



# Sign-in-Sheet

**SUBJECT: PROCESS SAFETY MANAGEMENT**  
(week 1)

I the undersigned Instructor/Supervisor hereby certify that a meeting was held on \_\_\_\_ / \_\_\_\_ / \_\_\_\_, at the  
(City & State) \_\_\_\_\_ location.

Instructor/ Supervisor: \_\_\_\_\_ Signature \_\_\_\_\_

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## MONTHLY REFRESHER TRAINING

Process Safety Management

December Week 1 — Taking The Field



### 1. Employee Involvement — TEAM

HUDDLE Safety talks, JHAs, pre-job briefs, and observations. Everyone participates. Everyone has a voice. A strong huddle prevents a bad play.

### 2. Process Safety Information —

SCOUTING REPORT Know your opponent: chemical behavior, flammability, reactivity, corrosivity, safe limits, incompatibilities. You don't run the play unless you know the field.

### 3. Process Hazard Analysis — FILM STUDY

Learn from past failures, near misses, breakdowns, and "what-if" scenarios. PHAs expose how the opponent has beaten teams before. Film study prevents repeat losses.

### 4. Operating Procedures — PLAY CALLS

Written, step-by-step instructions for how to do the job safely. If the play changes mid-game, call timeout — don't improvise. The playbook exists so no one runs the wrong route.

### 5. Training — PRACTICE DRILLS

Repetition builds instinct. Instinct builds confidence. Confidence keeps you calm when the field gets loud. Every player must know their assignment.

### 6. Contractor Safety — SPECIAL TEAMS

We run the hardest, highest-risk plays. We must know the hazards, the boundaries, and the rules of each PSM zone. No solo plays — always coordinated. Special Teams wins or loses the game in seconds.

A normal jobsite becomes a PSM field the moment the chemical chameleons show up in force — when enough of them are stored, pumped, or moved to cross OSHA's threshold quantity. Once those quantities are hit, the stadium changes. New rules apply. New plays must be run. The field becomes high-hazard territory identified as a PSM area.

Hexane morphs into the Sprinter — low, invisible vapor already downfield before a rookie notices the snap. Sulfuric acid shifts into the Lineman — forcing through steel and generating heat with every move. Pressure systems morph into the Blitzbacker — quiet one moment, explosive the next.

And these aren't the only Chemical Chameleons. There are more, each with their own tendencies, reactions, and formations. Just image Space Jam with their monstrous appearance standing over the All Star.

Once this team takes the field, the stadium fills with players and plays. Operations running the offense, engineering holding the defensive line, fire watch scanning for sparks, gas testers reading the air, and contractors lined up inches from the hazard.

That's why OSHA requires a playbook. That's why this is a PSM field in which there are 14 elements, each designed to identify, control and prevent catastrophic chemical releases.

### WHO IS ON THE FIELD

**Chemical Chameleons** — Opposing Team — Their behavior shapes every play

**Operations** — Offense — Runs the process safely

**Engineering/Safety** — Defense — Build and maintain safeguards

**Contractors/Maintenance** — Special Teams — Execute high-risk plays (repairs, shutdowns, hot work)

### THE PLAYBOOK EVERY PLAYER CARRIES

Once the chemical chameleons take the field, the stadium hands out the official playbook to everyone — **operators, engineering, fire watch, gas testers, and contractors stepping onto the turf.** OSHA requires this playbook and requires it to be followed.

### Inside the PSM playbook you'll find:

The SOPs that tell us exactly how each play is supposed to run. The permits that decide when Special Teams enter the formation. The isolations and blinds that lock Chemical Chameleons in place during work. The emergency play to call when a Chameleon breaks formation. The worst-case scenario play that's written long before the game starts

**On a PSM field, success isn't about improvising. It's about running the plays exactly as written.**

## **POSSESSION — THE ONLY THING THAT DECIDES THE GAME**

Possession = control of the process.

If we keep possession: pressure stays steady, vapors stay contained, temperatures stay right, equipment behaves, chameleons stay boxed in.

If they take possession: fire, explosion, toxic release, injury, shutdown, catastrophic consequences.

There is no next drive. No redo. No second half.

We protect possession because they know what the chameleons can do with the ball.

### **WHAT WE MUST KNOW**

Contractors work closest to the Chemical Chameleons. So we MUST know what the PSM is telling us.

- **What we're dealing with** — “What chemical is here? How does it move? How does it change form? What sets it off?”
- **How it reacts when things break down** — Some chameleons move low. Some go airborne. Some explode with heat. Some corrode steel quietly. Some release stored energy in one violent motion.
- **How we hold the line** — Mechanical Integrity is reading the signs the chameleons give off.
- **How we work around them safely** — isolations, blinds, lockout, ventilation, gas testing, PPE, Hot Work permits.

### **WHEN THE FIELD SHIFTS — RECOGNIZING THE BLITZ**

Pressure creeps. A smell appears. Vapor flickers. A pump tone changes. A single alarm chirps.

**Yellow flag** = pause the play.

**Red flag** = play over, clear the field, run the two-minute drill described in the PSM.

### **PROTECTING POSSESSION**

Never hand the ball to someone who doesn't know the playbook. (The PSM)

We know where these locations are and what's in there. If you are ever unsure of the PSM areas where you are working, ask your supervisor!

We are the ringers on a PSM field. We run the plays with discipline. We read the formations early. We protect possession. We throw the flag when something shifts. We execute the two-minute drill when needed.

**And we walk off the field safely because that is the win that counts.**

**7. Pre-Startup Safety Review — PRE-GAME WARMUP** Before a new or modified system starts, everything must be checked: equipment, communication, isolations, valves, guards. No kickoff until the field is ready.

**8. Mechanical Integrity — STRENGTH & CONDITIONING** Inspect, test, repair, and maintain equipment: pumps, lines, tanks, hoses, supports, sensors, reliefs. If something is worn, corroded, or vibrating wrong—the opponent sees that weakness too.

**9. Hot Work Permits — SIGNAL FROM THE SIDELINE** No sparks without the signal: gas testing, authorization, fire watch. Hot work changes the entire field instantly. One missed signal can hand the ball to the opponent.

**10. Management of Change — FORMATION SHIFT** When equipment, chemicals, or procedures change — the whole play changes. Stop, regroup, reassess. New formation = new risks = new responsibilities.

**11. Incident Investigation — POST-GAME FILM REVIEW** Break down what went wrong, why it happened, and how the opponent got through. Learn the lesson, update the playbook, and don't run the same mistake twice. Every loss teaches the next victory.

**12. Emergency Planning & Response — TWO-MINUTE DRILL**  
The emergency play is already written in the PSM. When the **red flag** flies, we don't improvise — we follow the plan. This play is about calm, discipline, and life safety.

**13. Compliance Audits — SEASON REVIEW**  
Check the plays, check the performance, check the discipline. Are we following the playbook? Are the plays still good? Championship teams review their season.

**14. Trade Secrets — PLAYBOOK SECURITY**  
Every worker has the right to know the hazards, limits, and risks associated with the process. Hazard knowledge is not optional — it's required. You can't run plays from a sealed playbook.



