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ETC
BEHAVIORAL SAFETY

Objective:

Upon completion of the Behavior Based Safety unit, employees will have knowledge of behavioral safety and how it works on the job site.

Specific Objectives:

- Define the difference between incident and accident
- Assess hazards while on the jobsite

Reference: Operators Safety Manual
Company Safety Manual

I. Introduction – Behavior Based Safety

Behavior Based Safety (BBS) is the application of science of behavior change to real world problems. BBS focuses on what people do, analyzes why they do it, and then applies a strategy to improve what people do.

To be successful a BBS program must include all employees. Changes cannot be done without buy-in and support from all those involved in making decisions.

II. Production with Safety

- All organizations need a "culture of safety."
- Within a culture of safety, everyone takes personal responsibility for their own safety as well as those around them.

Notes

III. How Behavior Based Safety Works

Site observation includes individual feedback which proves to be most effective. The observer monitors the worker and notices his safe behaviors and at-risk behaviors.

Feedback is started on a positive note by noticing safe behaviors. Feedback then moves to the at-risk behaviors and talking about "why" the employee is putting himself at risk. At risk behaviors are discussed until the observer and worker agrees to try the suggested recommendations made by the observer to work more safely.

The observer's job is to highlight behaviors, explain the associated negative consequences with the behavior and to agree on a safe work plan.

When looking at behaviors that could put an employee at risk, it is important to understand terminology, how to recognize hazards, the mindset of the employee and how to most effectively reach the goal of a safe work environment.

IV. Effective Feedback

- Must be based on a sincere desire to help someone improve.
- Focuses on actions that can be observed (not attitudes).
- Focuses on correct actions as well as what can be done better.

V. Receiving Feedback

- Listen with an open mind.
- Separate what the person says from what you think about that person.
- Never overreact.
- Ask open, non-defensive questions.
- Focus on areas to improve, even when you don't agree.
- The majority of feedback should be on what is done right.

Notes

VI. Hazard Recognition

- Safety begins with recognizing the hazards that surround us throughout the day.
  1. The controlled release of energy is what we call work.
  2. The uncontrolled release of energy is what we call an incident.

- What is a hazard?
  1. A hazard is any source of energy that has a potential to cause harm.
  2. If we can find the energy, we can eliminate or lessen the hazard.
     - ✓ Eliminate
     - ✓ Control
     - ✓ Protect

- How do we identify hazards?
  1. We use our knowledge and experience.
  2. We use our senses-sight, sound, touch, smell, and feel.
  3. We use our job planning skills.

VII. Types of Energy Sources

- Motion
- Chemical
- Radiation
- Electrical
- Gravity
- Heat/Cold
- Biological
- Pressure

Notes

VIII. After Recognition

- Once the energy source is identified, the hazard must be evaluated.
    1. Can the job be done safely?
    2. How can I make the job safer?
    3. If something unforeseen happens, will I stop work?
    4. Am I in the right state of mind to work safely?

IX. How will I stay safe?

- Talking about safety is the key to success.
- Everyone is obligated to speak up when they see someone performing an at-risk behavior.

A culture of safety creates a level of trust that encourages people to speak up.

Notes

ETC
INTERVENTION

Objective:

Upon completion of this module, students will understand what intervention is and how it applies to the work site.

Specific Objectives:

- Understand what intervention is
- Relate examples of how intervention can improve safety
- Explain how interventions are used

Reference:

Operators Safety Manual
Company Safety Manual

I. Introduction – Intervention

Intervention is the process of affecting a situation in order to stabilize the environment. The situation can be anything from a conduct issue to a procedural issue that affects your safety. How you react and the choices you make, or don't make, can affect the outcome of the situation.

II. Define Intervention

Intervention, also referred to as Stop Work Authority (SWA), is the employee's right and obligation to stop work if the job is unsafe.

III. Key Principles

Assessing hazards correctly depends on each employee taking responsibility for their safety and that of their co-workers. It is through this process that you can determine if work must be stopped. Upper management is critical for the Stop Work Authority process to effectively reduce workplace injuries.

Notes

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INTERVENTION

Employees have the RIGHT and the AUTHORITY to stop work without repercussions.

