How to Read a Safety Data Sheet (SDS)

Purpose

This procedure explains how to read a Safety Data Sheet (SDS) so you can safely identify, handle, store, and dispose of laboratory chemicals. Using isopropyl alcohol as a working example, this guide walks through every major SDS section so you know exactly what information to look for and how to apply it before working with any chemical.

Scope

This procedure applies to any chemical you plan to use in the laboratory. All Safety Data Sheets follow the same standardized 16-section format, so the steps below can be applied to any SDS, regardless of the specific chemical involved.

Required equipment and PPE

Before handling the chemical described on the SDS, gather the following:

- The Safety Data Sheet matching the exact chemical name on your container
- Protective gloves
- Protective clothing
- Eye protection
- Access to a fume hood or well-ventilated area

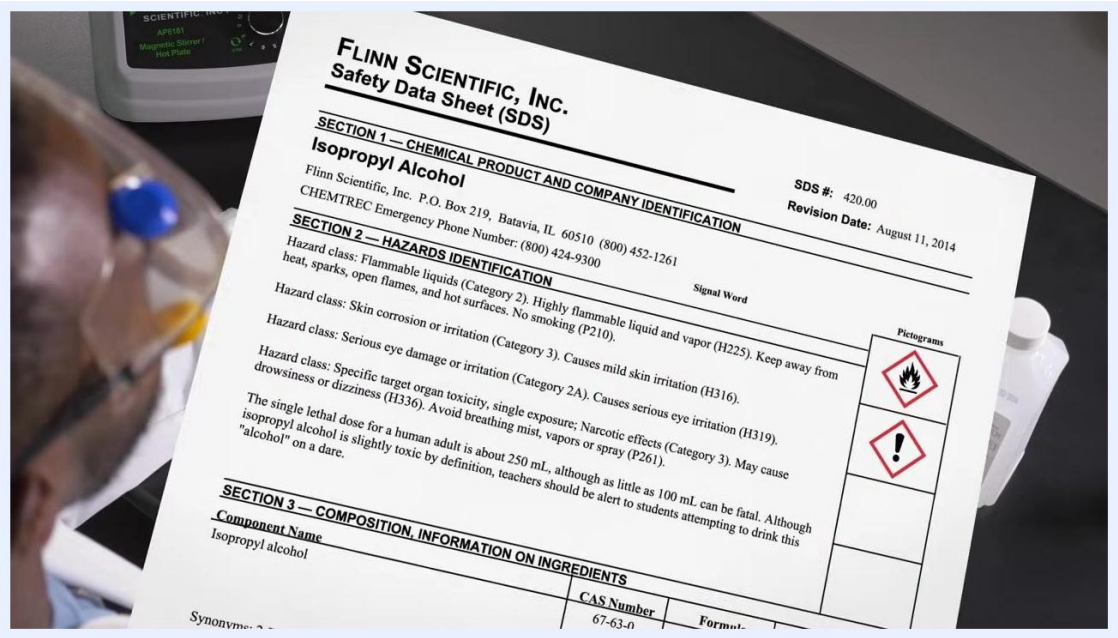
Procedure

1. Confirm you have the correct SDS

Always consult the Safety Data Sheet before working with any chemical. Locate the SDS for the specific substance you are using — for example, isopropyl alcohol, a common household chemical found in first aid kits for treating minor scrapes and wounds. Confirm that the chemical name on the SDS matches the name printed on your container.

2. Identify the chemical and manufacturer (Section 1)

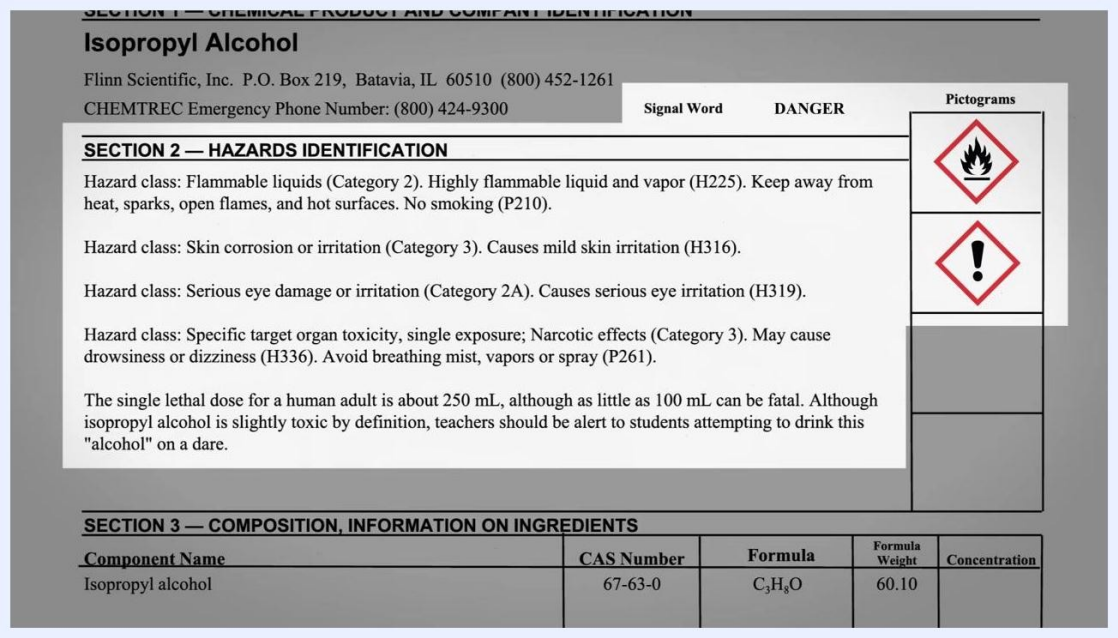
Check that the SDS opens with chemical identification details, including the chemical name, manufacturer name and address, and an emergency phone number. For isopropyl alcohol, this section lists the chemical name as Isopropyl Alcohol, the manufacturer as Flinn Scientific, Inc., P.O. Box 219, Batavia, IL 60510, and an emergency phone number of (800) 424-9300.



Close-up view of an SDS with the chemical name, manufacturer, and emergency contact information highlighted

3. Review the hazard identification section (Section 2)

Locate Section 2, which details the hazards associated with the chemical. Hazards are identified in three ways: a signal word, pictograms, and hazard classes with statements. For isopropyl alcohol, this includes the signal word "DANGER," flame and exclamation mark pictograms, and statements such as highly flammable liquid and vapor (H225), causes mild skin irritation (H316), causes serious eye irritation (H319), and may cause drowsiness or dizziness (H336).



Isopropyl Alcohol

Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261
CHEMTREC Emergency Phone Number: (800) 424-9300

Signal Word DANGER

Pictograms

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

SECTION 3 — COMPOSITION, INFORMATION ON INGREDIENTS

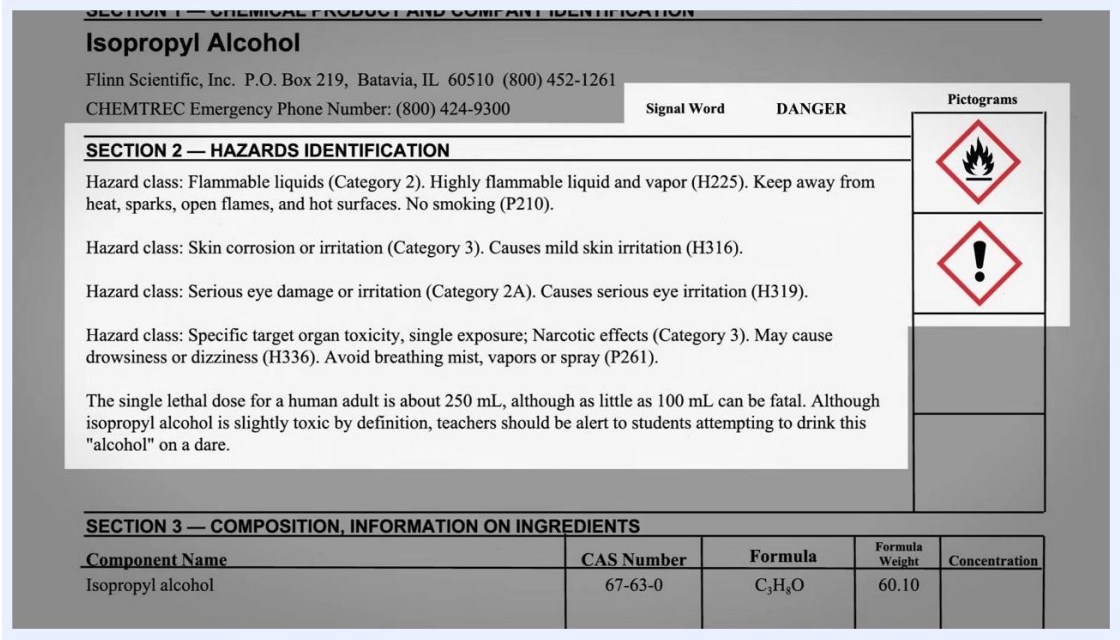
Component Name	CAS Number	Formula	Formula Weight	Concentration
Isopropyl alcohol	67-63-0	C_3H_8O	60.10	

