label. Store the containers between 5 and 35º C, in a dry and well-ventilated place, far from sources of heat and direct solar light. Keep far away from ignition points. Keep away from oxidising agents and from highly acidic or alkaline materials. Do not smoke. Prevent the entry of non-authorised persons. Once the containers are open, they must be carefully closed and placed vertically to prevent spills.
The product is not affected by Directive 2012/18/EU (SEVESO III).

7.3 Specific end use(s).
No more relevant information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

8.1 Control parameters.
The product does NOT contain substances with Professional Exposure Environmental Limit Values. The product does NOT contain substances with Biological Limit Values.
Concentration levels DNEL/DMEL:

<table>
<thead>
<tr>
<th>Name</th>
<th>DNEL/DMEL</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-(n-Butyl)-thiophosphoric triamide</td>
<td>DNEL</td>
<td>Inhalation, Long-term, Systemic effects</td>
<td>2,59 (mg/m³)</td>
</tr>
<tr>
<td>CAS No: 94317-64-3</td>
<td>(Workers)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC No:</td>
<td>DNEL</td>
<td>Dermal, Long-term, Systemic effects</td>
<td>0,74 (mg/kg bw/day)</td>
</tr>
<tr>
<td></td>
<td>(Workers)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.
DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.
Concentration levels PNEC:

<table>
<thead>
<tr>
<th>Name</th>
<th>Details</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-(n-Butyl)thiophosphoric triamide</td>
<td>PNEC aqua (freshwater)</td>
<td>0,28 (mg/L)</td>
</tr>
<tr>
<td>CAS No: 94317-64-3</td>
<td>PNEC aqua (marine water)</td>
<td>0,028 (mg/L)</td>
</tr>
<tr>
<td>EC No:</td>
<td>PNEC aqua (intermittent releases)</td>
<td>2,8 (mg/L)</td>
</tr>
<tr>
<td></td>
<td>PNEC STP</td>
<td>8,8 (mg/L)</td>
</tr>
<tr>
<td></td>
<td>PNEC sediment (freshwater)</td>
<td>1,51 (mg/kg sediment dw)</td>
</tr>
<tr>
<td></td>
<td>PNEC sediment (marine water)</td>
<td>0,15 (mg/kg sediment dw)</td>
</tr>
</tbody>
</table>

PNEC: Predicted No Effect Concentration, concentration of the substance below which adverse effects are not expected in the environmental compartment.

8.2 Exposure controls.

Measures of a technical nature:
Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system.

<table>
<thead>
<tr>
<th>Concentration: 100 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses: Fertilizer</td>
</tr>
</tbody>
</table>

Breathing protection:
PPE: Particle filter mask
Characteristics: «CE» marking, category III. Made of filtering material, it covers nose, mouth and chin.
CEN standards: EN 149
Maintenance: Check for any tears, defects, etc. before use. Since it is disposable individual protection equipment, it should be replaced after use.
Observations: Does not protect worker unless properly adjusted. Follow the manufacturer's instructions regarding suitable use of the equipment.
Filter Type needed: P2

Hand protection:
PPE: Protective gloves against chemicals.
Characteristics: «CE» marking, category III.
CEN standards: EN 374-1, En 374-2, EN 374-3, EN 420
Maintenance: Keep in a dry place, away from any sources of heat, and avoid exposure to sunlight as much as possible.
Observations: Do not make any changes to the gloves that may alter their resistance, or apply paints, solvents or adhesives.

Material: PVC (polyvinyl chloride)
Breakthrough time (min.): > 480
Material thickness (mm): 0,35

Eye protection:
PPE: Protective goggles against particle impacts.
Characteristics: «CE» marking, category II. Eye protector against dust and smoke.
CEN standards: EN 165, EN 166, EN 167, EN 168
Maintenance: Visibility through lenses should be ideal. Therefore, these parts should be cleaned daily. Protectors should be disinfected periodically following the manufacturer's instructions.
Observations: Some signs of wear and tear include: yellow colouring of the lenses, superficial scratching of the lenses, scraping etc.