# Sign-in-Sheet

## SUBJECT: SDS PICTOGRAM REVIEW (WEEK 2)

I the undersigned Instructor/Supervisor hereby certify that a meeting was held on \_\_\_\_ / \_\_\_\_ / \_\_\_\_, at the  
(City & State) \_\_\_\_\_ location.

Instructor/ Supervisor: \_\_\_\_\_ Signature \_\_\_\_\_

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**MONTHLY REFRESHER TRAINING**  
**SDS Pictogram Review**  
**DECEMBER WEEK 2 – SDS RECRUITING REVIEW**



| #     | Section                                           | Football Terms         | Why It Matters                                                                                  |
|-------|---------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------|
| 1     | Identification                                    | Jersey & Team Info     | Product name, manufacturer, emergency contact.                                                  |
| 2     | Hazard Identification                             | Combine Results        | Lists hazards and pictograms—how this “player” performs under stress and gives the signal word. |
| 3     | Composition / Ingredients                         | Team Roster            | What’s inside, who this player runs with.                                                       |
| 4     | First Aid Measures                                | Trainer’s Instructions | Immediate response to exposure.                                                                 |
| 5     | Fire-Fighting Measures                            | Defensive Play Call    | Proper extinguisher class and isolation steps.                                                  |
| 6     | Accidental Release Measures                       | Fumble Recovery Plan   | Contain and clean spills safely.                                                                |
| 7     | Handling & Storage                                | Locker Assignment      | Correct storage and separation.                                                                 |
| 8     | Exposure Controls / PPE                           | Protective Gear        | Uniform requirements                                                                            |
| 9     | Physical & Chemical Properties                    | Player Metrics         | Flash point, vapor pressure, density.                                                           |
| 10    | Stability & Reactivity                            | Temper Rating          | What it reacts with; how volatile it gets.                                                      |
| 11    | Toxicological Info                                | Injury History         | Health effects from exposure.                                                                   |
| 12–15 | Environmental / Disposal / Transport / Regulatory | League Rules           | Travel, disposal, and compliance details.                                                       |
| 16    | Other Info                                        | Coach’s Notes          | Revision date — review when a supplier changes.                                                 |

Every chemical has a stat line, now respect the data.  
**THE SCOUTING REPORT: WHAT A SDS IS!** In football, no coach takes the field without reviewing the scouting report. You study your opponents. You study their strengths, weaknesses, and tendencies. Winning starts with knowing what you’re up against. In the safety world, that scouting report is called the Safety Data Sheet/

The 16 Sections of an SDS = Your Scouting Data.  
 A SDS tells you everything about a chemical before you step onto the field.

- What it’s made of
- How dangerous it is
- How it reacts
- How to protect yourself if things go wrong

**SDS Signal Word** – Coach’s Tone on the Scouting Report  
 Every SDS uses one — and only one — Signal Word to tell you how severe the hazard is. There are only two options:

● **DANGER** – Highest Hazard Level - Used for chemicals that can cause severe burns, immediate toxicity, explosions, rapid fire spread, or irreversible damage.

Football Translation: Full Blitz — maximum pressure; one mistake equals big consequences.

● **WARNING** – Moderate Hazard Level - Used for chemicals that can cause irritation, dizziness, reversible health effects, mild burns, or harm with repeated exposure.

Football Translation: Zone Coverage — threat is real but controlled; avoid sloppy mistakes.

Summary: DANGER = Most severe hazard (“full blitz”). WARNING = Serious but manageable (“zone coverage”).

**Your Questions Before the game can really be broken down into four parts:**

| Question                     | SDS Section                                                   | Purpose                                                      |
|------------------------------|---------------------------------------------------------------|--------------------------------------------------------------|
| Who are you playing against? | Sections 1–3 (Identification, Hazards, Composition)           | Tells you what the chemical is and what it can do.           |
| How can you get hurt?        | Sections 4–8 (First Aid, Fire, Accidental Release, PPE)       | Explains exposure routes, health risks, and protection.      |
| What happens under pressure? | Sections 9–10 (Physical/Chemical Properties, Stability)       | Shows flammability, flash points, reactivity, and stability. |
| What’s the game plan?        | Sections 11–16 (Toxicology, Disposal, Transport, Regulations) | Teaches safe storage, disposal, and transport.               |

## Pictograms - THE HALL OF FAME ROSTER

Before you even read half the SDS, your eyes should go straight to the pictograms. These are the chemical's position icons — quick visuals that tell you exactly what kind of "player" you're dealing with. Every SDS uses the same set of GHS symbols, and each one signals a different threat level: flammable, toxic, corrosive, reactive, and more.

To make them easier to remember, here's the Hall of Fame roster — the football legends whose playing style mirrors how each hazard behaves on the field.

| Every chemical play is unique                                                                                          | Hall of Fame Player                        |                                                                                     | Why They're Dangerous                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Flame (Flammable) -</b> Flammable liquids, gases, and vapors ignite easily. One spark can cause fire.               | <b>Bo Jackson</b><br>Raiders               |    | Bo Jackson was <b>instant acceleration</b> . No buildup, no warm-up, just explosive power the moment the ball touched his hands. Flammables behave the same way: <b>One spark, one static pop, one hot surface — and they're gone.</b> |
| <b>Flame Over Circle (Oxidizer)</b> Oxidizers intensify fire and make other materials burn hotter.                     | <b>Barry Sanders</b><br>Detroit Lions      |    | Barry Sanders took small plays and exploded them into highlights. Oxidizers do the same — they turn a small flame into a raging reaction, amplifying everything around them.                                                           |
| <b>Exploding Bomb (Explosive / Reactive)</b> Explosive or reactive chemicals can detonate suddenly and violently.      | <b>Brett Favre</b><br>Green Bay Packers    |    | Brett Favre was the ultimate boom-or-bust QB — unpredictable, high-energy, and capable of massive game-changing plays in an instant. Explosive hazards behave the same way: stable one moment, total detonation the next.              |
| <b>Corrosion (Corrosive to Skin/Metal)</b> Corrosive chemicals burn skin, eyes, and eat through metal and PPE.         | <b>Reggie White</b><br>Packers/<br>Eagles  |   | Reggie White bulldozed through protection like it wasn't there. Corrosives do the same — relentlessly eating through barriers and equipment.                                                                                           |
| <b>Gas Cylinder (Compressed Gas)</b> Compressed gas can explode if dropped, heated, or punctured.                      | <b>Troy Polamalu</b><br>Steelers           |  | Polamalu was calm before the snap, then launched like a missile. Compressed gas looks harmless until pressure releases — then all stored energy hits at once.                                                                          |
| <b>Skull and Crossbones (Acute Toxicity)</b> Highly toxic — can cause serious or fatal effects quickly.                | <b>Brian Urlacher</b><br>Chicago Bears     |  | Urlacher ended plays instantly — direct, decisive, no build-up. Acute toxins strike the same way: exposure leads to fast, severe consequences.                                                                                         |
| <b>Health Hazard (Chronic)</b> Chronic hazards cause long-term damage: cancer, organ damage, fertility issues.         | <b>Peyton Manning</b><br>Colts/<br>Broncos |  | Peyton didn't win with one big hit — he wore you down with precision over time. Chronic hazards do the same: small exposures add up into major long-term harm.                                                                         |
| <b>Environmental Hazard</b> Harms waterways, wildlife, soil, and ecosystems — long-term impact.                        | <b>Ray Lewis</b><br>Baltimore Ravens       |  | Ray Lewis didn't just affect one player — he affected the entire field environment. Environmental hazards have that same field-wide, long-term influence.                                                                              |
| <b>Exclamation Mark (Irritant)</b> Causes irritation: coughing, dizziness, skin rash, eye burn, or allergic reactions. | <b>Hines Ward</b><br>Pittsburgh Steelers   |  | Hines Ward was the ultimate irritant — annoying, distracting, always in your way. Irritant hazards won't kill you, but they ruin your day and cause mistakes.                                                                          |



# Sign-in-Sheet

## SUBJECT: EXTRACTION PROCESS & HEXANE SAFETY (WEEK 3)

I the undersigned Instructor/Supervisor hereby certify that a meeting was held on \_\_\_\_ / \_\_\_\_ / \_\_\_\_, at the  
(City & State) \_\_\_\_\_ location.