SDS section displaying hazard classes, the signal word "DANGER," and pictograms for isopropyl alcohol

Safety note: Precautionary statements accompanying these hazards include avoiding breathing mist, vapors, or spray (P261) and prohibiting smoking near the chemical (P210).

4. Interpret the signal word

Identify the signal word on the SDS to gauge the level of hazard. "DANGER" indicates a highly hazardous chemical, while "WARNING" indicates a less hazardous one. Non-hazardous chemicals may carry no signal word at all.



Isopropyl Alcohol

Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261
CHEMTREC Emergency Phone Number: (800) 424-9300

Signal Word **DANGER**

Pictograms

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

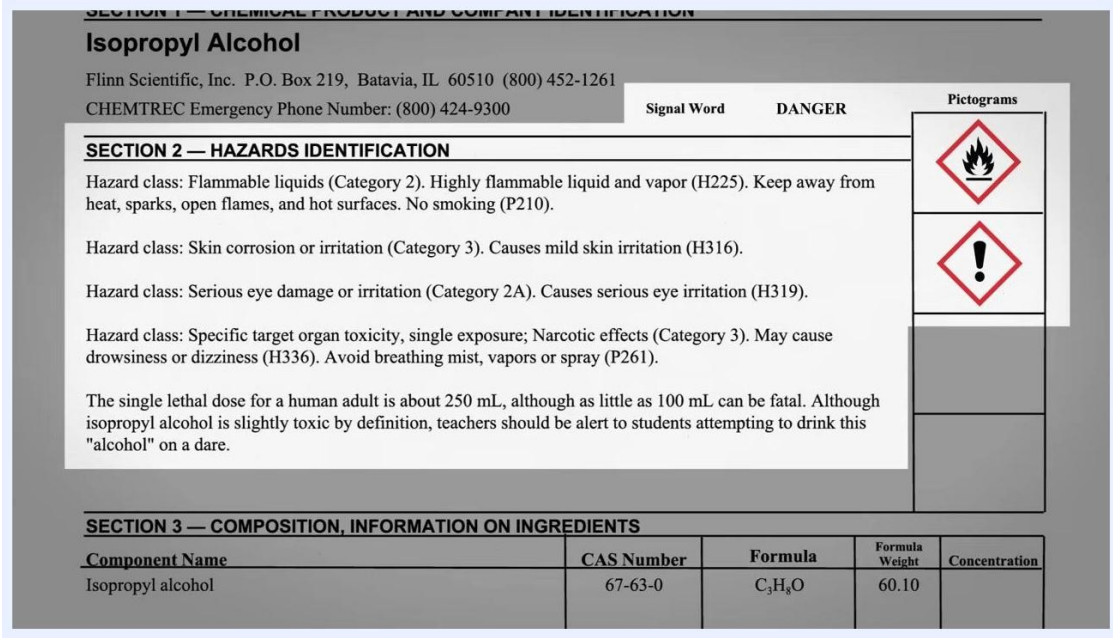
SECTION 3 — COMPOSITION, INFORMATION ON INGREDIENTS

Component Name	CAS Number	Formula	Formula Weight	Concentration
Isopropyl alcohol	67-63-0	C_3H_8O	60.10	

SDS excerpt with the "Signal Word: DANGER" field highlighted

5. Recognize the pictograms

Learn to identify the pictograms shown on the SDS, as each one represents a specific type of hazard. For isopropyl alcohol, the flame pictogram indicates flammability and the exclamation mark indicates irritation or other hazards.



Isopropyl Alcohol

Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261
CHEMTREC Emergency Phone Number: (800) 424-9300

Signal Word DANGER

Pictograms

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

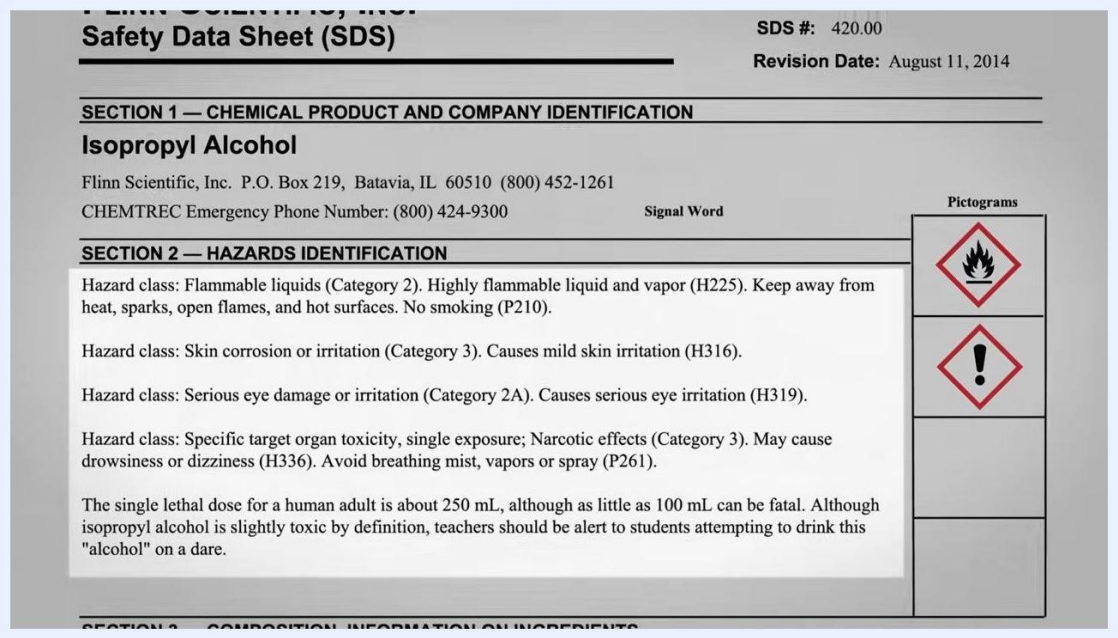
SECTION 3 — COMPOSITION, INFORMATION ON INGREDIENTS

Component Name	CAS Number	Formula	Formula Weight	Concentration
Isopropyl alcohol	67-63-0	C_3H_8O	60.10	

SDS section showing pictograms for flammability and irritation

6. Reference the full set of standard pictograms

There are nine standard pictograms used across all SDS documents to describe possible chemical hazards. Review the full set to build broader chemical safety awareness, even though only some pictograms apply to any given chemical.