Skin protection:
PPE: Protective clothing.
Characteristics: «CE» marking, category II. Protective clothing should not be too tight or loose in order not to obstruct the user's movements.
CEN standards: EN 340
Maintenance: In order to guarantee uniform protection, follow the washing and maintenance instructions provided by the manufacturer.
Observations: The protective clothing should offer a level of comfort in line with the level of protection provided in terms of the hazard against which it protects, bearing in mind environmental conditions, the user's level of activity and the expected time of use.

PPE: Work footwear.
Characteristics: «CE» marking, category II.
CEN standards: EN ISO 13287, EN 20347
Maintenance: This product adapts to the first user's foot shape. That is why, as well as for hygienic reasons, it should not be used by other people.
Observations: Work footwear for professional use includes protection elements aimed at protecting users against any injury resulting from an accident.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

9.1 Information on basic physical and chemical properties.
Appearance: Crystalline/powder
Colour: White
Odour: N.A./N.A.
Odour threshold: N.A./N.A.
pH: N.A./N.A.
Melting point: 59 ºC
Boiling Point: 277.4 ºC
Flash point: 121.6 ºC
Evaporation rate: N.A./N.A.
Inflammability (solid, gas): N.A./N.A.
Lower Explosive Limit: N.A./N.A.
Upper Explosive Limit: N.A./N.A.
Vapour pressure: N.A./N.A.
Vapour density: N.A./N.A.
Relative density: 1.171
Solubility: N.A./N.A.
Liposolubility: N.A./N.A.
Hydrosolubility: N.A./N.A.
Partition coefficient (n-octanol/water): N.A./N.A.
Auto-ignition temperature: N.A./N.A.
Decomposition temperature: N.A./N.A.
Viscosity: N.A./N.A.
Explosive properties: N.A./N.A.
Oxidizing properties: N.A./N.A.
N.A./N.A. = Not Available/Not Applicable due to the nature of the product

9.2 Other information.
Pour point: N.A./N.A.
Blink: N.A./N.A.
Kinematic viscosity: N.A./N.A.
N.A./N.A. = Not Available/Not Applicable due to the nature of the product

SECTION 10: STABILITY AND REACTIVITY.

10.1 Reactivity.
The product does not present hazards by their reactivity.

10.2 Chemical stability.
Stable under the recommended handling and storage conditions (see section 7).

10.3 Possibility of hazardous reactions.
The product does not present possibility of hazardous reactions.

10.4 Conditions to avoid.
Avoid any improper handling.

10.5 Incompatible materials.
Keep away from oxidising agents and from highly alkaline or acidic materials in order to prevent exothermic reactions.
10.6 Hazardous decomposition products.
No decomposition if used for the intended uses.

SECTION 11: TOXICOLOGICAL INFORMATION.

11.1 Information on toxicological effects.
Repeated or prolonged contact with the product can cause the elimination of oil from the skin, giving rise to non-allergic contact dermatitis and absorption of the product through the skin.

Toxicological information.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Test</th>
<th>Kind</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-(n-Butyl)-thiophosphoric triamide</td>
<td>Oral</td>
<td>LD50</td>
<td>rat male/female</td>
<td>2823 mg/kg bw (20 h) [1]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dermal</td>
<td>LD50</td>
<td>rabbit male/female</td>
<td>&gt; 2000 mg/kg bw (24 h) [1]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhalation</td>
<td>LC50</td>
<td>rat male/female</td>
<td>&gt; 2.1 mg/L air (analytical) (4 h) [1]</td>
</tr>
</tbody>
</table>

a) acute toxicity; Not conclusive data for classification.
b) skin corrosion/irritation; Not conclusive data for classification.
c) serious eye damage/irritation; Product classified: Serious eye damage, Category 1: Causes serious eye damage.
d) respiratory or skin sensitisation; Product classified: Skin sensitisier, Category 1: May cause an allergic skin reaction.
e) germ cell mutagenicity; Not conclusive data for classification.
f) carcinogenicity; Not conclusive data for classification.
g) reproductive toxicity; Product classified: Reproductive toxicant, Category 2: Suspected of damaging fertility or the unborn child.
h) STOT-single exposure; Not conclusive data for classification.
i) STOT-repeated exposure; Not conclusive data for classification.
j) aspiration hazard; Not conclusive data for classification.