Instructor/ Supervisor: \_\_\_\_\_ Signature \_\_\_\_\_

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**MONTHLY REFRESHER TRAINING**  
**EXTRACTION PROCESS & HEXANE SAFETY**  
**December Week 3 — When the Sprinter Takes the Field**



**THE PROCESS**

**1. Extraction Process**

In industrial processing, extraction uses a solvent—often hexane—to separate oil from material. Hexane dissolves oils, the mixture is separated, and the hexane is recovered and reused. This is a hazardous process because hexane is highly flammable and can form explosive mixtures with air.

**Extraction Broken Down**

1. Material is washed with warm hexane.
2. Hexane dissolves the oil and carries it away.
3. Hexane evaporates, is captured, cooled, and reused.

**2. Why This Area Falls Under PSM**

If a facility stores or uses more than OSHA's threshold quantity of hexane, the process becomes regulated under Process Safety Management (PSM). This requires written procedures, mechanical integrity, training, hot work controls, emergency planning, and SDS access.

**THE SPRINTER — HEXANE'S ROLE ON A PSM FIELD**

Once hexane steps onto the field, it becomes the Sprinter:

- Fast: Already halfway downfield before someone notices
- Flammable: Highly flammable in presence of open flames and sparks, of heat
- Low to the ground (Heavier than air –Hexane will sink when exposed to the atmosphere.)
- Invisible

This makes extraction efficient — and extremely high-hazard. Hexane vapor is flammable, heavy, and able to travel to ignition sources.



**PSM FIELD RULES — HOW WE KEEP POSSESSION**

|                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1. REPORT ANY FIELD SHIFT</b><br/> Unusual odors, leaks, noises, vapor movement, alarms — these are signs the Chameleons are changing formation.<br/> <b>Yellow flag:</b> pause the play.<br/> <b>Red flag:</b> stop the work and clear the field.</p>                                                                                                             | <p><b>3. HOT WORK = SPECIAL TEAMS ONLY</b><br/> Permits are required for welding, cutting, grinding, torch work, or any spark-producing tools. Special Teams plays are run only when the playbook calls for it, the atmosphere is tested, fire watch is posted, and safeguards are in place.</p> |
| <p><b>2. ELECTRONICS STAY ON THE BENCH</b><br/> In extraction zones, unless approved and intrinsically safe, keep the following out:<br/> - Cell phones - Smart watches - Earbuds<br/> - Key fobs - Cameras- Battery tools<br/> - Non-IS flashlights or radios<br/> Any battery-powered device can create a tiny spark. Hexane vapor needs almost nothing to ignite.</p> | <p><b>4. NO SPARK-PRODUCING ITEMS WITHOUT AUTHORIZATION</b><br/> No lighters, matches, cigarettes, vapes, grinders, saws, welders, or tools capable of producing friction sparks, electrical arcs, or static discharge.</p>                                                                      |

**POSSESSION — THE ONLY THING THAT DECIDES THE GAME**

Keeping possession means vapors contained, pressures steady, temperatures controlled, and no sparks. If the Chemical Chameleons take possession: fire, explosion, toxic release, shutdown, no second half.

**n-Hexane Safety Data Sheet (SDS)**

SDS #: 388.5

Revision Date: October 20, 2015

Save SDS to Your Library

## SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### n-Hexane

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

Chemtrec Emergency Phone Number: (800) 424-9843

#### Signal Word

**DANGER**

## 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: Aspiration hazard (Category 1). May be fatal if swallowed and enters airways (H304).

Hazard class: Skin corrosion or irritation (Category 2). Causes skin irritation (H315).

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).

Hazard class: Reproductive toxicity (Category 2). Suspected of damaging fertility or the unborn child (H361). Obtain special instructions before use (P201). Do not handle until all safety precautions have been read and understood (P202). Use personal protective equipment as required (P281).

Hazard class: Specific target organ toxicity, repeated exposure (Category 2). May cause damage to organs through prolonged or repeated exposure (H373). Do not breathe mist, vapors or spray (P260).

#### Pictograms



## SECTION 3 — COMPOSITION, INFORMATION ON INGREDIENTS

| Component Name | CAS Number | Formula                                                         | Formula Weight |
|----------------|------------|-----------------------------------------------------------------|----------------|
| n-Hexane       | 110-54-3   | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>4</sub> CH <sub>3</sub> | 86.18          |

## SECTION 4 — FIRST AID MEASURES

**If exposed or concerned:** Get medical advice or attention (P308+P313).

**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.

**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).

**If swallowed:** Rinse mouth. Do not induce vomiting. Call a POISON CENTER or physician if you feel unwell.

## SECTION 5 — FIRE FIGHTING MEASURES

Class IB flammable liquid.

Flash point: -22 °C Flammable limits: Upper 7.5%

Lower: 1.1% Autoignition Temperature: 225 °C

When heated to decomposition, may emit toxic fumes.

In case of fire: Use tri-class dry chemical fire extinguisher (P370+P378).

**NFPA Code H-2 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 #3. Store with hydrocarbons, oils, esters and aldehydes. Store in a cool, dry place. Keep container tightly closed (P233). Keep cool (P235). Ground or bond container and receiving equipment (P240). Use explosion-proof electrical and ventilating equipment (P241). Use only non-sparking tools (P242). Take precautionary measures against static discharge (P243). Use only in a hood or in a well-ventilated area (P271).

## SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

Wear protective gloves, protective clothing, and eye protection (P280). Wash thoroughly after handling (P264). Use only in a hood or in a well-ventilated area (P271).

Exposure guidelines: TLV 50 ppm (ACGIH); PEL 500 ppm (OSHA); IDLH 1100 ppm

## **SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

Clear, colorless liquid. Weak, characteristic odor.  
Soluble in alcohol and ether. Not miscible with water.  
Explosion limits: 1.2 vol% (lower) 7.4 vol% (upper)  
Boiling point: 69 °C Melting point: -95 °C  
Flash point: -23 °C Ignition temp: 240 °C  
Refractive index: 1.375  
Specific gravity: 0.6591 Density at 20 °C: 0.659 g/cm<sup>3</sup>  
Vapor density: 3 Vapor pressure at 20 °C: 160 hPa

## **SECTION 10 — STABILITY AND REACTIVITY**

Avoid heat, sunlight, and ignition sources. Reacts with oxidizing agents.  
Shelf life: Good.