1. Do it safely or not at all.
2. There is always time to do it right.

IV. Always

1. Operate within design and environmental limits.
2. Operate in a safe and controlled condition.
3. Ensure safety devices are in place and functioning.
4. Follow safe work practices and procedures.
5. Meet or exceed customer requirements.
6. Maintain integrity of dedicated systems.
7. Comply with all applicable rules and regulations.
8. Address abnormal conditions.
9. Follow written procedures for high-risk or unusual situations.
10. Involve the right people in decisions that affect procedures and equipment.

V. Example of a Intervention

1. Identify the perceived unsafe condition(s); a stop work intervention shall be immediately initiated with the person(s) potentially at risk.
2. If the supervisor is readily available and the affected person(s) are not in immediate risk, the "stop work action" should be coordinated through the supervisor. If the supervisor is not readily available or the affected person(s) are in immediate risk, the "stop work" intervention should be initiated directly with those at risk.

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	3. Notify all affected personnel and supervision of the stop work issue. If necessary, stop associated work activities, remove person(s) from the area, stabilize the situation and make the area as safe as possible. 4. All parties shall discuss and gain agreement on the stop work issue. 5. If determined and agreed that the task or operation is OK to proceed as is (i.e., the stop work initiator was unaware of certain facts or procedures) the affected persons should thank the initiator for their concern and proceed with the work. 6. If determined and agreed that the stop work issue is valid, then every attempt should be made to resolve the issue to all affected person's satisfaction prior to the commencement of work. 7. If the stop work issue cannot be resolved immediately, work shall be suspended until proper resolution is achieved. 8. Under no circumstances should retribution be directed at any person(s) who exercise in good faith their stop work authority as detailed in this program. 9. All stop work interventions and associated detail shall be documented and reported. **Stop Work Authority (SWA)** **Your Right, Your Responsibility**
Notes	

ETC
INCIDENT REPORTING AND INVESTIGATION

Objective:

Upon completion of this module, students will understand and be able to apply the principles of incident reporting as it relates to this training.

Specific Objectives:

- Understand who is responsible for reporting an incident
- Understand how to report an incident
- Define the types of incidents
- Explain the purpose of an incident investigation
- Explain why incidents need investigation

Reference:

Operators Safety Manual
Company Safety Manual

I. Introduction – Incident Reporting and Investigation

Incident reporting is more than just notifying your company that an incident occurred. It is a way for the company to look at what happened, investigate all the contributing factors and determine if we can make work safer for you and your co-workers. Incident reporting protects the company as well as the employee.

II. Definition of an Incident to Report

All injuries/incidents should be reported to your Supervisor immediately regardless of severity.

- Unsafe acts
- Unsafe conditions
- Any incident or injury – regardless of severity
- Near Hits

Notes

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INCIDENT REPORTING AND INVESTIGATION

III. How to Report an Incident

- Notify your Supervisor immediately that something has happened
- Fill out a written report

IV. Types of Incidents

There are two category of incidents:

1. Non-Recordable – these incidents are kept on the company register but not reportable to the Occupational Safety & Health Administration (OSHA).

2. Recordable – these incidents are required by OSHA to be reported on an annual basis.

V. Non-Recordable

- **For Record Only (FRO)** – an injury has occurred but no medical treatment is required. FRO informs the company that something has happened and protects you in the event you need medical attention later.

- **First Aid By Professional (FABP)** – an injury has occurred and you wish to see a doctor. First aid medical treatment is rendered, but no prescriptions are given and you return to work without restrictions.

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INCIDENT REPORTING AND INVESTIGATION

VI. Recordable

- **Medical Only (MO)** – an injury has occurred that requires medical treatment beyond first aid. The doctor may prescribe medication and you return to work without restrictions.
- **Light Duty (LD)** – an injury has occurred that requires medical treatment beyond first aid. The employee returns to work with limitations such as:
  - Limited lifting or standing
  - No driving
- **Lost Time (LT)** – Employee is injured and unable to work for a period of time.
- **Fatality (FA)** – Loss of life.

VII. Incident Investigation

Incident investigations are conducted to determine who/what is at fault. Incidents are unplanned events that result in injury to employees or damage to property.

Looking at all contributing factors in an incident is critical in helping the company determine what (if anything) can be done to reduce the chance of an incident happening again. This could include people, equipment, materials or the work environment.