SECTION 12: ECOLOGICAL INFORMATION.

-Continued on next page.-
12.1 Toxicity.

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Test</th>
<th>Kind</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-(n-Butyl)thiophosphoric triamide</td>
<td>Fish</td>
<td>LC50</td>
<td>Lepomis macrochirus</td>
<td>1140 mg/L (96 h) [1]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[1] study report, 1990. EPA OPPTS 850.1075 (Freshwater and Saltwater Fish Acute Toxicity Test)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aquatic invertebrates</td>
<td>EC50</td>
<td>Daphnia magna</td>
<td>290 mg/L (48 h) [1]</td>
</tr>
<tr>
<td></td>
<td>Aquatic plants</td>
<td>EC50</td>
<td>Selenastrum capricornatum</td>
<td>280 mg/L (96 h) [1]</td>
</tr>
</tbody>
</table>

CAS No: 94317-64-3  EC No: 

12.2 Persistence and degradability.

No information is available regarding the biodegradability.
No information is available on the degradability.
No information is available about persistence and degradability of the product.

12.3 Bioaccumulative potential.

No information is available regarding the bioaccumulation.

12.4 Mobility in soil.

No information is available about the mobility in soil.
The product must not be allowed to go into sewers or waterways.
Prevent penetration into the ground.

12.5 Results of PBT and vPvB assessment.

No information is available about the results of PBT and vPvB assessment of the product.

12.6 Other adverse effects.

No information is available about other adverse effects for the environment.

SECTION 13 DISPOSAL CONSIDERATIONS.

13.1 Waste treatment methods.

Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.

SECTION 14: TRANSPORT INFORMATION.

Transportation is not dangerous. In case of road accident causing the product’s spillage, proceed in accordance with point 6.
14.1 UN number.
Transportation is not dangerous.

14.2 UN proper shipping name.
Description:
ADR: Transportation is not dangerous.
IMDG: Transportation is not dangerous.
ICAO/IATA: Transportation is not dangerous.

14.3 Transport hazard class(es).
Transportation is not dangerous.

14.4 Packing group.
Transportation is not dangerous.

14.5 Environmental hazards.
Transportation is not dangerous.

14.6 Special precautions for user.
Transportation is not dangerous.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code.
Transportation is not dangerous.

SECTION 15: REGULATORY INFORMATION.

15.1 Safety, health and environmental regulations/legislation specific for the substance.

Product classification according to Annex I of Directive 2012/18/EU (SEVESO III): N/A
The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.
The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

15.2 Chemical safety assessment.
No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION.

Classification codes:

Eye Dam. 1 : Serious eye damage, Category 1
Repr. 2 : Reproductive toxicant, Category 2
Skin Sens. 1 : Skin sensitiser, Category 1

It is advisable to carry out basic training with regard to health and safety at work in order to handle this product correctly.

Abbreviations and acronyms used:
CEN: European Committee for Standardization.
DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.
DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.
EC50: Half maximal effective concentration.
PPE: Personal protection equipment.
LC50: Lethal concentration, 50%.
LD50: Lethal dose, 50%.
PNEC: Predicted No Effect Concentration, concentration of the substance below which adverse effects are not expected in the environmental compartment.

Key literature references and sources for data:
http://eur-lex.europa.eu/homepage.html
http://echa.europa.eu/


The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.

-End of safety data sheet.-