## **SECTION 11 — TOXICOLOGICAL INFORMATION**

Acute effects: Eye, skin, and mucous membrane irritant.  
Headache, peripheral neuropathy, dizziness, dermatitis.  
Chronic effects: Nervous system and reproductive

system damage.

Target organs: Skin, PNS, lung, kidneys, liver, brain, reproductive system.

ORL-RAT LD<sub>50</sub>: 25 g/kg

IHL-RAT LC<sub>50</sub>: 48,000 ppm/4H

SKN-RBT LD<sub>50</sub>: N.A.

## **SECTION 12 — ECOLOGICAL INFORMATION**

Toxic to aquatic life. EC50 Daphnia 3878 mg/L/48H

## **SECTION 13 — DISPOSAL CONSIDERATIONS**

Please review all federal, state and local regulations that may apply before proceeding.

Flinn Suggested Disposal Method #18b is one option.

## **SECTION 14 — TRANSPORT INFORMATION**

UN number: UN1208 Shipping name: hexanes. Hazard class: 3, Flammable liquids. Packing group: II

## **SECTION 15 — REGULATORY INFORMATION**

TSCA listed.

## **SECTION 16 — OTHER INFORMATION**

This Safety Data Sheet (SDS) is for guidance and is based upon information and tests believed to be reliable.

**Revision Date:** October 20, 2015



# Sign-in-Sheet

**SUBJECT: COLD STRESS  
(WEEK 4)**

I the undersigned Instructor/Supervisor hereby certify that a meeting was held on \_\_\_\_ / \_\_\_\_ / \_\_\_\_, at the  
(City & State) \_\_\_\_\_ location.

Instructor/ Supervisor: \_\_\_\_\_ Signature \_\_\_\_\_

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|----|---------------|------------|-------|--|---------------|------------|-------|
| 1  |               |            | 21    |  |               |            |       |
| 2  |               |            | 22    |  |               |            |       |
| 3  |               |            | 23    |  |               |            |       |
| 4  |               |            | 24    |  |               |            |       |
| 5  |               |            | 25    |  |               |            |       |
| 6  |               |            | 26    |  |               |            |       |
| 7  |               |            | 27    |  |               |            |       |
| 8  |               |            | 28    |  |               |            |       |
| 9  |               |            | 29    |  |               |            |       |
| 10 |               |            | 30    |  |               |            |       |
| 11 |               |            | 31    |  |               |            |       |
| 12 |               |            | 32    |  |               |            |       |
| 13 |               |            | 33    |  |               |            |       |
| 14 |               |            | 34    |  |               |            |       |
| 15 |               |            | 35    |  |               |            |       |
| 16 |               |            | 36    |  |               |            |       |
| 17 |               |            | 37    |  |               |            |       |
| 18 |               |            | 38    |  |               |            |       |
| 19 |               |            | 38    |  |               |            |       |
| 20 |               |            | 40    |  |               |            |       |

## MONTHLY REFRESHER TRAINING

### COLD STRESS

#### December Week 4 — Warmups

### THE COLD CHANGES THE GAME

Cold weather is one of the most underestimated hazards on a job site. It affects grip strength, reaction time, decision-making, and balance.

#### Key Statistics:

- Cold environments cause a 14–20% decrease in hand dexterity.
- Grip strength can drop by 25–30% when fingers are cold.
- Over half of cold-related incidents happen within the first hour of exposure.
- Wind chill can make exposed skin freeze in as little as 10 minutes at extreme temps.

### WHAT COLD STRESS DOES TO YOUR BODY

Cold stress happens when your body loses heat faster than it can produce it. This leads to:

- Loss of coordination
- Slow reflexes
- Poor grip
- Mental fog or confusion
- Increased slips and falls
- Strain on the heart

When the cold cuts in and the wind won't quit,  
That's when sharp crews gear up and commit.  
Watch your buddy close, keep your warmth in mind  
Cold stress hits fast, so don't get left behind.

## Protect Yourself from the Cold



**You are at risk if you work outside or in cold conditions**



### Dress Appropriately

Wear clothes meant for cold, wet, and windy conditions such as:

- ❄️ Loose-fitting layers
- ❄️ Hats, socks, shoes, and gloves
- ❄️ Outerwear that will keep you dry



Extreme exposure to the cold can eventually lead to **hypothermia**.

### Drink Warm Beverages & Take Breaks



- ❄️ Take frequent breaks in heated areas, if possible.
- ❄️ Drink plenty of warm, sweet beverages (sugar water, sports drinks).
- ❄️ **AVOID** caffeine (in coffee, tea, sodas, or hot chocolate) and alcohol.

### Know the Warning Signs

#### Health Problems:



Trench Foot



Frostbite



Hypothermia

#### Hypothermia—Don't ignore the signs!



Uncontrollable Shivering



Slurred Speech



Clumsiness



Fatigue



Confusion

### Hypothermia is a medical emergency

**Call 911**

Getting help can be the difference between **life** and **death**.



You are at a higher risk if you take certain medications, are in poor physical condition, or suffer from illnesses such as diabetes, hypertension, or cardiovascular disease.

**Work in pairs so that you and a co-worker can spot danger signs in each other.**

❄️ **Follow these tips and stay safe in the cold.** ❄️

## **THE BIG THREE: WARNING SIGNS**

### **1. Hypothermia**

#### Early Signs:

- Shivering
- Pale or cold skin
- Numbness
- Slow thinking
- Trouble with fine motor tasks

#### Advanced Signs:

- Slurred speech
- Confusion
- Stumbling
- Slow movements
- Shivering stops (emergency)

### **3. Trench Foot**

#### Early Signs:

- Tingling or burning
- Redness or blotchy patches
- Swelling
- Numbness
- Cramping
- "Prune-like" skin

Warm water helps maintain core temperature and supports circulation.

- Keeps blood flowing to fingers and toes
  - Prevents cold-induced cramping
  - Reduces shivering intensity
  - Rehydrates the body faster than cold water
- Warm water = hydration + internal heat support.

Sports drinks provide fast-acting energy and replace minerals lost through cold exposure.

- Replaces electrolytes (sodium, potassium, magnesium)
  - Restores muscle function
  - Provides simple carbs for immediate heat and energy
  - Reduces fatigue and keeps reaction time sharp
- Sports drinks = fuel your body uses instantly.

### **2. Frostbite**

#### Early Signs:

- Redness
- Tingling
- Pins and needles
- Skin feels firm

#### Advanced Signs:

- Waxy or bluish skin
- Stiff skin
- Complete numbness
- Blisters after rewarming

## **HYDRATE**

Cold weather drains your body faster than most people realize. When temperatures drop, the human body burns more calories, uses more energy, and loses hydration more rapidly — even if you don't feel thirsty. To stay safe and maintain performance, workers must hydrate and fuel correctly throughout cold-weather operations.

Electrolytes keep the nervous system functioning correctly.

- Prevent muscle cramping
  - Maintain mental clarity
  - Keep the heart and muscles firing properly
  - Help stabilize body temperature during exposure
- Electrolytes = nerve and muscle protection in the cold.

## **WHAT TO AVOID**

Caffeine (coffee, tea, sodas, energy drinks) increases heat loss and dehydration.