Safety Data Sheet (SDS)

SDS #: 420.00

Revision Date: August 11, 2014

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Isopropyl Alcohol

Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

Signal Word

Pictograms

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

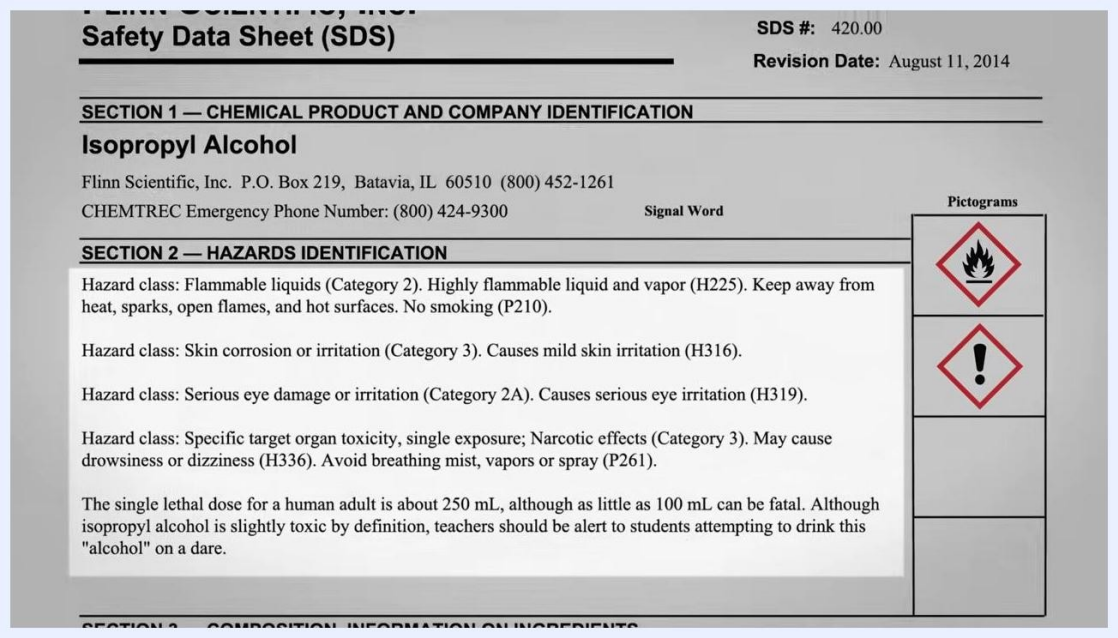
Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

Grid of the nine standard hazard pictograms, including flame, exclamation mark, gas cylinder, corrosion, and skull and crossbones

7. Match pictograms to specific hazard text

Confirm what each pictogram means by reading the accompanying hazard text. For isopropyl alcohol, the flame pictogram is paired with the statement "Isopropyl alcohol will burn," and the exclamation mark pictogram is paired with "Other potential hazards."



Safety Data Sheet (SDS)

SDS #: 420.00

Revision Date: August 11, 2014

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Isopropyl Alcohol

Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

Signal Word

Pictograms

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

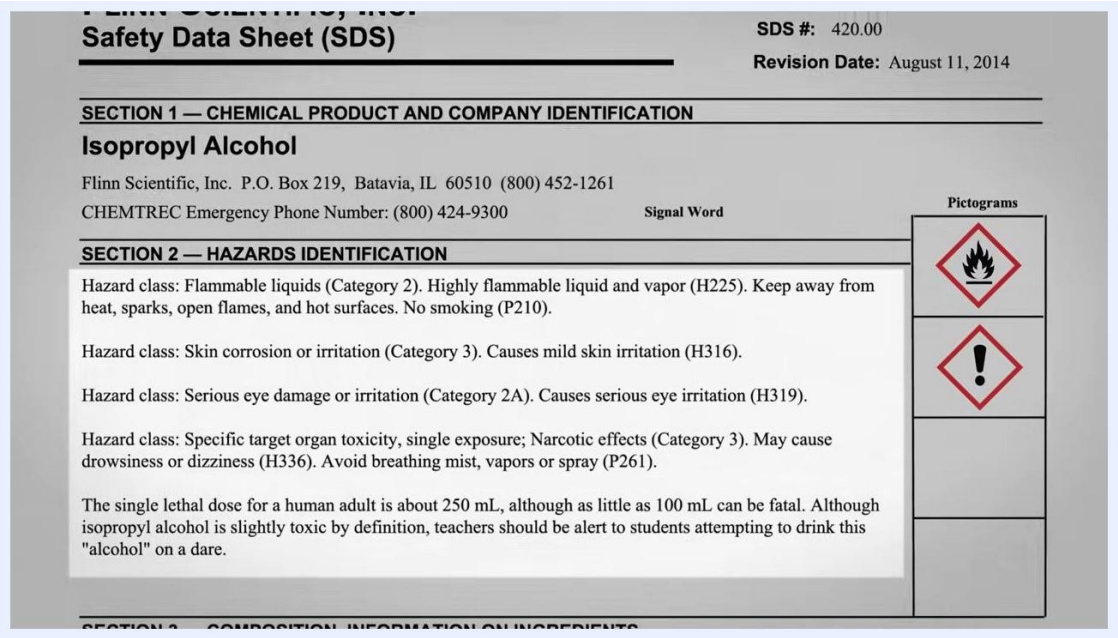
Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

SDS text stating "Isopropyl alcohol will burn" next to the flame pictogram, and "Other potential hazards" next to the exclamation mark pictogram, both highlighted

8. Review the principal hazards in detail

Read through each hazard statement listed for the chemical. For isopropyl alcohol, this includes: highly flammable liquid and vapor (H225, keep away from heat, sparks, open flames, and hot surfaces, no smoking — P210); mild skin irritation (H316); serious eye irritation (H319); and drowsiness or dizziness (H336, avoid breathing mist, vapors, or spray — P261).



Safety Data Sheet (SDS)

SDS #: 420.00

Revision Date: August 11, 2014

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Isopropyl Alcohol

Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

Signal Word

Pictograms

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

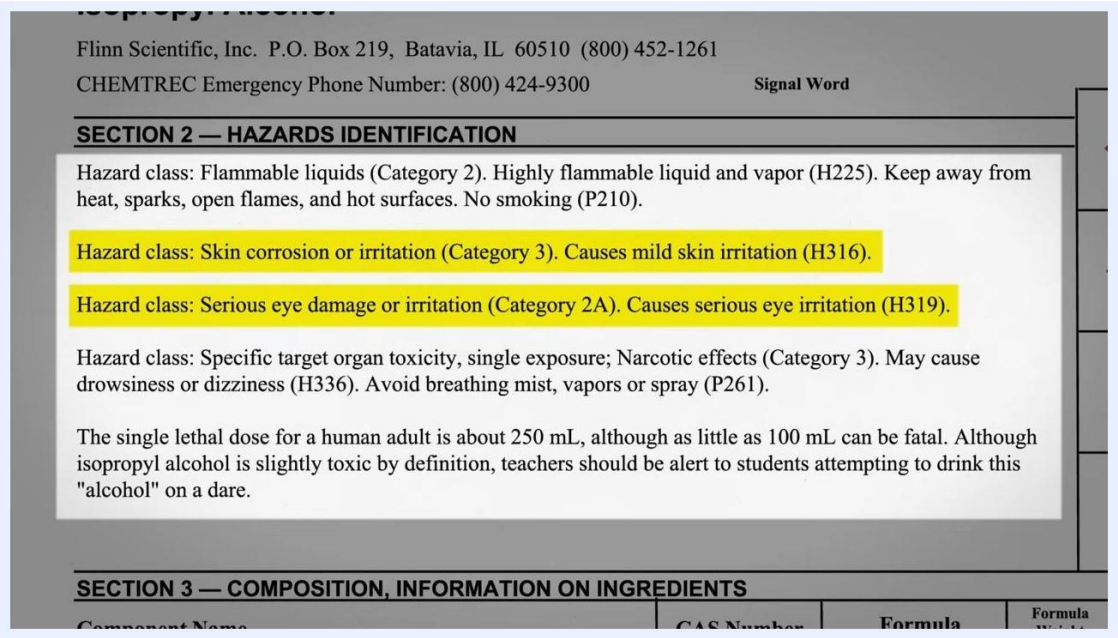
The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

SDS section listing detailed hazard classes for isopropyl alcohol, covering flammability, skin and eye irritation, and narcotic effects

Safety note: Ingestion of isopropyl alcohol can be fatal. Do not confuse it with ethanol.