Reduction of incidents through investigations that result in safer practices help to send you home safely at the end of the day. Safer work results in less cost to the company which allows for better programs, benefits and a healthy company.

Notes

ETC
SUBSTANCE ABUSE AWARENESS

Objective:

The student will be aware of the hazards and effects of alcohol and drug abuse on an individual in the workplace.

Specific Objectives:

- Identify the effects of illegal drugs used in the workplace
- Determine the effects of alcohol on an individual and the workplace
- Know the symptoms of alcohol and drugs in the workplace
- Awareness of Employer Assistance Program (EAP)

I. Introduction – Substance Abuse Awareness

There are approximately 12.1 million people in America that perform a ***safety sensitive*** job in transportation. These jobs are regulated by the Department of Transportation (DOT) drug and alcohol regulations. There are other government entities such as Federal Motor Carrier Safety Administration, Federal Railroad Administration, Federal Transit Authority, Pipeline & Hazardous Material Safety Administration and the U.S. Coast Guard who govern the responsibilities of drug and alcohol prevention.

The government has strict requirements for the enforcement of drug and alcohol abuse in the workplace within the Unites States.

YOU and your EMPLOYER are required by the law to comply with the regulations.

The President's Council on a Drug Free America is pro active in preventing substance abuse in our society.

Your employer may have a drug policy to prevent substance abuse.

The odds are against anyone that uses drugs and alcohol in the workplace.

Simply put, *NOT TOLERATED*!

Notes

ETC
SUBSTANCE ABUSE AWARENESS

Workplace Impact

Alcohol abuse and the use of illegal drugs are serious workplace problems. Nearly three quarters of those who use illegal drugs also work, and alcohol remains the leading drug abused, as one in every ten people in the U.S. has an alcohol problem. People don't check their substance abuse problems at the door when they enter the workplace. Workers who abuse alcohol and other drugs affect everyone around them. Substance abuse can affect all segments of the workforce ranging from employees with tedious repetitive tasks to managers under stress.

Employees may be subject to one or more of the following tests: pre-employment, random, follow-up, post accident, and reasonable suspicion. Employers must randomly test their DOT regulated employees at a minimum rate of 50% for drug and 10% for alcohol annually. Employees may also be subject to reasonable suspicion, return-to-duty, and post-incident testing. Supervisors that oversee DOT regulated employees must receive 60 minutes of alcohol training and 60 minutes of drug training.

<u>Facts about Drugs and Alcohol</u>

- 70% of all adult illegal drug users are employed.
- 12% of the workforce reports heavy drinking.
- 14% of employees abuse drugs on the job.
- 60% of drug users will sell drugs to other employees.
- 40% of drug users will steal from their company to support their habits.
- 8 times more likely to have attendance problems.
- 5 times more likely to file workers compensation claims.
- 5 times more likely to be in an accident.
- 3.5 times more likely to injure others in workplace incidents.
- 2.5 times more likely to ask for time off.
- 1/3 less productive.
- 300% higher medical costs and benefit usage.

Notes

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SUBSTANCE ABUSE AWARENESS

Employee Health Substance abusers tend to neglect their nutrition, sleep and other health needs, and substance abuse depresses the immune system.

Impact:
- ☐ Higher health benefit usage
- ☐ Increased use of sick time
- ☐ More absenteeism and tardiness

Safety is affected with the use of alcohol and other drugs. There are impairments in vision, hearing, attention span, muscle coordination, alertness and mental acuity.

Impact:
- ☐ More accidents
- ☐ More workers' compensation claims

Productivity Employees who abuse alcohol or use drugs can be physically and mentally impaired on the job. Substance abuse interferes with job satisfaction and the motivation to do a good job.

Impact:
- ☐ Reduced output
- ☐ Increased errors
- ☐ Lower quality
- ☐ Reduced customer satisfaction

Decision Making Employees who use alcohol and/or drugs often make poor decisions and have a distorted perception of their ability.

Impact:
- ☐ Reduced innovation
- ☐ Reduced creativity
- ☐ Reduced competitiveness
- ☐ Poor daily and strategic decisions

Notes

Morale The presence of an employee with drug and/or alcohol problems places a strain on relationships between co-workers. Organizations that appear to condone drug use create the image that the organization does not care.