- Speeds up dehydration
- Restricts blood flow to hands/feet
- Causes jitteriness, reducing fine-motor control
- Can worsen cold-induced heart strain

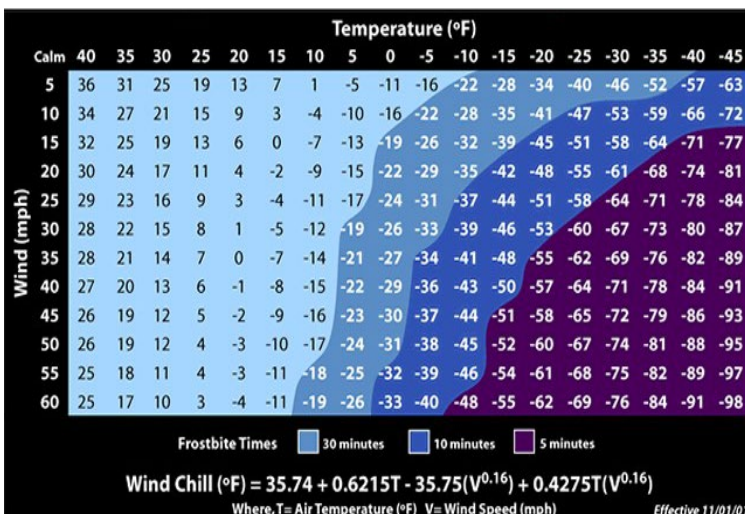
Caffeine + cold = cold hands, poor grip, and faster heat loss.

Alcohol is extremely dangerous in cold weather.

- Drops core temperature rapidly
  - Makes you feel warm while cooling your core
  - Slows reaction time and judgment
  - Increases risk of hypothermia
- Alcohol + cold = a fast-track to medical emergencies.

Energy Drinks combine caffeine, stimulants, and sugars.

- Spike and crash effect leads to fatigue
  - Increase dehydration
  - Strain the heart during cold exposure
  - Reduce coordination and grip strength
- Energy drinks = temporary hype, long-term danger





## A-Lert Construction Yearly Review Test

### PSM Safety

Print Name \_\_\_\_\_ Sign Name \_\_\_\_\_ EE # \_\_\_\_\_  
Date \_\_\_\_\_ Location \_\_\_\_\_  
Instructor \_\_\_\_\_ Circle One PASS or Fail

*[Read each question and then circle the letter of the most correct answer.]*

1. **You are working by a Hexane extractor and see liquid leaking out. What should you do?**
  - a. If it is clear and not a large leak, do nothing. This will not a problem.
  - b. If you know what you are doing, try to snug up the bolts and stop the leak.
  - c. Stop. Get away from the leak and report at once. This could be Hexane leaking creating a health and fire hazard.
2. **If Hexane is leaking, the vapors you can't see may be more dangerous than the liquid because?**
  - a. The fumes are heavier than air so fall downward and accumulate not diluting easily.
  - b. The fumes are lighter than air and may accumulate at the roof levels.
  - c. The vapors will immediately dilute with air being lost needing replaced by the processing equipment.
3. **For the most part PSM safety is completed by the customer. You see a sign that indicates you are about to enter a PSM area. What does this mean for you?**
  - a. Nothing practically. This is the responsibility of the host, not us as contractors
  - b. Only make sure the location is noted on your JHA. You will already be taking safety in to account. Normal work rules will suffice.
  - c. You must know the special rules for the PSM area you are about to enter. This could mean that your normal tools are not allowed or that you need special equipment.
4. **You have training on the hazards of Hexane and know how the wear the PPE for protection. The customer would like you to help leak check hexane equipment. Is this OK?**
  - a. Yes. You know the hazards and have the safety gear. You can do this.
  - b. No. Even with training, the right tools, and safety gear do not work with hexane without approval from A-Lert management.
  - c. Depends solely on your comfort level. If you feel OK doing this then go ahead.
5. **You are in an extraction plant and the LEL meter starts to go into alarm. You know that there is potential for Hexane in the building. What do you need to remember?**
  - a. The amount of Hexane needed to be flammable is also high enough to be hazardous to your health or could displace oxygen. Get out.
  - b. There may be Hexane leaking, make sure you have gloves and a respirator. Continue your task.
  - c. Look around you for visible leaks. If you see nothing continue but stay alert.

Nombre escrito \_\_\_\_\_ Firma \_\_\_\_\_ # de Empl. \_\_\_\_\_

La Fecha \_\_\_\_\_ El Lugar \_\_\_\_\_

Instructor \_\_\_\_\_ *Circle One PASS or Fail*

**Lee cada pregunta y entonces marca con un círculo alrededor de la repuesta correcta**

**1. Trabajas junto a un extractor de hexano y ves que se escapa líquido. ¿Qué deberías hacer?**

- a. Si está claro y no es una fuga grande, no hagas nada. Esto no será un problema.
- b. Si sabes lo que haces, intenta ajustar los pernos y detén la fuga.
- c. Para. Aléjate de la fuga y repórtala de inmediato. Esto podría ser una fuga de hexano que crea un riesgo para la salud y un incendio.

**2. Si hay una fuga de hexano, los vapores que no puedes ver pueden ser más peligrosos que el líquido, ¿por qué?**

- a. Los vapores son más pesados que el aire, así que caen hacia abajo y se acumulan sin diluirse fácilmente.
- b. Los vapores son más ligeros que el aire y pueden acumularse en los niveles del techo.
- c. Los vapores se diluirán inmediatamente con la pérdida de aire y será necesario reemplazarlo con el equipo de procesamiento.

**3. Por la mayor parte de los casos, la seguridad de PSM la realiza el cliente. Ves un letrero que indica que estás a punto de entrar a un área de PSM. ¿Qué significa esto para ti?**

- a. Prácticamente nada. Esta es responsabilidad del anfitrión, no de nosotros como contratistas.
- b. Sólo asegúrate de que la ubicación esté anotada en tu JHA. Ya tendrás en cuenta la seguridad. Las reglas normales de trabajo serán suficientes.
- c. Debes conocer las reglas especiales para el área de PSM a la que estás a punto de entrar. Esto podría significar que tus herramientas habituales no están permitidas o que necesitas equipo especial.

**4. Tienes capacitación sobre los peligros del hexano y sabes cómo usar el EPP para protección. El cliente desea que tú le ayudes a comprobar si hay fugas en el equipo de hexano. ¿Está bien?**

- a. Sí. Conoces los peligros y tienes el equipo de seguridad. Puedes hacerlo.
- b. No. Aun con la capacitación, las herramientas adecuadas y el equipo de seguridad, no trabajes con hexano sin la aprobación de la gerencia de A-Lert.
- c. Depende únicamente de tu nivel de comodidad. Si te sientes bien haciendo esto, adelante.

**5. Estás en una planta de extracción y el contador LEL empieza sonar su alarma. Tú sabes que existe la potencial del hexano en el edificio. ¿Qué necesitas recordar?**

- a. La cantidad de hexano necesaria para ser inflamable también es lo suficientemente alta como para ser peligrosa para la salud o podría desplazar el oxígeno. Sal.
- b. Puede haber una fuga de hexano, asegúrate de tener guantes y un respirador. Continúa tu tarea.
- c. Mira a tu alrededor en busca de fugas visibles. Si no ves nada, continúa, pero mantente alerta.