9. Check the hazard category ratings

Review the specific hazard categories assigned to the chemical. For isopropyl alcohol: Flammable Liquid Category 2; Skin Corrosion/Irritation Category 3 (mild irritation); Serious Eye Damage/Irritation Category 2A; and Specific Target Organ Toxicity (Single Exposure) Category 3 (drowsiness or dizziness). These categories may be highlighted on the SDS for emphasis.



Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300 **Signal Word**

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

SECTION 3 — COMPOSITION, INFORMATION ON INGREDIENTS

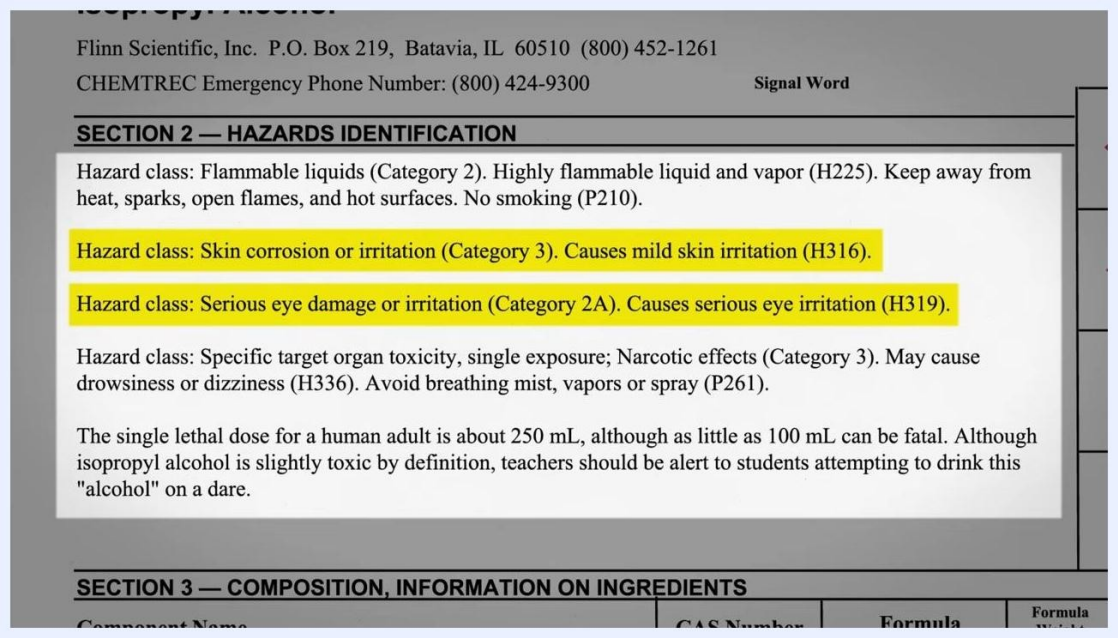
Formula

SDS hazard identification section with skin and eye irritation hazard classes highlighted in yellow

Safety note: The single lethal dose for a human adult is approximately 250 mL, with as little as 100 mL potentially fatal. Isopropyl alcohol is classified as slightly toxic. Supervisors should remain alert to the risk of anyone attempting to drink it.

10. Locate composition information (Section 3)

Check Section 3 for the chemical formula, CAS number, molecular weight, and synonyms. For isopropyl alcohol: Component Name — Isopropyl alcohol; CAS Number — 67-63-0; Formula — C_3H_8O; Formula Weight — 60.10; Synonyms — 2-Propanol, Rubbing alcohol.



Flinn Scientific, Inc. P.O. Box 219, Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300 **Signal Word**

SECTION 2 — HAZARDS IDENTIFICATION

Hazard class: Flammable liquids (Category 2). Highly flammable liquid and vapor (H225). Keep away from heat, sparks, open flames, and hot surfaces. No smoking (P210).

Hazard class: Skin corrosion or irritation (Category 3). Causes mild skin irritation (H316).

Hazard class: Serious eye damage or irritation (Category 2A). Causes serious eye irritation (H319).

Hazard class: Specific target organ toxicity, single exposure; Narcotic effects (Category 3). May cause drowsiness or dizziness (H336). Avoid breathing mist, vapors or spray (P261).

The single lethal dose for a human adult is about 250 mL, although as little as 100 mL can be fatal. Although isopropyl alcohol is slightly toxic by definition, teachers should be alert to students attempting to drink this "alcohol" on a dare.

SECTION 3 — COMPOSITION, INFORMATION ON INGREDIENTS

Formula

SDS section listing composition and ingredient information, including CAS number, formula, and synonyms

11. Follow first aid measures (Section 4)

Locate the first aid instructions for each exposure route:

- If inhaled: Remove the person to fresh air and keep at rest in a comfortable position for breathing (P304+P340).
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so, then continue rinsing. Seek medical advice if irritation persists (P305+P351+P338, P337+P313).
- If on skin or hair: Immediately remove contaminated clothing and rinse skin with water (P303+P361+P353). Seek medical advice if irritation occurs (P332+P313).

- If feeling unwell: Call a poison center or physician (P312).

Component Name	CAS Number	Formula	Formula Weight	Concentration
Isopropyl alcohol	67-63-0	C_3H_8O	60.10	
Synonyms: 2-Propanol, Rubbing alcohol				

SECTION 4 — FIRST AID MEASURES

Call a POISON CENTER or physician if you feel unwell (P312).
If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing (P304+P340).
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing (P305+P351+P338). **If eye irritation persists:** Get medical advice or attention (P337+P313).
If on skin (or hair): Immediately remove all contaminated clothing. Rinse skin with water (P303+P361+P353). **If skin irritation occurs:** Get medical advice or attention (P332+P313).

SECTION 5 — FIRE FIGHTING MEASURES

Class IB flammable liquid.
Flash point: 12 °C Flammable limits: Lower: 2.0% Upper: 12.7% Autoignition Temperature: 399 °C
When heated to decomposition, may emit toxic fumes.
In case of fire: Use a tri-class dry chemical fire extinguisher (P370+P378).

NFPA Code
H-1
F-3
R-0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

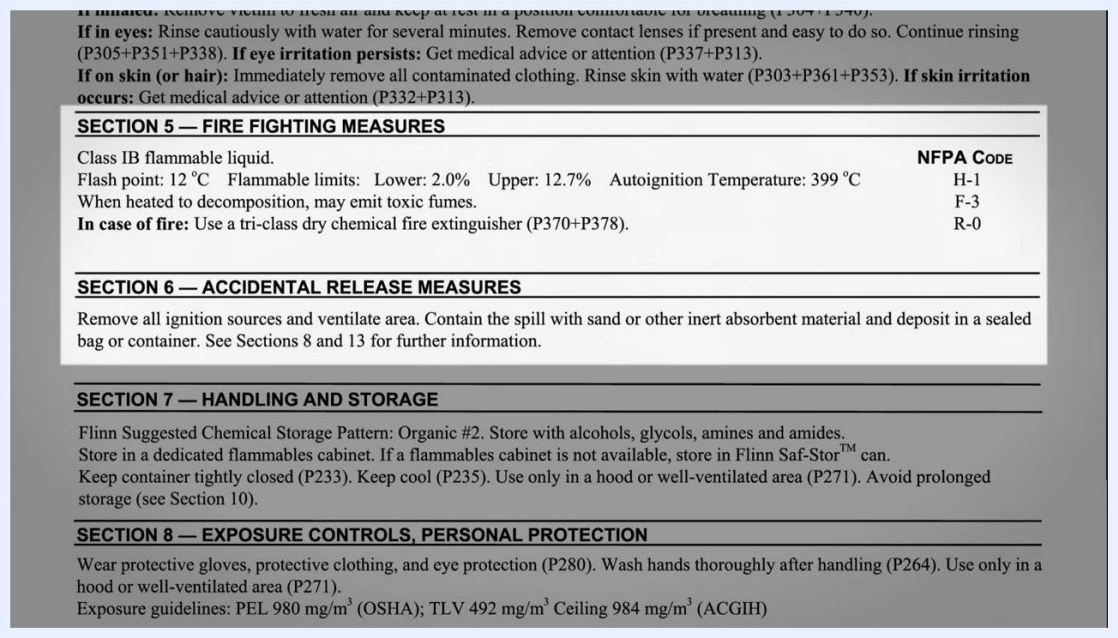
Remove all ignition sources and ventilate area. Contain the spill with sand or other inert absorbent material and deposit in a sealed bag or container. See Sections 8 and 13 for further information.