Impact:
- ☐ Higher turnover
- ☐ Diminished quality
- ☐ Reduced team effort

Security Employees with drug and/or alcohol problems often have financial difficulties, and employees using illegal drugs may conduct illegal activities in the workplace.

Impact:
- ☐ Theft
- ☐ Law enforcement involvement

Organizational Image and Community Relations Accidents, lawsuits and other incidents may receive media attention.

Impact:
- ☐ Reduced trust and confidence
- ☐ Reduced ability to attract high quality employees
- ☐ Decreased business/financial well-being

Understanding Addiction

Employees with drug and/or alcohol problems often are unhappy with their lives, but fail to realize that their use of alcohol and/or drugs is a major contributing factor to their unhappiness.

The struggle with addiction is characterized by repeated failures to control use, an increase in the number and severity of problems caused by use and the need for greater amounts of the substance to achieve the desired effect. However, not everyone who uses alcohol or experiments with illegal drugs becomes addicted.

Notes

Formal attempts to standardize definitions used to describe alcohol and drug disorders have not been entirely successful for a number of reasons, including the fact that the differences between *use, abuse* and *addiction* are not easily recognized based on isolated observable behaviors that individuals may exhibit. Nevertheless, health care professionals who specialize in drug and alcohol disorders and reflect the progression that may occur from normal, non-problematic use to abuse and addiction use the following descriptions of use, abuse and addiction.

Use of Alcohol and other drugs may be used in a socially accepted or medically authorized manner to modify or control mood or state of mind. Examples include having a drink with friends or taking an anti-anxiety medication as prescribed by a physician. Described below are different ways that people use alcohol and other drugs without necessarily becoming addicted.

- **Experimental use** - Out of curiosity and/or at the urging of peers, individuals may try drinking or using drugs illegally. If the illegal drug use is not repeated, or discontinues after a short time, such experimentation may not be problematic. Likewise, deciding to drink alcoholic beverages after early experimentation is not problematic for most adults.
- **Social/Recreational use -** Drinking alcoholic beverages is permitted in American society, and some excessive use may even be condoned. If use doesn't cause problems for the user, or those around him/her, most people would consider such use to be social or recreational. Some use marijuana in a similar manner-only in certain social or recreational situations and without immediate adverse consequences. However, marijuana use is illegal except in a few states.

Notes

- **As a stress reliever** - Many people use alcohol or other drugs to help them cope with pressure or stress. If this type of use is infrequent and doesn't create more stress or other difficulties for the individual or those around them, it may not lead to addiction. However, alcoholism and drug addiction often begin with relief drinking.

Abuse
The use of a substance to modify or control mood or state of mind in a manner that is illegal or harmful to oneself or others is considered problematic use, or abuse. Examples of potential consequences of harmful use are:

- Accidents or injuries
- Blackouts
- Legal problems
- Poor job performance
- Family problems
- Health problems

Addiction
A number of individuals occasionally use or abuse alcohol or drugs without becoming addicted, but for many abuse continues despite repeated attempts to return to more social or controlled use and leads to addiction. The repeated, compulsive seeking or use of a substance despite adverse social, psychological and/or physical consequences characterizes addiction.

A wide range of substances, both legal and illegal, can be abused addictively. Addiction is often, but not always, accompanied by *physical dependence*, a *withdrawal syndrome* and *tolerance*. Physical dependence is defined as a physiological state of adaptation to a substance such that the absence of the substance produces symptoms of withdrawal. A withdrawal syndrome consists of a predictable group of signs and symptoms that result from abrupt removal of, or rapid decrease in the regular dosage of a psychoactive substance.

Notes

Tolerance is a state in which a drug produces a diminishing biologic or behavioral response, which means higher doses are needed to produce the same effect that the user experienced initially.

Addiction to alcohol and other drugs is:

- **Chronic** - Once you have developed an addiction, you will always have to deal with it. You may manage to stop using alcohol or other drugs for significant periods of time, but for most the disease doesn't disappear but rather goes into remission. Should you attempt to resume "normal" use, you will rapidly return to addiction, out of control use and abuse.
- **Progressive** - Addiction gets worse over time. With some drugs, the decline is rapid; with others, like alcohol, it can be more gradual, but it does get worse. Alcohol and other drugs cause a biochemical change in the nervous system that can persist even after the substance leaves the blood. Repeated use causes progressive damage.
- **Primary** - Addiction is not just a symptom of some underlying psychological problem, a developmental stage or a reaction to stress. Once your use of alcohol or drugs has become an addiction, the addiction itself needs to be medically treated as the primary illness.
- **Terminal** - Addiction to alcohol and/or other drugs often leads to disease and possibly death.