## A-Lert Construction Yearly Review Test

### PSM Safety

Print Name      KEY      Sign Name      \_\_\_\_\_  
Date      \_\_\_\_\_      Location      \_\_\_\_\_  
Instructor      \_\_\_\_\_      Circle One      PASS      or      Fail

*[Read each question and then circle the letter of the most correct answer.]*

1.    **You are working by a Hexane extractor and see liquid leaking out. What should you do?**
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  - b. There may be Hexane leaking, make sure you have gloves and a respirator. Continue your task.
  - c. Look around you for visible leaks. If you see nothing continue but stay alert.

### **Gestión de seguridad de procesos (PSM)**

PSM es una regulación emitida por OSHA. El propósito de la regulación es prevenir o minimizar las consecuencias de las liberaciones de sustancias químicas peligrosas en una instalación o en el medio ambiente que rodea una instalación. Los productos químicos peligrosos son aquellos que pueden ser tóxicos, reactivos, inflamables, explosivos o una combinación de estas propiedades. Las industrias que manejan productos químicos peligrosos deben desarrollar un programa de PSM eficaz que proteja a los empleados, contratistas y visitantes de las instalaciones. Estas industrias incluyen: petroquímica, farmacéutica, pinturas, adhesivos y selladores, procesamiento de alimentos, productos orgánicos e inorgánicos industriales y fábricas de papel.

### **Elementos del GSP (en ingles se abrevia como PSM)**

Los siguientes 14 elementos son necesarios para el cumplimiento del programa PSM.

#### **1. Participación de los empleados**

Todos los empleados que desempeñan un papel en las operaciones de las instalaciones deben participar en un programa de PSM. Cada uno de los siguientes elementos requiere un equipo de personas competente y experimentado. Idealmente, un equipo debería incluir al menos una persona que se especialice en el proceso específico que se usa.

#### **2. Información de seguridad del proceso (en ingles se abrevia como PSI)**

El elemento PSI requiere que los empleadores recopilen y documenten información sobre sustancias químicas altamente peligrosas (HHC en inglés para químicas altamente peligrosas) antes de realizar un análisis de peligros del proceso. La información debe ser accesible para todos los empleados para que comprendan los riesgos relacionados con HHC que pueden enfrentar durante el trabajo.

#### **3. Análisis de peligros del proceso (en ingles se abrevia como PHA)**

Una PHA la realiza un equipo de expertos en ingeniería y mantenimiento que pueden identificar, evaluar y controlar los peligros. Las PHAs se pueden realizar utilizando varias técnicas, que incluyen:

- Análisis de "qué pasaría si"
- Métodos de lista de verificación
- Estudios de los peligros y el manejo
- Análisis de modos y efectos de fallas
- Análisis de árboles de fallas

#### **4. Procedimientos operativos**

Las empresas deben documentar todos los procedimientos operativos que involucran el arranque inicial, las operaciones normales, las operaciones temporales y las paradas de emergencia. Los operadores deben ser conscientes de los límites operativos del proceso, las consecuencias si el proceso se desvía de las condiciones normales y estar preparados para corregir las desviaciones cuando sea necesario.

#### **5. La Capacitación**

Los empleados deben recibir capacitación sobre procedimientos, factores de seguridad y los riesgos para la salud específicos de la tarea laboral.

## **6. Seguridad del contratista**

Las empresas deben evaluar el desempeño de seguridad de un contratista antes de comenzar un proyecto. La responsabilidad de la empresa (cliente) es informar al contratista (tú) de los riesgos potenciales y peligros para la salud relacionados con el proyecto del contratista.

## **7. Revisión de la seguridad del proceso antes de iniciar**

Las empresas deben realizar una revisión de seguridad antes de que las instalaciones nuevas o modificadas comiencen a producir. La revisión de seguridad antes de iniciar confirma que se ha realizado una PHA inicial y que se han cumplido todos los requisitos de los códigos.

## **8. Integridad mecánica**

Se requieren inspecciones de rutina para las principales unidades y equipos de proceso, como recipientes a presión, tanques de almacenamiento, sistemas de tuberías, sistemas de alivio y ventilación, sistemas de parada de emergencia, sistemas de control (por ejemplo, dispositivos de monitoreo y sensores) y bombas para asegurarse de que la integridad mecánica del componente cumple con los requisitos.

## **9. Permiso de trabajo en caliente**

Este mandato requiere permisos de trabajo en caliente para el personal que realiza operaciones de alta temperatura en equipos como soldadura, corte y esmerilado.

## **10. Gestión del cambio**

Una empresa necesita tener un proceso organizado y eficiente para gestionar los cambios de procedimiento relacionados con los productos químicos, la tecnología y/o los equipos del proceso.

## **11. Investigación de incidentes**

Se deben realizar investigaciones sobre incidentes que resultaron (o podrían haber resultado) en una liberación catastrófica de HHC. Las investigaciones de incidentes deben informar:

## **12. Planificación y respuesta a emergencias**

Las empresas deben desarrollar e implementar planes de acción de emergencia para toda la instalación. Los planes de emergencia incluyen procedimientos para mitigar las liberaciones grandes y pequeñas de HHC.

## **13. Auditorías de cumplimiento**

Las personas deben recertificar sus credenciales al menos cada tres años para mantenerse actualizados con las prácticas y la tecnología en evolución. Este elemento también establece que las empresas deben conservar los 2 informes de auditoría de cumplimiento más recientes.

## **14. Secretos comerciales**

Este mandato garantiza que los empleados involucrados en los elementos 2 al 13 tengan acceso a la información sobre el proceso y los riesgos para la salud que puedan encontrar durante el trabajo.

La mayoría de los requisitos de PSM son responsabilidad de nuestros clientes.

***Debemos saber dónde están estos lugares y qué reglas de seguridad debemos seguir dentro de cada área de PSM. Si no está seguro de las áreas de PSM en las que trabajas, ¡pregúntale a tu supervisor!***

## DIRECTRICES DE SEGURIDAD EN LA EXTRACCIÓN

- 1. Reporta todos los incidentes** (Incendios, Derrames, Lesiones, Casi Accidentes, etc....)
- 2. A menos que** lo apruebe la Gerencia, los teléfonos celulares, incluido cualquier dispositivo de grabación, deben permanecer en tu vehículo y no contigo mientras te encuentres en propiedad de la Compañía o del Cliente.
- 3. Se requieren permisos de trabajo en caliente** (sigue los procedimientos específicos del cliente):
  - Soldadura • Corte • Esmerilado • Herramientas productoras de chispas; etc.
- 4. No se permiten equipos que produzcan chispas** en ti o en tu lonchera/caja de herramientas sin permiso:

Prohibido fumar, teléfonos móviles, encendedores, cerillas, controles remotos de entrada sin llave,

No se permiten teléfonos, buscapersonas ni equipos que no sean intrínsecamente seguros (radios, linternas, relojes, etc.).