SDS section showing first aid measures for inhalation, eye, and skin exposure highlighted in yellow

Safety note: These first aid measures are written as standard precautionary statements and reinforce familiar laboratory safety practices, such as using an eye wash station or safety shower when needed.

12. Follow handling and storage guidance (Section 7)

Locate Section 7 and store the chemical according to the guidance provided. For isopropyl alcohol: store following the Flinn Suggested Chemical Storage Pattern Organic #2, with compatible chemicals such as alcohols, glycols, amines, and amides. Place the container in a dedicated flammables cabinet, or use a Flinn Saf-Stor™ can if one is unavailable. Keep the container tightly closed (P233) and keep it cool (P235). Use only in a hood or well-ventilated area (P271), and avoid prolonged storage.



If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing (P305+P351+P338). **If eye irritation persists:** Get medical advice or attention (P337+P313).
If on skin (or hair): Immediately remove all contaminated clothing. Rinse skin with water (P303+P361+P353). **If skin irritation occurs:** Get medical advice or attention (P332+P313).

SECTION 5 — FIRE FIGHTING MEASURES

Class IB flammable liquid.
Flash point: 12 °C Flammable limits: Lower: 2.0% Upper: 12.7% Autoignition Temperature: 399 °C
When heated to decomposition, may emit toxic fumes.
In case of fire: Use a tri-class dry chemical fire extinguisher (P370+P378).

NFPA Code
H-1
F-3
R-0

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Remove all ignition sources and ventilate area. Contain the spill with sand or other inert absorbent material and deposit in a sealed bag or container. See Sections 8 and 13 for further information.

SECTION 7 — HANDLING AND STORAGE

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.
Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor™ can.
Keep container tightly closed (P233). Keep cool (P235). Use only in a hood or well-ventilated area (P271). Avoid prolonged storage (see Section 10).

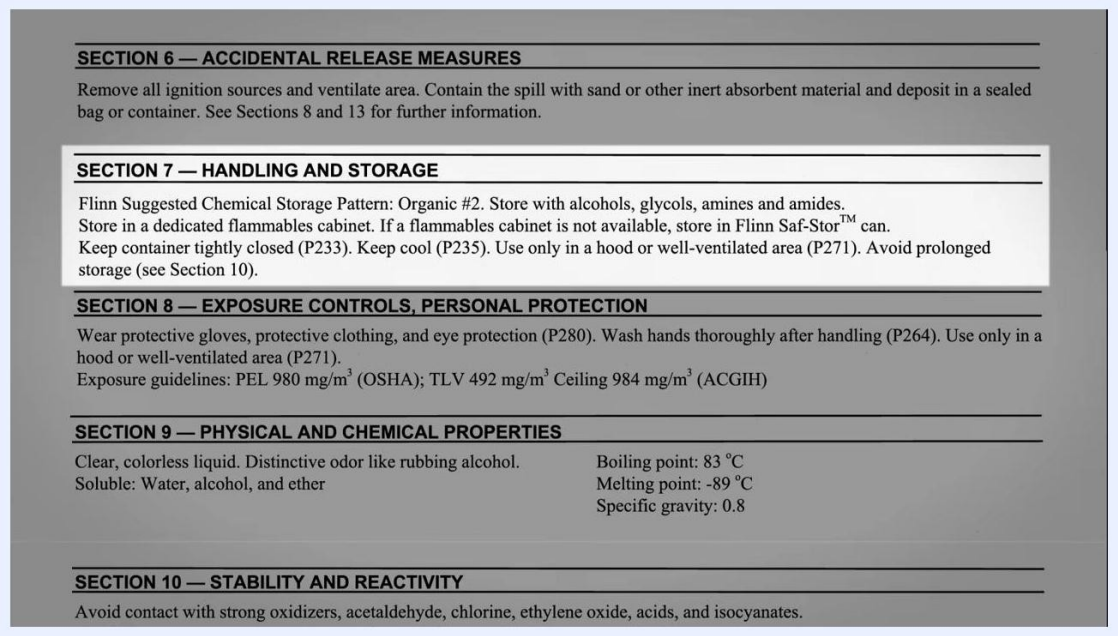
SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

Wear protective gloves, protective clothing, and eye protection (P280). Wash hands thoroughly after handling (P264). Use only in a hood or well-ventilated area (P271).
Exposure guidelines: PEL 980 mg/m^3 (OSHA); TLV 492 mg/m^3 Ceiling 984 mg/m^3 (ACGIH)

SDS Section 7 showing storage pattern, compatible chemicals, flammables cabinet requirement, and storage precautions

13. Apply exposure controls and PPE (Section 8)

Locate Section 8 for personal protection requirements. Wear protective gloves, protective clothing, and eye protection (P280). Wash hands thoroughly after handling (P264), and use only in a hood or well-ventilated area (P271). For isopropyl alcohol, exposure limits are: PEL 980 mg/m³ (OSHA), TLV 492 mg/m³, and Ceiling 984 mg/m³ (ACGIH).



SECTION 6 — ACCIDENTAL RELEASE MEASURES

Remove all ignition sources and ventilate area. Contain the spill with sand or other inert absorbent material and deposit in a sealed bag or container. See Sections 8 and 13 for further information.

SECTION 7 — HANDLING AND STORAGE

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.
Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor™ can.
Keep container tightly closed (P233). Keep cool (P235). Use only in a hood or well-ventilated area (P271). Avoid prolonged storage (see Section 10).

SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

Wear protective gloves, protective clothing, and eye protection (P280). Wash hands thoroughly after handling (P264). Use only in a hood or well-ventilated area (P271).
Exposure guidelines: PEL 980 mg/m^3 (OSHA); TLV 492 mg/m^3 Ceiling 984 mg/m^3 (ACGIH)

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Clear, colorless liquid. Distinctive odor like rubbing alcohol.
Soluble: Water, alcohol, and ether

Boiling point: 83 °C
Melting point: -89 °C
Specific gravity: 0.8

SECTION 10 — STABILITY AND REACTIVITY

Avoid contact with strong oxidizers, acetaldehyde, chlorine, ethylene oxide, acids, and isocyanates.

SDS Section 8 showing PPE requirements, hand-washing instructions, ventilation requirements, and exposure limits

14. Reference physical and chemical properties (Section 9)

Check Section 9 for physical properties useful for lab reports or presentations. For isopropyl alcohol: appearance is a clear, colorless liquid; odor is distinctive, like rubbing alcohol; solubility is water, alcohol, and ether; boiling point is 83°C; melting point is -89°C; specific gravity is 0.8.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Remove all ignition sources and ventilate area. Contain the spill with sand or other inert absorbent material and
bag or container. See Sections 8 and 13 for further information.

SECTION 7 — HANDLING AND STORAGE

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.
Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor™ can.
Keep container tightly closed (P233). Keep cool (P235). Use only in a hood or well-ventilated area (P271). Avo
storage (see Section 10).

SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

Wear protective gloves, protective clothing, and eye protection (P280). Wash hands thoroughly after handling (P
hood or well-ventilated area (P271).
Exposure guidelines: PEL 980 mg/m^3 (OSHA); TLV 492 mg/m^3 Ceiling 984 mg/m^3 (ACGIH)

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Clear, colorless liquid. Distinctive odor like rubbing alcohol.
Soluble: Water, alcohol, and ether

Boiling point: 83 °C
Melting point: -89 °C
Specific gravity: 0.8

SDS Section 9 listing appearance, odor, solubility, boiling and melting points, and specific gravity

15. Review stability and reactivity information (Section 10)

Check Section 10 to identify incompatible substances. Avoid contact with strong oxidizers, acetaldehyde, chlorine, ethylene oxide, acids, and isocyanates. Note that shelf life is fair, and organic peroxides may develop if the chemical is exposed to light and air, which can result in explosions, particularly during distillation. Avoid prolonged storage.