Characterized by denial - One of the most disturbing and confusing aspects of addiction is that it is characterized by denial. The user denies that his/her use is out of control or that it is causing any problems at home or on the job. The user often seems to be the last to know that his/her life is out of control. There are effective strategies employed by professionals for helping to break through this denial, which must be overcome before treatment can take place.

Notes

Risk of Addiction

Many factors can lead to developing a problem with alcohol and/or other drugs. Unfortunately, we really are not able to predict who can drink socially or who will develop an addiction. We do, however, have some evidence of what types of behavior or history can increase the risk of developing a serious problem.

Addiction is a family disease.

Some people with a history of substance abuse in their family are more susceptible to developing problems with addiction. Children of alcoholics or addicts are three times as likely to develop problems. If both parents are addicts or alcoholics, the risk increases to five times as great. This is due to heredity as well as learned behavior. It is important for parents to realize that children learn much more from watching their behavior than listening to their advice.

Prior abuse of alcohol and other drugs has a great impact on developing future problems.

A pattern of abuse develops and can lead to addiction and psychological reliance on drugs and/or alcohol. This can be a slow progression for some and a rapid decline for others. Research demonstrates that the later in life an individual first drinks alcohol or uses other drugs, the less likely he or she will be to progress to problem use.

Other contributing factors.

Some people abuse alcohol and drugs as part of a self-destructive lifestyle Other people start to use substances to seek relief from depression or crisis in their lives. Although some fortunate individuals never develop serious problems and use diminishes or ceases once the precipitating events change, others develop a serious problem before they even realize it.

Notes

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SUBSTANCE ABUSE AWARENESS

Signs and Symptoms

Signs that someone is developing a problem with alcohol and/or drugs cover a wide range and many of them are apparent on the job. Unfortunately, no one wants to believe that a friend, co-worker or family member has a substance abuse problem. Subtle changes in behavior often are discounted. Changes in friends, lack of interest in old hobbies and increasing isolation are all minimized. Nonetheless, there is usually ample evidence of a problem if you are willing to recognize the connection between the behavior you observe and the drug and alcohol use.

Almost everyone knows someone who has a problem with alcohol and/or drugs.

You need to be aware of the common signs of abuse. They are:

Emotional

- ☐ Aggression
- ☐ Burnout
- ☐ Anxiety
- ☐ Depression
- ☐ Paranoia
- ☐ Denial

Behavioral

- ☐ Slow reaction time
- ☐ Impaired coordination
- ☐ Slowed or slurred speech
- ☐ Irritability
- ☐ Excessive talking
- ☐ Inability to sit still
- ☐ Limited attention span
- ☐ Poor motivation and lack of energy

Physical

- ☐ Weight loss
- ☐ Sweating
- ☐ Chills
- ☐ Smell of alcohol

Notes

Family and Co-worker Impact

A person's abuse of alcohol or other drugs affects everyone around him or her. Whether it is an employee, an employee's loved one, or a co-worker who has a problem, the impact can be felt on the job.
Often those affected by someone who has a drug or alcohol problem change their behavior to adapt, ignore, struggle or otherwise cope with that person's substance abuse. Some of the behaviors that families and friends adopt are called "enabling".

Enabling is action that you take to protect the person with the problem from the consequences of his or her actions.
Unfortunately, enabling actually helps him or her to not deal with the problem.

Examples of enabling behavior include:

- **Covering Up** - providing alibis, making excuses or even doing an impaired co-worker's work rather than allowing it to be known that he/she is not meeting his/her responsibilities.
- **Rationalizing** - developing reasons why the person's continued use is understandable or acceptable.
- **Withdrawing** - avoiding contact with the person with the problem.
- **Blaming** - blaming yourself for the substance abusers continued use or getting angry at the individual for not trying hard enough to control his/her use or to get help.
- **Controlling** - trying to take responsibility for the person's use by throwing out his/her drugs or cutting off the supply.
- **Threatening** - saying that you will take action (ceasing to cover up, turning the person in, terminating the relationship) if the person doesn't control his/her use, but not following through when he/she repeatedly uses.