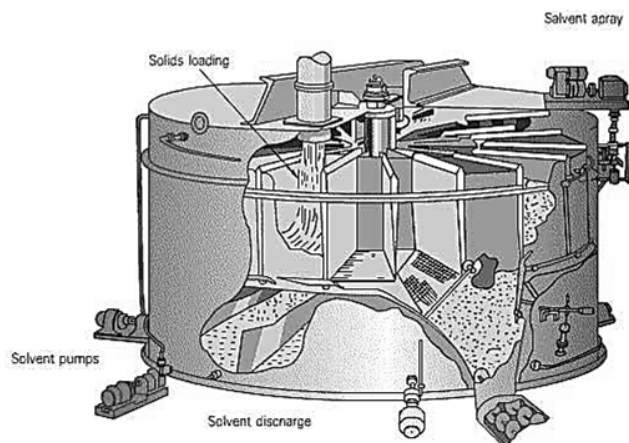
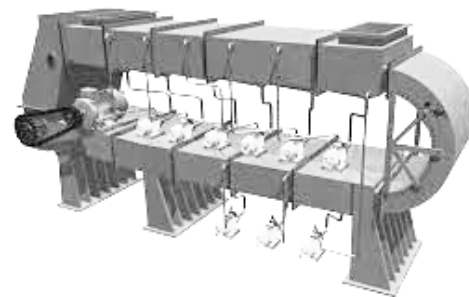
Herramientas/cables eléctricos, herramientas que funcionan con baterías, herramientas/equipos que producen chispas (soldadores, amoladoras/pulidores, baterías no intrínsecamente seguras, etc.)

**No se permite nada que funcione con batería/electricidad o que produzca chispas sin un permiso.**

- 5. Hexano** (consulta la hoja MSDS para obtener información de seguridad detallada)

Propiedades físicas importantes:

- Inflamable: Altamente inflamable en presencia de llamas abiertas y chispas, de calor
- Más pesado que el aire – Ten cuidado; El hexano se hundirá cuando se exponga a la atmósfera.



## Consideraciones de salud importantes:

- **Contacto con los ojos:** Comprueba si hay lentes de contacto y quítalos. Enjuague los ojos inmediatamente con agua corriente durante al menos 15 minutos, manteniendo los párpados abiertos. Obtén atención médica si se produce irritación.
- **Contacto con la piel:** Lava con agua y jabón. Cubre la piel irritada con un emoliente (agente calmante). Obtén atención médica si se desarrolla irritación.
- **Contacto grave con la piel:** Lava con jabón desinfectante y cubre la piel contaminada con una crema antibacteriana. Busca atención médica.
- **Inhalación:** Si se inhala, mueve al aire libre. Si no respira, dé respiración artificial. Si la respiración es difícil, proporciona oxígeno. Obtén atención médica si aparecen síntomas.
- **Inhalación grave:** Evacua a la víctima a un área segura lo antes posible. Afloja la ropa ajustada, como cuello, corbata, cinturón o pretina. Si la respiración es difícil, administra oxígeno. Si la víctima no respira, realiza resucitación boca a boca. Busca atención médica.
- **Ingestión:** NO induzcas el vómito a menos que así lo indique el personal médico. Nunca le des nada por vía oral a una persona inconsciente. Afloja la ropa ajustada, como cuello, corbata, cinturón o pretina. Obtén atención médica si aparecen síntomas.
- **NFPA:** Salud: 2 Inflamabilidad: 3 Reactividad: 0

## n-Hexano

### PELIGRO



Líquido y vapores altamente inflamables. Provoca la irritación de la piel. Puede ser mortal en caso de ingestión o penetración en las vías respiratorias. Puede causar somnolencia o mareos. Se sospecha que perjudica la fertilidad o al feto. Puede provocar daños al sistema nervioso tras inhalación prolongada o repetida.



#### PREVENCIÓN

Mantén alejado del calor, chispas y llamas abiertas. - No Fumes. Mantén el contenedor bien cerrado.

No respire los vapores. Lávate bien las manos y cualquier otra piel contaminada después de la manipulación. Utiliza guantes protectores y protección para los ojos. Úsalo únicamente al aire libre o en un área bien ventilada.



Obtén instrucciones especiales antes de su uso. No lo manipules hasta que se hayan leído y comprendido todas las precauciones de seguridad.

#### REACCION

**Si se ingiere:** Llama inmediatamente a un centro de intoxicaciones o a un médico. No induzcas el vómito.

**Si entras en contacto con la piel (o el cabello):**

Quítate inmediatamente toda la ropa contaminada. Enjuaga la piel con abundante agua y jabón/ducha. Lava la ropa contaminada antes de volver a usarla. Si se produce irritación de la piel: busca atención médica. **Si estás expuesto o preocupado:** obtén consejos médicos. Obtén atención médica si no se siente bien.

**En caso de incendio:** Utiliza espuma, agua pulverizada o niebla. Sólo se pueden utilizar productos químicos secos, dióxido de carbono o arena para incendios pequeños. NO utilices agua en chorro.

**Ficha de datos de seguridad (SDS abreviado en inglés) de n-Hexano**

FDS #: 388.5

Fecha de revisión: 20 de octubre de 2015

Guarde SDS en su biblioteca

**SECCIÓN 1 — IDENTIFICACIÓN DEL PRODUCTO QUÍMICO Y DE LA COMPAÑÍA**

**n-Hexano**

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

Número de teléfono de emergencia de Chemtrec: (800) 424-9843

**Palabra Clave**

**PELIGRO**

**SECCIÓN 2 — IDENTIFICACIÓN DE PELIGROS**

Clase de peligro: Líquidos inflamables (Categoría 2). Líquido y vapores muy inflamables (H225). Mantén alejado del calor, chispas, llamas abiertas y superficies calientes. No fumes (P210).

Clase de peligro: Peligro por aspiración (Categoría 1). Puede ser mortal en caso de ingestión y penetración en las vías respiratorias (H304).

Clase de peligro: Corrosión o irritación cutáneas (Categoría 2). Provoca irritación cutánea (H315).

Clase de peligro: Toxicidad específica en determinados órganos, exposición única; Efectos narcóticos (Categoría 3). Puede provocar somnolencia o vértigo (H336). Evita respirar nieblas, vapores o aerosoles (P261).

Clase de peligro: Toxicidad para la reproducción (Categoría 2). Se sospecha que perjudica a la fertilidad o perjudica al feto (H361). Obtén instrucciones especiales antes de su uso (P201). No lo manipules hasta haber leído y comprendido todas las precauciones de seguridad (P202). Utiliza equipo de protección personal según sea necesario (P281).

Clase de peligro: Toxicidad específica en determinados órganos, exposición repetida (Categoría 2). Puede provocar daños en los órganos tras exposiciones prolongadas o repetidas (H373). No respire la niebla, los vapores o el aerosol (P260).

**Pictogramas**



**SECCIÓN 3 — COMPOSICIÓN, INFORMACIÓN SOBRE LOS INGREDIENTES**

| Nombre del componente | Número CAS | Formula                                                         | Fórmula Peso |
|-----------------------|------------|-----------------------------------------------------------------|--------------|
| n-Hexano              | 110-54-3   | CH <sub>3</sub> (CH <sub>2</sub> ) <sub>4</sub> CH <sub>3</sub> | 86.18        |

**SECCIÓN 4: MEDIDAS DE PRIMEROS AUXILIOS**

**En caso de estar expuesto o preocupado:** busca atención o consejo médico (P308+P313).

**En caso de inhalación:** Traslada a la víctima al aire libre y mantenla en reposo en una posición cómoda para respirar (P304+P340).