SECTION 7 — HANDLING AND STORAGE

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.
Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor™ can.
Keep container tightly closed (P233). Keep cool (P235). Use only in a hood or well-ventilated area (P271). Avoid prolonged storage (see Section 10).

SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

Wear protective gloves, protective clothing, and eye protection (P280). Wash hands thoroughly after handling (P264). Use only in a hood or well-ventilated area (P271).
Exposure guidelines: PEL 980 mg/m^3 (OSHA); TLV 492 mg/m^3 Ceiling 984 mg/m^3 (ACGIH)

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Clear, colorless liquid. Distinctive odor like rubbing alcohol.
Soluble: Water, alcohol, and ether

Boiling point: 83 °C
Melting point: -89 °C
Specific gravity: 0.8

SECTION 10 — STABILITY AND REACTIVITY

Avoid contact with strong oxidizers, acetaldehyde, chlorine, ethylene oxide, acids, and isocyanates.
Shelf life: Fair. Organic peroxides may develop if exposed to light and air, which can result in explosions, especially when distilled.
Avoid prolonged storage.

SECTION 11 — TOXICOLOGICAL INFORMATION

Acute effects: Serious eye irritant, mild skin irritant, dizziness,

ORL-RAT LD_{50}: 5045 mg/kg

SDS Section 10 showing incompatible chemicals, shelf life, peroxide formation risk, and storage warnings

16. Interpret toxicological information (Section 11)

Check Section 11 for acute and chronic health effects. For isopropyl alcohol, acute effects include serious eye irritation, mild skin irritation, dizziness, drowsiness, nausea, and headache; chronic effects are listed as Not Available (N.A.). Target organs are the eyes, skin, and respiratory system. Key toxicity values include ORL-RAT LD_{50} of 5045 mg/kg (oral, rat), IHL-RAT LC_{50} of 16,000 ppm/8H (inhalation, rat), and SKN-RBT LD_{50} of 12,800 mg/kg (skin, rabbit).

SECTION 10 — STABILITY AND REACTIVITY

Avoid contact with strong oxidizers, acetaldehyde, chlorine, ethylene oxide, acids, and isocyanates.
Shelf life: Fair. Organic peroxides may develop if exposed to light and air, which can result in explosions, especially when distilled. Avoid prolonged storage.

SECTION 11 — TOXICOLOGICAL INFORMATION

Acute effects: Serious eye irritant, mild skin irritant, dizziness, drowsiness, nausea, headache.
Chronic effects: N.A.
Target organs: Eyes, skin, respiratory system.

ORL-RAT LD_{50}: 5045 mg/kg
IHL-RAT LC_{50}: 16,000 ppm/8H
SKN-RBT LD_{50}: 12,800 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

SECTION 12 — ECOLOGICAL INFORMATION

Data not yet available.

SECTION 13 — DISPOSAL CONSIDERATIONS

Please review all federal, state and local regulations that may apply before proceeding.
Flinn Suggested Disposal Method #18a is one option.

SECTION 14 — TRANSPORT INFORMATION

Shipping name: Isopropyl alcohol. Hazard class: 3, Flammable liquid. UN number: UN1219.

N/A = Not applicable

SDS Section 11 showing acute effects, target organs, LD50/LC50 values, and chronic effects marked as not available

Safety note: N.A. means not all health aspects of the substance have been fully investigated — it does not mean the substance is safe.

17. Check ecological and disposal information (Sections 12–13)

Review Section 12, Ecological Information — for isopropyl alcohol, environmental effects data is not yet available. Review Section 13, Disposal Considerations, and check all federal, state, and local regulations before disposal. Flinn Suggested Disposal Method #18a is one option for isopropyl alcohol.

SECTION 12 — ECOLOGICAL INFORMATION

Data not yet available.

SECTION 13 — DISPOSAL CONSIDERATIONS

Please review all federal, state and local regulations that may apply before proceeding.
Flinn Suggested Disposal Method #18a is one option.

SECTION 14 — TRANSPORT INFORMATION

Shipping name: Isopropyl alcohol. Hazard class: 3, Flammable liquid. UN number: UN1219.

N/A = Not applicable

SECTION 15 — REGULATORY INFORMATION

TSCA-listed, EINECS-listed (200-661-7), RCRA code D001.

SECTION 16 — OTHER INFORMATION

This Safety Data Sheet (SDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific, Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the science instructor to be in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of Flinn Scientific, Inc. and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).

Consult your copy of the *Flinn Science Catalog/Reference Manual* for additional information about laboratory chemicals.

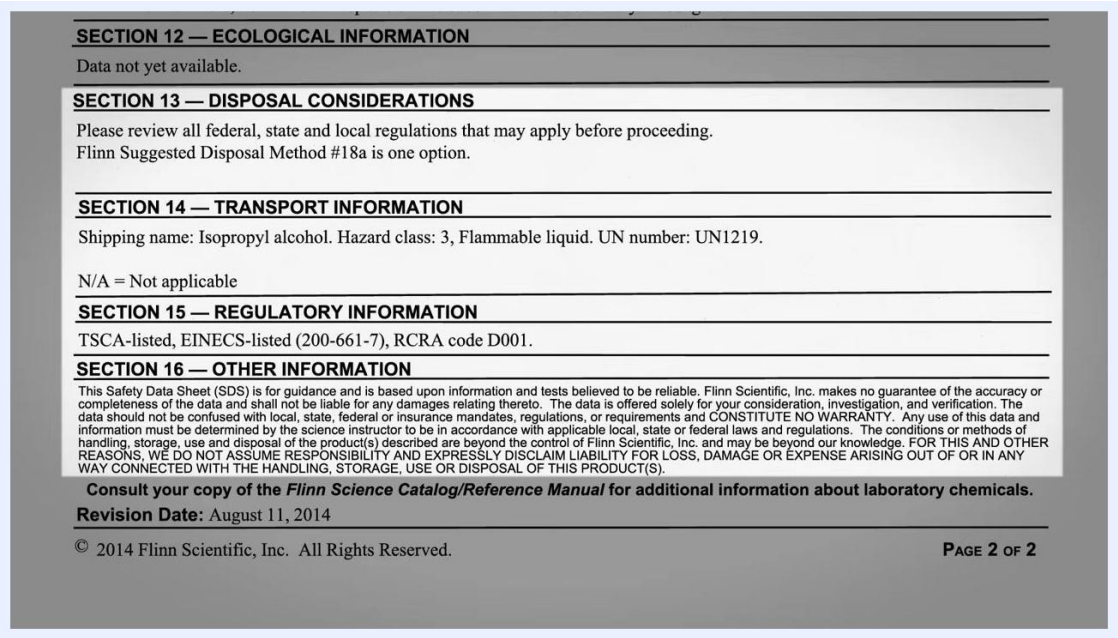
Revision Date: August 11, 2014

© 2014 Flinn Scientific, Inc. All Rights Reserved.

SDS Sections 11–13 showing toxicological, ecological, and disposal information with acute and chronic effects and target organs highlighted

18. Review transport and regulatory information (Sections 14–16)

Check Section 14, Transport Information, for the shipping name, hazard class, and UN number. For isopropyl alcohol: shipping name is Isopropyl alcohol; hazard class is 3 (Flammable liquid); UN number is UN1219. Check Section 15, Regulatory Information — isopropyl alcohol is TSCA-listed, EINECS-listed (200-661-7), with RCRA code D001. Check Section 16, Other Information, which notes that the SDS is for guidance and based on reliable information and tests, that the manufacturer does not guarantee accuracy or completeness, and lists the revision date (August 11, 2014 for this example).



SECTION 12 — ECOLOGICAL INFORMATION

Data not yet available.

SECTION 13 — DISPOSAL CONSIDERATIONS

Please review all federal, state and local regulations that may apply before proceeding.
Flinn Suggested Disposal Method #18a is one option.

SECTION 14 — TRANSPORT INFORMATION

Shipping name: Isopropyl alcohol. Hazard class: 3, Flammable liquid. UN number: UN1219.

N/A = Not applicable

SECTION 15 — REGULATORY INFORMATION

TSCA-listed, EINECS-listed (200-661-7), RCRA code D001.

