Section 1: Product and Company Identification

1.1 Product Identifiers:
Product Name: Microcystin LF Deuterated Standard
Product Code: 300500

1.2 Identified Use: Positive control for determination of Microcystin LF in samples. Restrictions on Use: For research use only.

1.3 Company: Abraxis, Inc., 124 Railroad Drive, Warminster, PA 18974 USA, info@abraxiskits.com +1(215) 357-3911, FAX +1(215) 357-5232

1.4 Emergency Telephone Number: +1(215) 357-3911

Section 2: Hazard(s) Identification

2.1 Classification of the substance:
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 2), H225 Highly flammable liquid and vapor
Acute toxicity, Oral (Category 2), H300 Fatal if swallowed; Acute toxicity, Oral (Category 3), H301 Toxic if swallowed
Acute toxicity, Inhalation (Category 3), H310 Toxic if inhaled
Acute toxicity, Dermal (Category 2), H311 Toxic in contact with skin; Acute toxicity, Dermal (Category 3), H313 Toxic in contact with skin
Skin irritation (Category 2), H315 Causes skin irritation
Eye irritation (Category 2A), H319 Causes serious eye irritation
Skin sensitization (Category 1), H317 May cause an allergic skin reaction
Specific target organ toxicity - single exposure (Category 3), H335 Respiratory system; Specific target organ toxicity - single exposure (Category 1), H370 Causes damage to organs
HMIS Rating: Health hazard: 2, Chronic Health Hazard: *, Flammability: 3, Physical Hazard 0
NFPA Rating: Health hazard: 2, Fire Hazard: 3, Reactivity Hazard: 0

2.2 GHS Label elements, including precautionary statements:

Pictogram(s)

Signal word: Danger
Hazard statement(s):
H225 Highly flammable liquid and vapor.
H300 + H310 Fatal if swallowed or in contact with skin
H301 + H311 + H313 Toxic if swallowed, in contact with skin, or if inhaled
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H370 Causes damage to organs.
Precautionary statement(s):
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P261 Avoid breathing dust/fumes/gas/mist/vapors/spray.
P262 Do not get in eyes, on skin, or on clothing.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves/eye protection/face protection.
P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth.
P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.
P303 + P361 + P333 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present. Continue rinsing.
P307 + P311 If exposed: Call a POISON CENTER or doctor/physician.
P310 Immediately call a POISON CENTER or doctor/physician.
P330 Rinse mouth.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P361 Remove/Take off immediately all contaminated clothing.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P405 Store locked up.
P501 Dispose of contents/container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS: None known.

2.4 Unknown acute toxicity: None known.

Section 3: Composition / Information on Ingredients

3.1 Substances:
Name and Synonym(s): Microcystin LF-D, MCY LF-D
Formula: C_{52}H_{66}D_{5}N_{7}O_{12}
Molecular weight: 991 g/mol
CAS No.: Data not available
Classification: Acute Toxicity 2; Skin Irritation 2; Eye Irritation 2A; Skin Sensitization 1; STOT SE 3; H300 + H310 + H330, H315, H317, H319, H335
Percentage: less than or equal to 0.000001%

Hazardous component(s):
Name and Synonym(s): Methyl alcohol, MeOH, Methanol
Formula: CH_{4}O
Molecular weight: 32.04 g/mol
CAS No.: 67-56-1
EC-No.: 200-659-6
Classification: Flammable Liquid 2, Acute Toxicity 3; STOT SE 1; H225, H301 + H311 + H331, H370
Percentage in Mixture: ~100%
For full text of H-Statements mentioned in this Section, see Section 2.

Section 4: First Aid Measures

4.1 Description of first aid measures: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact: Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed: The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
4.3 Indication of any immediate medical attention and special treatment needed: No data available. Treat symptomatically.

