1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers
Product name : CSE, from Escherichia coli O113:H10
Product Number : E0125, E0005, and PN000249

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified uses : Laboratory chemical/standard

1.3 Details of the supplier of the safety data sheet
Company : Associates of Cape Cod, Inc.
124 Bernard E St Jean Drive
East Falmouth, MA 02536
USA
Telephone : +1 888-395-2221
: +1 508-540-3444

1.4 Emergency telephone number
Emergency Phone #: (800) 424-9300 Chemtrec® Domestic North America
: (703) 527-3887 Chemtrec® International

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Oral (Category 2)
Acute toxicity, Inhalation (Category 4)
Acute toxicity, Dermal (Category 4)
Reproductive Toxicity (Category 1B)

2.2 GHS Label elements, including precautionary statements
Pictogram

Signal word Danger

Hazard statement(s)
• Fatal if swallowed, may damage fertility or the unborn child (Intraperitoneal and Intravenous), in contact with skin or if inhaled

Precautionary statement(s)
• Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
• Wash skin thoroughly after handling.
• Do not eat, drink or smoke when using this product.
• Use only in a well-ventilated area.
• Wear protective gloves/ protective clothing/ eye protection.
• Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
• If exposed or concerned: Get medical advice/attention.
• IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
• IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/physician if you feel unwell.
• IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
• Wash contaminated clothing before reuse.
• Store locked up. Dispose of contents/container to an approved waste disposal plant in accordance with local/regional/national/international regulations.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>CAS Registry Number</th>
<th>93572-42-0</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC-No.:</td>
<td>297-473-0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lipopolysaccharides from Escherichia coli</td>
<td>Acute Tox. 2; Repro. Tox. 1B</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

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. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution. Consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Take victim immediately to hospital. 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 section 2.2 and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available
5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Nature of decomposition products not known.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for fire-fighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapors or mist. Ensure adequate ventilation. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of aerosols.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Recommended storage temperature 2 - 8 °C
Keep in a dry place.
Storage class (TRGS 510): Non-combustible, acute toxic Cat. 2 toxic hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure Guidelines
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with 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.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Appearance</td>
<td>Film, lyophilized</td>
</tr>
<tr>
<td>b) Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>c) Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>d) pH</td>
<td>No data available</td>
</tr>
<tr>
<td>e) Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>f) Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>g) Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>h) Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>i) Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>j) Upper/lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>k) Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>l) Vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>m) Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>n) Water solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>o) Partition coefficient: n- octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>p) Auto-ignition temperature</td>
<td>No data available</td>
</tr>
</tbody>
</table>
9.2 Other safety information
No data available

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
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available

In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>TYPE OF TEST</th>
<th>LD50 - Lethal dose, 50 percent kill</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTE OF EXPOSURE</td>
<td>Oral</td>
</tr>
<tr>
<td>SPECIES OBSERVED</td>
<td>Rodent - rat</td>
</tr>
<tr>
<td>DOSE/DURATION</td>
<td>48300 µg/kg</td>
</tr>
<tr>
<td>TOXIC EFFECTS</td>
<td>Details of toxic effects not reported other than lethal dose value</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF TEST</th>
<th>LD50 - Lethal dose, 50 percent kill</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTE OF EXPOSURE</td>
<td>Intraperitoneal</td>
</tr>
<tr>
<td>SPECIES OBSERVED</td>
<td>Rodent - rat</td>
</tr>
<tr>
<td>DOSE/DURATION</td>
<td>10 mg/kg</td>
</tr>
<tr>
<td>TOXIC EFFECTS</td>
<td>Details of toxic effects not reported other than lethal dose value</td>
</tr>
</tbody>
</table>
Reproductive toxicity

TYPE OF TEST               : TDLo - Lowest published toxic dose
ROUTE OF EXPOSURE         : Intraperitoneal
SPECIES OBSERVED          : Rodent - rat
DOSE                      : 500 µg/kg
SEX/DURATION              : female 15 day(s) after conception
TOXIC EFFECTS             : Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus) Reproductive - Effects on Embryo or Fetus - fetal death

TYPE OF TEST               : TDLo - Lowest published toxic dose
ROUTE OF EXPOSURE         : Intraperitoneal
SPECIES OBSERVED          : Rodent - rat
DOSE                      : 1 mg/kg
SEX/DURATION              : female 8 day(s) after conception
TOXIC EFFECTS             : Reproductive - Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)