Notes

Covering up the problem. Often, the person with a problem will consciously or unconsciously use a variety of "traps" to protect him or her when being confronted.

Examples of these traps include:

Sympathy:	Trying to get you involved in his/her personal problems.
Excuses:	Having increasingly improbable explanations for everything that happens.
Apology:	Being very sorry and promising that they will change. ("It won't happen again.")
Diversions:	Trying to get you to talk about other issues in life or in the workplace.
Innocence:	Claiming he/she is not the cause of the problems you observe, but rather the victim. ("It isn't true." "I didn't know." "Everyone is against me.")
Anger:	Exhibiting physically intimidating behavior, blaming others. ("It's your fault I drink.")
Pity:	Using emotional blackmail to elicit your sympathy and guilt. ("You know what I'm going through. How can you do this to me now?")
Tears:	Falling apart and expressing remorse upon confrontation.

When these traps are used unconsciously, the individual may indeed truly feel sorry and be determined to change, but without treatment and appropriate support, it is unlikely that they will succeed.

If you encounter these responses when confronting a loved one, friend or co-worker about his/her behavior, you may want to consult the Employee Assistance Program (EAP) if you have access to one.

Notes

The EAP can help you deal with your own frustration in dealing with a substance abuser and give you pointers about how to most effectively confront the individual. When talking to the person with the problem, you will want to be straight forward and serious about the problem. Convey that you care and are worried and encourage him or her to follow up with the EAP or seek other help.

Remember: You did not cause it.
You cannot control it.
You cannot cure it.

If you do not have an EAP available, you may want to seek help from a professional counselor who is experienced in addressing addiction. You may also find it helpful to attend an Al-Anon meeting where other family, friends and loved ones of alcoholics and drug addicts share their experience, strength and hope as they struggle to cope to come to terms with the effects of addiction.

Getting Help
Employer Assistance Program

Stress that information shared with the EAP is confidential.

If your organization has an EAP:
The EAP can help employees decide what to do about their alcohol or drug problem. The EAP also can help determine what the employee should do if someone in his/her family or work group has a problem. An employee assistance professional will meet with the employee and conduct an assessment of the problem. The employee assistance professional will help clarify the problem, direct the employee to appropriate resources and then follow his or her progress.

Conversations with the employee assistance professional will be protected. EAP records are completely separate from personnel records and can only be accessed with a signed release from the employee. There are clear limits on when and what information the employee assistance professional can share and with whom.

Notes

However, there also are some limits on confidentiality that may require:

- Disclosure of child abuse, elder abuse and serious threats of homicide or suicide as dictated by state law.
- Reporting participation in the EAP to the referring supervisor.
- Reporting the results of assessment and evaluation following a positive drug test.
- Verifying medical information to authorize release time or satisfy fitness-for-duty concerns as specified in company policy.
- Revealing medical information to the insurance company in order to qualify for coverage under a benefits plan.

If your organization does not have an EAP:
You should still seek help. There are numerous local resources for assistance. Many of them are free. Alcoholics Anonymous, Narcotics Anonymous, County or State addiction or Mental Health Agencies and many more.

Specific Drugs of Abuse

Since a large portion of the adult population is employed, education in the workplace is one of the most effective ways to reach adults and focus on preventing the use and abuse of alcohol and drugs. It is important for everyone to realize that all drugs, including alcohol, chemically alter the mind and body. As a result, use of drugs and/or alcohol can impair motor skills, hinder judgment, distort perception, decrease reaction time and interfere with other skills necessary to do a job safely and efficiently.

We will review the signs and symptoms of the following drugs that are abused.

Alcohol
Marijuana
Cocaine

Notes

ETC
SUBSTANCE ABUSE AWARENESS

I. Alcohol

In American society alcohol is a legal drug. Nonetheless, it is a depressant and is the leading drug of abuse. Use of alcohol affects judgment and decision-making abilities, slows down the central nervous system and brain function, and reduces coordination and reflex actions.

Symptoms of abuse may include sweating, nausea, vomiting, and tremors. Extreme cases could cause delusions, delirium tremors seizures or death. Signs could be dulled mental processes, lack of coordination, slowed reaction time, poor judgment, and reduced inhibitions.