Section 5: Fire-fighting Measures

5.1 Suitable extinguishing media: Dry powder or sand
Unsuitable extinguishing media: Do NOT use water jet
5.2 Special hazards arising from the substance or mixture: Carbon oxides, nitrogen oxides
5.3 Advice for firefighters: Wear self-contained breathing apparatus for fire-fighting if necessary, and full protective gear to prevent contact with skin and eyes.
5.4 Further information: Use water spray to cool unopened containers.

Section 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures: Use personal protective equipment (see section 8). Avoid dust formation. Avoid breathing vapors, mist, dust, or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas.
6.2 Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
6.3 Methods and materials for containment and cleaning up: Contain spillage. Solids (if applicable): Pick up and arrange disposal without creating dust. Sweep up and shovel. Liquids (if applicable): Absorb with non-combustible liquid-binding material (sand, earth, diatomite, vermiculite). Keep in suitable, closed containers for disposal.
6.4 Reference to other sections: For information on safe handling see section 7.
For information on personal protection see section 8.
For information on disposal see section 13.

## Section 7: Handling and Storage

### 7.1 Precautions for safe handling:
See section 2. Avoid inhalation of vapors or mist, and avoid contact with skin and eyes. Wear appropriate personal protective equipment. Use explosion-proof equipment. Keep away from sources of ignition. Do not eat, drink, or smoke in work area. Take measures to prevent the buildup of electrostatic charge.

### 7.2 Precautions for safe storage:
Keep container(s) tightly closed in a dry, well-ventilated place. Protect from physical damage. Opened containers must be carefully resealed and kept upright to prevent leakage. See label or product insert for appropriate storage temperature and additional specific information. Storage class (TRGS 510): Flammable liquids.

### 7.3 Specific end use(s):
Other than use(s) specified in section 1, no other uses are stipulated.

## Section 8: Exposure Controls / Personal Protection

### 8.1 Control parameters:

**Component(s) with workplace control parameters**

**Methanol, CAS No. 67-56-1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>200.000000 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Headache</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dizziness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye damage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substances for which there is a Biological Exposure Index or Indices (see BEI section)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Danger of cutaneous absorption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEL</td>
<td>250.000000 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Headache</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nausea</td>
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<tr>
<td>Substances for which there is a Biological Exposure Index or Indices (see BEI section)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Danger of cutaneous absorption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>200.000000 ppm; 260.000000 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td>Potential for dermal absorption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td>250.000000 ppm; 325.000000 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td>Potential for dermal absorption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>200.000000 ppm; 260.000000 mg/m³</td>
<td>USA. Occupational Exposure Limits; (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td>The value in mg/m³ is approximate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>200 ppm; 260 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
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<td></td>
<td></td>
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<td>250 ppm; 325 mg/m³</td>
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</tr>
<tr>
<td>Potential for dermal absorption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>200 ppm; 260 mg/m³</td>
<td>USA. Occupational Exposure Limits; (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td>The value in mg/m³ is approximate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEL</td>
<td>250 ppm; 325 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
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<tr>
<td>Skin notation</td>
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<td></td>
</tr>
<tr>
<td>TWA</td>
<td>200 ppm; 260 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
</tbody>
</table>

### Biological occupational exposure limits

**Methanol, CAS No. 67-56-1**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Biological specimen</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>ST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Methanol 15.0000 mg/l Urine ACGIH – Biological Exposure Indices (BEI)

End of shift (As soon as possible after exposure ceases)

**Derived No Effect Level (DNEL)**
Methanol, CAS No. 67-56-1

<table>
<thead>
<tr>
<th>Application area</th>
<th>Exposure routes</th>
<th>Health effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects, Acute systemic effects</td>
<td>40mg/kg BW/d</td>
</tr>
<tr>
<td>Consumers</td>
<td>Skin contact</td>
<td>Long-term systemic effects, Acute systemic effects</td>
<td>8mg/kg BW/d</td>
</tr>
<tr>
<td>Consumers</td>
<td>Ingestion</td>
<td>Long-term systemic effects, Acute systemic effects</td>
<td>8mg/kg BW/d</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute systemic effects, Acute local effects, Long-term systemic effects, Long-term local effects</td>
<td>260 mg/m³</td>
</tr>
<tr>
<td>Consumers</td>
<td>Inhalation</td>
<td>Acute systemic effects, Acute local effects, Long-term systemic effects, Long-term local effects</td>
<td>50 mg/m³</td>
</tr>
</tbody>
</table>