TYPE OF TEST               : TDLo - Lowest published toxic dose
ROUTE OF EXPOSURE         : Intravenous
SPECIES OBSERVED          : Rodent - rat
DOSE                      : 100 µg/kg
SEX/DURATION              : female 17 day(s) after conception
TOXIC EFFECTS             : Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus) Reproductive - Effects on Embryo or Fetus - fetal death
<table>
<thead>
<tr>
<th>TYPE OF TEST</th>
<th>TDLo - Lowest published toxic dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTE OF EXPOSURE</td>
<td>Intravenous</td>
</tr>
<tr>
<td>SPECIES OBSERVED</td>
<td>Rodent - rat</td>
</tr>
<tr>
<td>DOSE</td>
<td>1 µg/kg</td>
</tr>
<tr>
<td>SEX/DURATION</td>
<td>female 12 day(s) after conception</td>
</tr>
<tr>
<td>TOXIC EFFECTS</td>
<td>Reproductive - Fertility - litter size (e.g. # fetuses per litter; measured before birth)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF TEST</th>
<th>TDLo - Lowest published toxic dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTE OF EXPOSURE</td>
<td>Intravenous</td>
</tr>
<tr>
<td>SPECIES OBSERVED</td>
<td>Rodent - rat</td>
</tr>
<tr>
<td>DOSE</td>
<td>100 µg/kg</td>
</tr>
<tr>
<td>SEX/DURATION</td>
<td>female 15 day(s) after conception</td>
</tr>
<tr>
<td>TOXIC EFFECTS</td>
<td>Reproductive - Effects on Embryo or Fetus - extra-embryonic structures (e.g., placenta, umbilical cord)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF TEST</th>
<th>TDLo - Lowest published toxic dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTE OF EXPOSURE</td>
<td>Intravenous</td>
</tr>
<tr>
<td>SPECIES OBSERVED</td>
<td>Rodent - rat</td>
</tr>
<tr>
<td>DOSE</td>
<td>100 µg/kg</td>
</tr>
<tr>
<td>SEX/DURATION</td>
<td>female 12 day(s) after conception</td>
</tr>
<tr>
<td>TOXIC EFFECTS</td>
<td>Reproductive - Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPE OF TEST</th>
<th>TDLo - Lowest published toxic dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROUTE OF EXPOSURE</td>
<td>Intravenous</td>
</tr>
<tr>
<td>SPECIES OBSERVED</td>
<td>Rodent - mouse</td>
</tr>
<tr>
<td>DOSE</td>
<td>4 µg/kg</td>
</tr>
<tr>
<td>SEX/DURATION</td>
<td>female 8 day(s) after conception</td>
</tr>
<tr>
<td>TOXIC EFFECTS</td>
<td>Reproductive - Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants)</td>
</tr>
</tbody>
</table>

Inhalation: No data available

Dermal: No data available

**Symptoms**

**Skin corrosion/irritation**
No data available

**Serious eye damage/eye irritation**
No data available
Respiratory or skin sensitization
No data available

Germ cell mutagenicity
mutagenic effects

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.

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

Fever

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
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available
13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN3462, Toxins, extracted from living sources, solid, n.o.s., (Lipopolysaccharides from Escherichia coli), 6.1, PG II

IMDG
UN3462, Toxins, extracted from living sources, solid, n.o.s., (Lipopolysaccharides from Escherichia coli), 6.1, PG II

IATA
UN3462, Toxins, extracted from living sources, solid, n.o.s., (Lipopolysaccharides from Escherichia coli), 6.1, PG II

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>93572-42-0</td>
<td></td>
</tr>
</tbody>
</table>

New Jersey Right To Know Components

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>93572-42-0</td>
<td></td>
</tr>
</tbody>
</table>

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
16. OTHER INFORMATION

HMIS Rating
Health hazard: 3
Flammability: 0
Physical Hazard: 0

NFPA Rating
Health hazard: 3
Fire Hazard: 0
Reactivity Hazard: 0

Further information
Associates of Cape Cod, Inc. (ACC). All rights reserved. The above information is believed to be current and accurate; however, ACC makes no warranty of any type with respect to such information and assumes no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information for their intended use.