**En caso de contacto con los ojos:** enjuaga cuidadosamente con agua durante varios minutos. Quítate los lentes de contacto si los tiene y es fácil hacerlo. Continúa enjugando.

**Si entra en contacto con la piel o el cabello:** Quita inmediatamente toda la ropa contaminada. Enjuaga la piel con agua (P303+P361+P353). Si se produce irritación de la piel: busca atención o consejo médico (P332+P313).

**En caso de ingestión:** Enjuaga la boca. No induzcas el vómito. Llama a un CENTRO DE TOXICOLOGÍA o a un médico si no te sientes bien.

**SECCIÓN 6: MEDIDAS DE LIBERACIÓN ACCIDENTAL**

Retira todas las fuentes de ignición y ventila el área. Contén el derrame con arena u otro material absorbente inerte y deposita en una bolsa o recipiente sellado. Consulta las Secciones 8 y 13 para obtener más información.

## **SECCIÓN 7: MANEJO Y ALMACENAMIENTO**

Patrón de almacenamiento de químicos sugerido por Flinn: Orgánico #3. Almacena con hidrocarburos, aceites, ésteres y aldehídos.

Guarda en un lugar fresco y seco. Mantén el recipiente bien cerrado (P233). Mantén fresco (P235). Conecta a tierra o enlaza el contenedor y equipo receptor (P240). Utiliza equipos eléctricos y de ventilación a prueba de explosiones (P241). Utiliza únicamente herramientas antichispas (P242). Toma medidas de precaución contra descargas estáticas (P243). Úsalo únicamente en una campana o en un área bien ventilada (P271).

## **SECCIÓN 8 — CONTROLES DE EXPOSICIÓN, PROTECCIÓN PERSONAL**

Utiliza guantes protectores, ropa protectora y protección para los ojos (P280). Lávate minuciosamente después de la manipulación (P264). Úsalo únicamente en una campana o en un área bien ventilada (P271).

Pautas de exposición: TLV 50 ppm (ACGIH); PEL 500 ppm (OSHA); IDHL 1100 ppm

## **SECCIÓN 9 — PROPIEDADES FÍSICAS Y QUÍMICAS**

Líquido transparente e incoloro. Olor débil y característico.

Soluble en alcohol y éter. No miscible con agua.

Límites de explosión: 1,2 % en volumen (inferior) 7,4 % en volumen (superior)

Punto de ebullición: 69 °C Punto de fusión: -95 °C

Punto de inflamación: -23 °C Temperatura de ignición: 240 °C

Índice de refracción: 1,375

Gravedad específica: 0,6591 Densidad a 20 °C: 0,659 g/cm<sup>3</sup>

Densidad de vapor: 3 Presión de vapor a 20 °C: 160 hPa

## **SECCIÓN 10 — ESTABILIDAD Y REACTIVIDAD**

Evita el calor, la luz solar y las fuentes de ignición. Reacciona con agentes oxidantes.

Vida útil: buena.

## **SECCIÓN 11 — INFORMACIÓN TOXICOLÓGICA**

Efectos agudos: Irritante para ojos, piel y mucosas. Dolor de cabeza, neuropatía periférica, mareos, dermatitis.

Efectos crónicos: Daño al sistema nervioso y al sistema reproductivo.

Órganos diana: Piel, SNP, pulmón, riñones, hígado, cerebro, sistema reproductivo.

ORL-RATA LD50: 25 g/kg

DIH-RATA LC50: 48.000 ppm/4H

SKN-RBT LD50: N.A.

## **SECCIÓN 12 — INFORMACIÓN ECOLÓGICA**

Tóxico para la vida acuática. EC50 Daphnia 3878 mg/L/48H

## **SECCIÓN 13 — CONSIDERACIONES DE ELIMINACIÓN**

Revisa todas las regulaciones federales, estatales y locales que puedan aplicarse antes de continuar.

El método de eliminación n.º 18b sugerido por Flinn es una opción.

## **SECCIÓN 14 — INFORMACIÓN DE TRANSPORTE**

Número ONU: UN1208 Nombre de envío: hexanos. Clase de peligro: 3, Líquidos inflamables. Grupo de embalaje: II

## **SECCIÓN 15 — INFORMACIÓN REGLAMENTARIA**

Listado por TSCA.

## **SECCIÓN 16 — OTRA INFORMACIÓN**

Esta Ficha de datos de seguridad (SDS) tiene carácter orientativo y se basa en información y pruebas que se consideran fiables.

Fecha de revisión: 20 de octubre de 2015

| ¡Protégete del frío!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Estás en riesgo si trabajas al aire libre o en condiciones de frío.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                      |
| Vístete apropiadamente                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Bebe Bebidas Calientes y Toma Descansos                                                                                                                                                                                                                                                                                                                                                              |
| <p>Lleva ropa diseñada para condiciones de frío, humedad y viento, como:</p> <ul style="list-style-type: none"> <li>• Capas de ropa holgadas</li> <li>• Gorros, calcetines, zapatos y guantes.</li> <li>• Prendas de abrigo que te mantendrán seco</li> </ul> <p>La exposición extrema al frío puede eventualmente provocar <b>hipotermia</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Si es posible, toma descansos frecuentes en áreas con calefacción.</li> <li>• Bebe muchas bebidas calientes y dulces (agua azucarada, bebidas deportivas).</li> <li>• <b>EVITA</b> la cafeína (en el café, té, refrescos o chocolate caliente) y el alcohol.</li> </ul>  |
| Conoce las señales de advertencia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>Problemas de salud:</b></p> <div>  <span>Pie de Trinchera</span>  <span>Congelación</span>  <span>Hipotermia</span> </div> <p><b>Hipotermia: ¡No ignores las señales!</b></p> <div>  <span>Escalofríos Incontrolables</span>  <span>Habla Arrastrada</span>  <span>Torpeza</span>  <span>Fatiga</span>  <span>Confusión</span> </div> | <p><b>La hipotermia es una emergencia médica. Llama al 911</b></p> <p>Obtener ayuda puede ser la diferencia entre la vida y la muerte.</p> <p>Corres un mayor riesgo si tomas ciertos medicamentos, estás en mala condición física o padeces enfermedades como diabetes, hipertensión o enfermedades cardiovasculares.</p>                                                                           |

### Recuerda Esto

- Lleva ropa diseñada para condiciones de frío, humedad y viento.
- Vístete con capas de ropa holgadas para adaptarte a los cambios de temperatura.
- Lleva gorro, calcetines, zapatos, guantes y ropa exterior que te mantenga seco.
- Trabaja en parejas para que tú y tu compañero de trabajo puedan detectar señales de peligro en el uno o el otro.
- Bebe muchas bebidas calientes y dulces (agua azucarada, bebidas deportivas), pero evita la cafeína (en el café, el té, los refrescos o el chocolate caliente) y el alcohol.
- Toma descansos frecuentes, en un área calentada, para calentarte.
- Busca ayuda médica de inmediato si tú u otro trabajador tiene síntomas de hipotermia: • Escalofríos • Fatiga • Pérdida de coordinación • Confusión o desorientación.
- Tienes mayor riesgo si tomas ciertos medicamentos, estás en mala condición física o padeces enfermedades como diabetes, hipertensión o enfermedades cardiovasculares.