**Predicted No Effect Concentration (PNEC)**
Methanol, CAS No. 67-56-1

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>23.5 mg/kg</td>
</tr>
<tr>
<td>Marine water</td>
<td>15.4 mg/l</td>
</tr>
<tr>
<td>Fresh water</td>
<td>154 mg/l</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>570.4 mg/kg</td>
</tr>
<tr>
<td>Onsite sewage treatment plant</td>
<td>100 mg/kg</td>
</tr>
</tbody>
</table>

8.2 Exposure controls:
**Appropriate engineering controls:** Provide adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday. Keep away from food and beverages.

**Personal protective equipment**
**Eye protection:** Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).
**Skin protection:** Handle with chemical resistant gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
**Respiratory protection:** Use a chemical fume hood or approved respiratory protection equipment.
**Body protection:** Lightweight, protective clothing to prevent skin exposure.
**Control of environmental exposure**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Section 9: Physical and Chemical Properties**

9.1 Information on basic physical and chemical properties of mixture
**Appearance:** Liquid
**Odor:** No data available
**Odor Threshold:** No data available
**pH:** No data available
**Melting point/freezing point:** No data available
**Initial boiling point and boiling range:** No data available
**Flash point:** No data available
**Evaporation rate:** No data available
**Flammability (solid, gas):** No data available
**Upper/lower flammability or explosive limits:** No data available
**Vapor pressure:** No data available
**Vapor density:** No data available
**Relative density:** No data available
**Water solubility:** No data available
**Partition coefficient: n-octanol/water:** No data available
**Auto-ignition temperature:** Not applicable
**Decomposition temperature:** No data available
**Viscosity:** No data available
**Explosive properties:** No data available
**Oxidizing properties:** No data available

9.2 Other information: No data available

**Section 10: Stability and Reactivity**

10.1 Reactivity: No data available
10.2 Chemical stability: Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions: No data available
10.4 Conditions to avoid: Keep away from open flame, hot surfaces, heat sources, and sources of ignition.
10.5 Incompatible materials: Acid chlorides, acid anhydrides, strong oxidizing agents, alkali metals, reducing agents, acids, peroxides
10.6 Hazardous decomposition products: No data available. In the event of fire: see section 5.
Section 11: Toxicological Information

11.1 Information on toxicological effects
To the best of our knowledge, the chemical, physical, and toxicological properties of this product have not been thoroughly investigated.

Acute toxicity: (Microcystin LF-D)
- **Inhalation**: No data available
- **Ingestion**: No data available
- **Skin contact**: Irritant to skin and mucous membranes

Eye contact: Irritating effect
Respiratory or skin sensitization: Sensitization possible through skin contact

**Aspiration hazard**: No data available

**Additional toxicological information**: Danger through skin adsorption

Acute toxicity (Methanol, CAS No. 67-56-1):
- **Inhalation**: LC50 Inhalation - Rat - 4 h - 128.2 mg/l; LC50 Inhalation - Rat - 6 h - 87.6 mg/l; LD50 Dermal - Rabbit - 17,100 mg/kg
- **Ingestion**: LDLO Oral - Human - 143 mg/kg (Lungs, Thorax, or Respiration; Dyspnea. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea); LD50 Oral - Rat - 1,187 - 2,769 mg/kg
- **Skin contact**: Rabbit skin—no irritation
- **Eye contact**: Rabbit eye—no irritation

**Respiratory or skin sensitization**: Maximization Test (GPMT)(OECD Test Guideline 406)—Guinea pig—does not cause skin sensitization