SECTION 16 — OTHER INFORMATION

This Safety Data Sheet (SDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific, Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the science instructor to be in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of Flinn Scientific, Inc. and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).

Consult your copy of the *Flinn Science Catalog/Reference Manual* for additional information about laboratory chemicals.

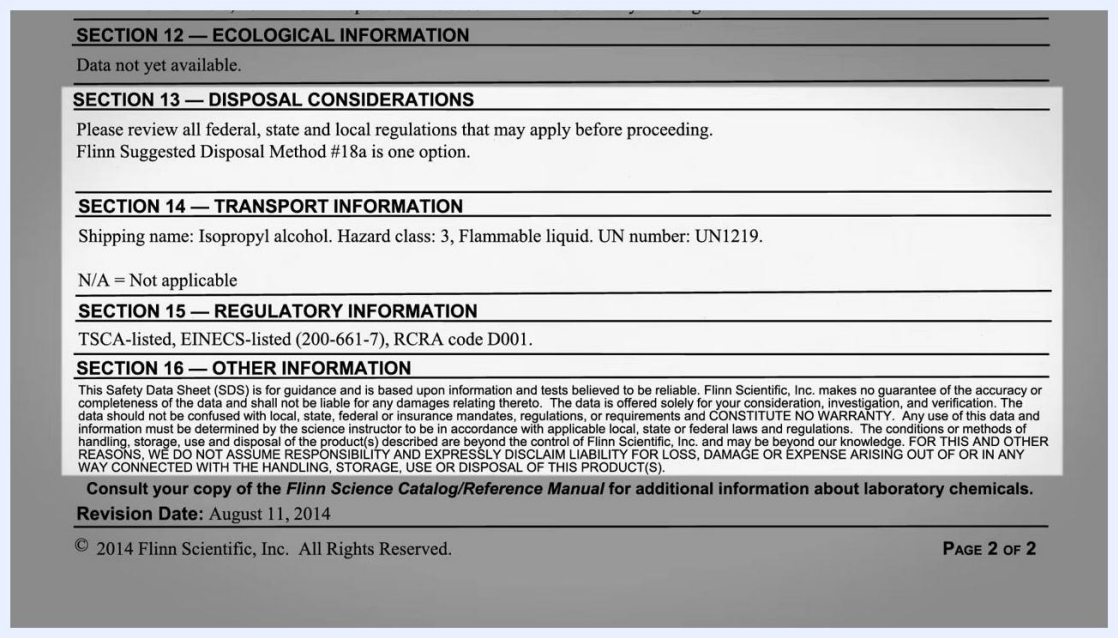
Revision Date: August 11, 2014

© 2014 Flinn Scientific, Inc. All Rights Reserved. PAGE 2 OF 2

SDS Sections 13–16 showing disposal, transport, regulatory, and other information for isopropyl alcohol

19. Confirm required PPE and equipment before handling

Before starting work, confirm that lab coat, safety goggles, and other required PPE are in place, and that the relevant equipment for the task is ready. In a typical isopropyl alcohol setup, this includes an Erlenmeyer flask, a graduated cylinder, a bottle of 99% isopropyl alcohol, and a hot plate.



SECTION 12 — ECOLOGICAL INFORMATION

Data not yet available.

SECTION 13 — DISPOSAL CONSIDERATIONS

Please review all federal, state and local regulations that may apply before proceeding.
Flinn Suggested Disposal Method #18a is one option.

SECTION 14 — TRANSPORT INFORMATION

Shipping name: Isopropyl alcohol. Hazard class: 3, Flammable liquid. UN number: UN1219.

N/A = Not applicable

SECTION 15 — REGULATORY INFORMATION

TSCA-listed, EINECS-listed (200-661-7), RCRA code D001.

SECTION 16 — OTHER INFORMATION

This Safety Data Sheet (SDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific, Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the science instructor to be in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of Flinn Scientific, Inc. and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).

Consult your copy of the *Flinn Science Catalog/Reference Manual* for additional information about laboratory chemicals.

Revision Date: August 11, 2014

© 2014 Flinn Scientific, Inc. All Rights Reserved. PAGE 2 OF 2

Laboratory setup showing an Erlenmeyer flask, graduated cylinder, bottle of 99% isopropyl alcohol, and hot plate, with a lab coat and goggles in use

Safety note: The SDS is an important document and is crucial to your safety in the lab.

20. Confirm your understanding of the SDS's purpose

Before finishing your review, confirm that you understand what the SDS is telling you: the properties of the chemical, its hazards, and how to protect yourself from those hazards.

SECTION 12 — ECOLOGICAL INFORMATION

Data not yet available.

SECTION 13 — DISPOSAL CONSIDERATIONS

Please review all federal, state and local regulations that may apply before proceeding.
Flinn Suggested Disposal Method #18a is one option.

SECTION 14 — TRANSPORT INFORMATION

Shipping name: Isopropyl alcohol. Hazard class: 3, Flammable liquid. UN number: UN1219.

N/A = Not applicable

SECTION 15 — REGULATORY INFORMATION

TSCA-listed, EINECS-listed (200-661-7), RCRA code D001.

SECTION 16 — OTHER INFORMATION

This Safety Data Sheet (SDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific, Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the science instructor to be in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of Flinn Scientific, Inc. and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).

Consult your copy of the *Flinn Science Catalog/Reference Manual* for additional information about laboratory chemicals.

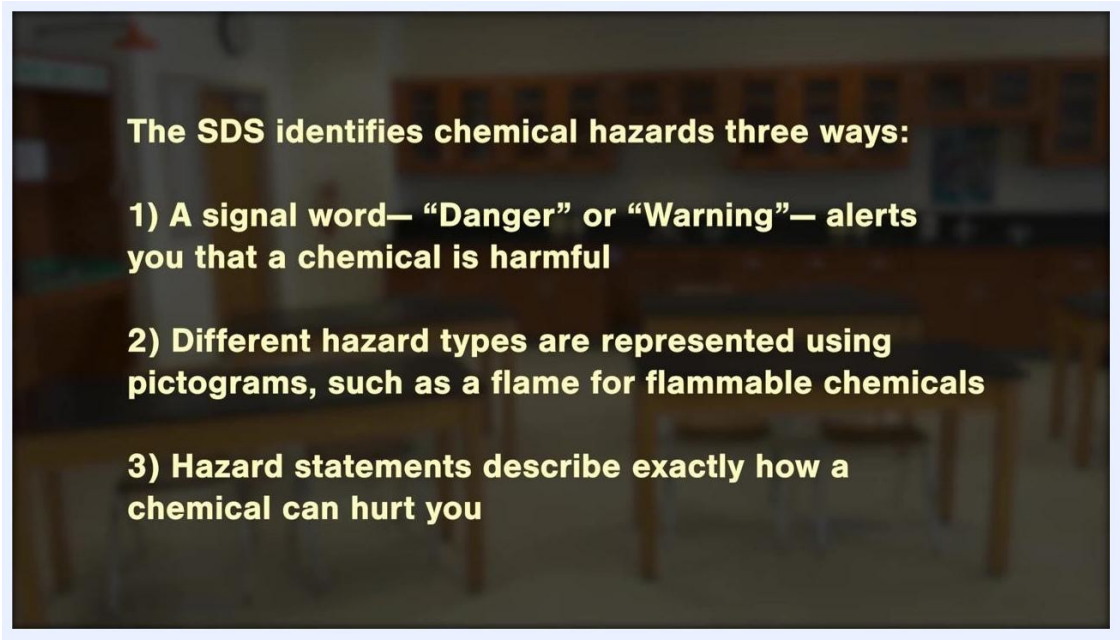
Revision Date: August 11, 2014

© 2014 Flinn Scientific, Inc. All Rights Reserved.

Reference text summarizing that Safety Data Sheets provide information about a chemical's properties, hazards, and protective measures

21. Confirm the three ways hazards are identified

As a final check, confirm you can identify hazards using all three SDS methods: the signal word ("Danger" or "Warning") alerts you that a chemical is harmful; pictograms represent specific hazard types, such as a flame for flammable chemicals; and hazard statements describe exactly how the chemical can hurt you.