**Aspiration hazard**: No data available

Mutagenicity (Methanol, CAS No. 67-56-1):
- Ames test (S. typhimurium)—Result: negative; in vitro assay (fibroblasts)—Result: negative; in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis (mouse, male and female)—Result: negative

Carcinogenicity: IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Teratogenicity: No data available

Reproductive/fertility toxicity: Damage to fetus not classifiable

Specific target organ toxicity, single exposure: (Methanol, CAS No. 67-56-1): Causes damage to organs

Specific target organ toxicity, repeated exposure: No data available

Additional information: (Methanol, CAS No. 67-56-1): RTECS: PC1400000 Effects due to ingestion may include headache, dizziness, drowsiness, metabolic acidosis, coma, seizures. Methanol may be fatal or cause blindness if swallowed. Stomach - Irregularities - Based on Human Evidence

Section 12: Ecological Information

12.1 Toxicity: No data available
12.2 Persistence and degradability: No data available
12.3 Bioaccumulative potential: No data available
12.4 Mobility in soil: No data available
12.5 Results of PBT and vPvB assessment: No data available
12.6 Other adverse effects: Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.

Section 13: Disposal Considerations

13.1 Waste treatment methods
- **Product**: All waste must be handled and disposed according to local, state, and federal regulations. Avoid disposing large volumes in sewer.
- **Contaminated packaging**: All waste must be handled and disposed according to local, state, and federal regulations.

Refer to sections 7 and 8 for safe handling guidance.

Section 14: Transport Information

DOT, Land Transport ADR/RID (cross-border), Maritime Transport IMDG, Air Transport ICAO-TI and IATA-DGR
UN Number: 3316
UN Proper shipping name: Chemical Kit, (contains Methanol)
Transport hazard class(es): 9
Packing group: III
Environmental hazard: See section 12
Bulk transport: Excepted/Limited quantity
Special considerations: See section 7 for handling

Section 15: Regulatory Information
EU Regulations, Hazard Symbol(s): Methanol: T (Toxic), F (Flammable)
Safety Phrases: Methanol: S 7 / 16 / 36 / 37 / 45, Keep container tightly closed. Keep away from sources of ignition, no smoking. Wear suitable protective clothing and gloves. In case of accident or if you become ill, seek medical advice immediately (show product label).
SARA Title III, Section 302 Components: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA Title III, Section 313 Components: Methanol, CAS No. 67-56-1
SARA 311/312 Hazards: Methanol, CAS No. 67-56-1: Fire Hazard, Acute Health Hazard, Chronic Health Hazard
State Right-to-Know
Massachusetts: Methanol, CAS No. 67-56-1
Pennsylvania: Methanol, CAS No. 67-56-1
New Jersey: Methanol, CAS No. 67-56-1
California Prop. 65 Components: WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Methanol, CAS No. 67-56-1

Section 16: Other information

This information is based on our present knowledge. While Abraxis, Inc. believes that the data contained herein are factual and the opinions expressed represent a best effort to present accurate information, the data are not to be taken as a warranty or representation for which Abraxis, Inc. assumes legal responsibility. The information shall not be taken as being all-inclusive and is to be used only as a guide. The data are offered solely for the user's consideration, investigation, and verification. These suggestions should not be confused with either state, municipal, or insurance requirements, or with national safety codes and constitute no warranty. Any use of these data and information must be determined by the user to be in accordance with applicable federal, state, and local regulations.

All materials and mixtures may present unknown hazards and should be used with caution. Since Abraxis, Inc. cannot control the methods, volumes, or conditions of use of this product, Abraxis, Inc. shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein. An individual technically qualified to handle potentially hazardous chemicals must supervise the use of this material. This product is sold for research use only. It is not for any human or animal therapeutic or clinical diagnostic use.

Date this SDS was prepared: 4/23/2018
Version: 4
Changes from previous version: Molecular weight and chemical formula corrected