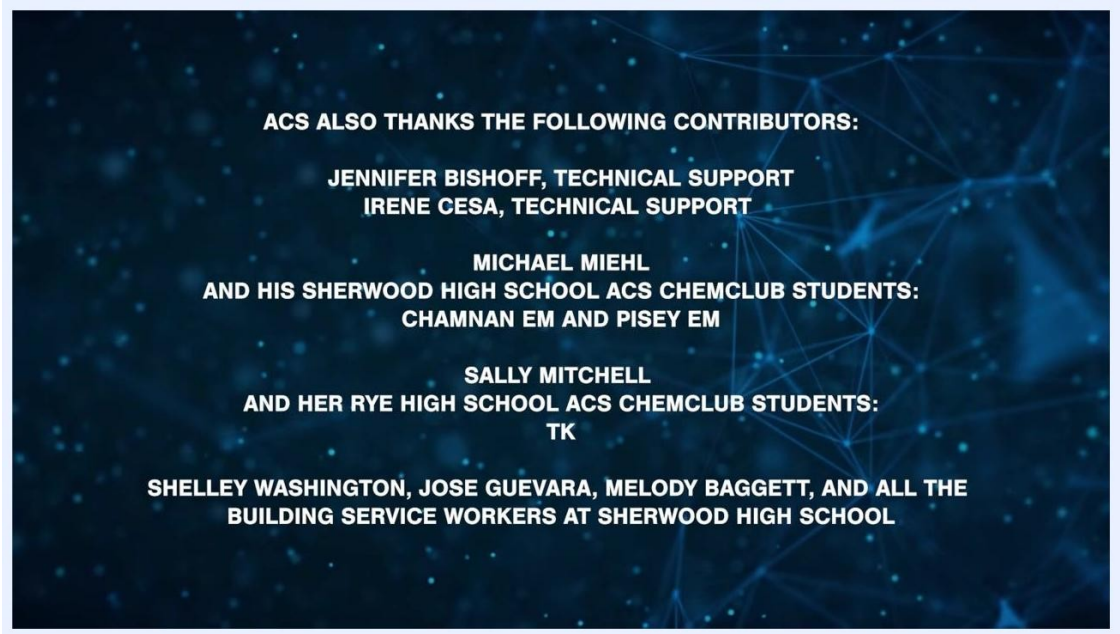
Reference text summarizing the three ways an SDS identifies chemical hazards: signal word, pictograms, and hazard statements

Verification and summary

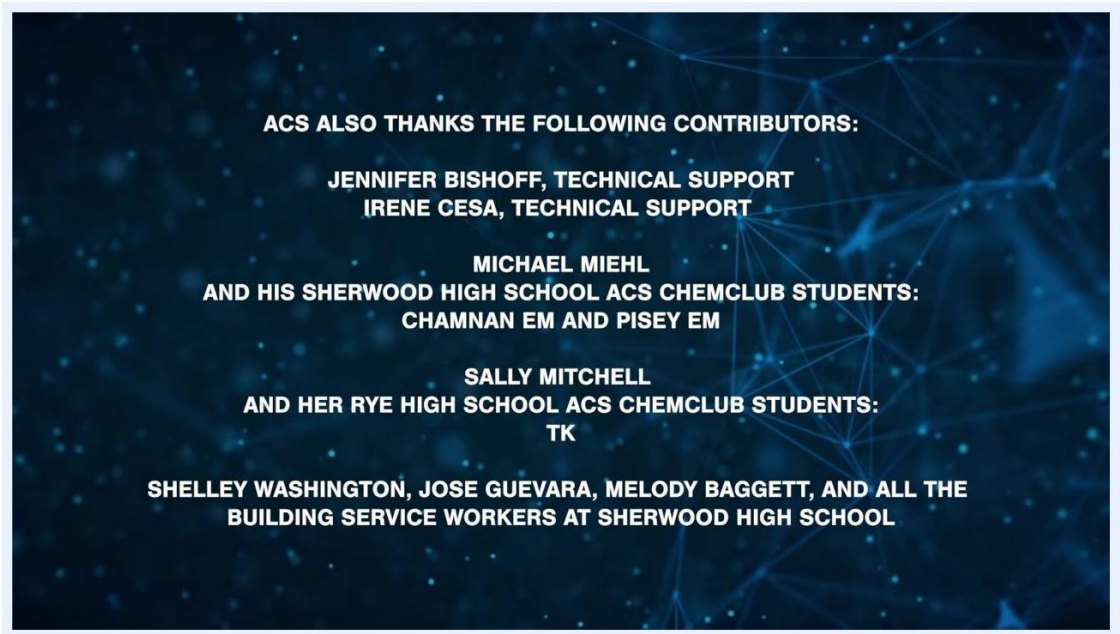
Before working with any chemical, confirm that you have completed the following:

- Located the correct SDS matching the chemical name on your container
- Identified the manufacturer, emergency contact, signal word, pictograms, and hazard statements
- Reviewed the chemical composition, first aid measures, and toxicological information
- Applied the required PPE and handling, storage, and exposure control guidance
- Confirmed the transport, regulatory, and disposal requirements

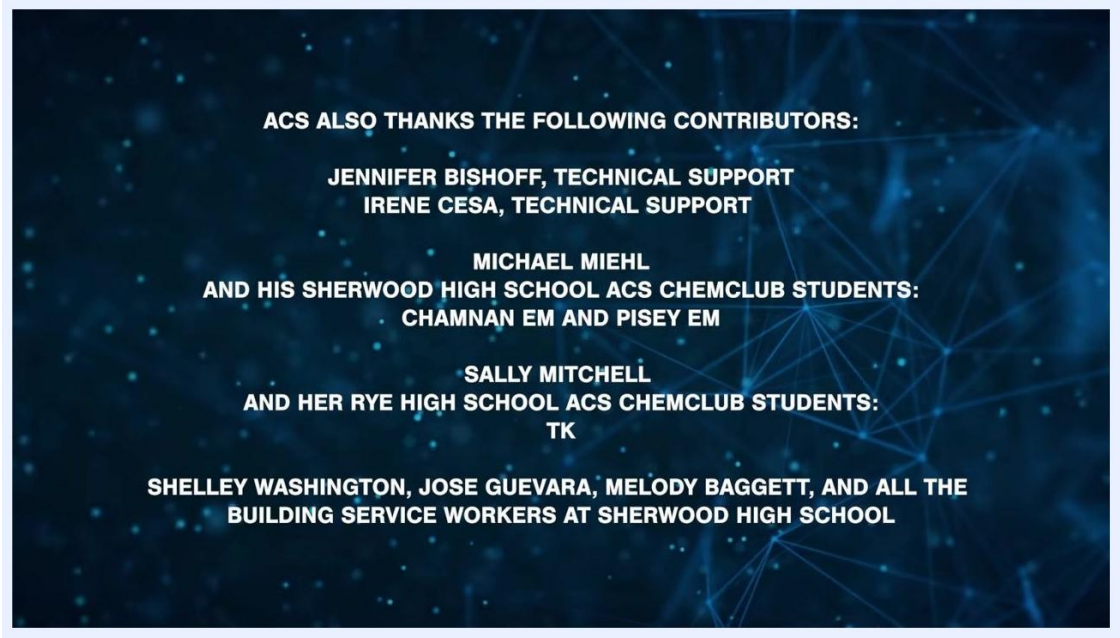
Always consult the SDS before working with any chemical, and follow all disposal, transport, and regulatory guidelines as specified. Understanding how to read a Safety Data Sheet ensures you recognize chemical hazards and can protect yourself and others in the laboratory.



Acknowledgement slide thanking Jim Blizzard for his contribution to chemical safety resources



Acknowledgement slide listing contributors and supporters for the safety resources



Final acknowledgement slide with contributors and a "Thank you" message

End credits screen listing executive producer, host, sound mixer, director & editor, camera, and production assistants, with a digital blue background

Black screen with white text: "© 2019 American Chemical Society. All Rights Reserved."