Chronic alcohol abuse may include liver disease, and increased cancers of the mouth, tongue, pharynx, esophagus, skin, kidney disease, ulcers, and birth defects-leading cause of preventable retardation. There is substantial data to support many accidents, suicides and deaths occur in alcohol related incidents.

People who would not ordinarily behave in inappropriate ways can be persuaded to change their behavior when they are drinking. Often employees are under the influence of alcohol when they make the decision to use drugs.

II. Marijuana

Marijuana is a derivative of the cannabis sativa plant and is illegally used for its intoxicating effects and dreamy state of relaxation and euphoria. All forms of marijuana have negative physical and mental effects. The active ingredient in marijuana is Delta-9-Tetrahydrocannabinol, or THC. **Physical** signs and symptoms of use are; substantial increases in heart rate, bloodshot eyes, dry mouth and throat, increased appetite, and chronic sore throat.

Notes

Use of marijuana also has **mental** effects that may include: impaired or reduced short-term memory and comprehension, altered sense of time, changed sensory perception-sight, smell, hearing, touch, and reduced ability to perform tasks requiring concentration and coordination, such as driving a car.

Research also shows that people do not retain knowledge when they are "high". Motivation and cognition may be altered, making the acquisition of new information difficult. Marijuana also can produce paranoia and psychosis.

Health effects could result in emphysema-like symptoms, respiratory track and sinus infections, and lowered immune system response.

III. Cocaine

Cocaine is the most potent stimulant of organic origin and the most widely used of the stimulants. Although cocaine has been used in the past as a topical anesthetic, its therapeutic uses have almost been eliminated due to the development of safer anesthetics. Cocaine is a powerfully addictive drug leading to physical and psychological dependence. Signs and symptoms of use are: dilated pupils, increased pulse rate, elevated blood pressure, insomnia, loss of appetite, tactile hallucinations, paranoia, seizures, anxiety, agitation, periods of increased activity followed by fatigue and depression, wide mood swings, and difficulty in concentration.

Cocaine stimulates the central nervous system. Its immediate health effects include dilated pupils and elevated blood pressure, heart rate, respiratory rate and body temperature. In addition, cocaine use can lead to death by cardiac arrest or respiratory failure. Cocaine powder is sniffed or snorted. The euphoric high tends to last for approximately 30 minutes. Occasional use can cause a stuffy or runny nose, while chronic use can ulcerate the mucous membrane of the nose. Cocaine powder can also be injected into the bloodstream when it is mixed with water.

Notes

Using contaminated equipment to inject cocaine, or any other substance can transmit HIV and cause HIV/AIDS, hepatitis and other diseases. Preparation of freebase, which involves the use of volatile solvents, can result in death or injury from fire or explosion. Inhalation of cocaine fumes from freebasing produces effects that are very fast in onset, very intense and momentary in duration. Crack is cocaine that is processed into tiny chips having the appearance of slivers of soap. Crack has become a very popular form of cocaine, since it is inexpensive and relatively easy to use. It is smoked in a pipe or rolled with tobacco in a cigarette. Cocaine can produce psychological and physical dependency, a feeling that the user cannot function without the drug. Many users become extremely depressed when not using the drug, and the craving for the drug is intense. In addition, tolerance develops rapidly.

IV. Methamphetamine

Reference: http://www.cesar.umd.edu/cesar/pubs/meth.pdf

A report by the National Drug Intelligence Center on "Oklahoma Drug Threat Assessment", reported that Methamphetamine, is the greatest drug threat to Oklahoma, and is available throughout the state and abuse of the drug is increasing. Violence associated with the production, distribution and abuse of Methamphetamine poses a significant threat to the safety of Oklahoma's residents. Mexican criminal groups and street gangs use violence to protect drug shipments and maintain control over drug territories. Street gangs also commit assaults, drive by shooting, vehicle thefts, robberies, and homicides. Many of the street gangs, such as the Bloods, Cripps, Mara Salvatrucha and Latin Kings, have nationwide connections and ties to family based criminal groups in Mexico.

What is Methamphetamine?

It is a highly addictive stimulant. The effects are long lasting, and users are known to stay awake for days during binges.

Notes

What does it look like?

Meth is white or yellowish, odorless, and bitter tasting powder that dissolves in water. The powder, known as "crystal" can be processed into a smokable rock ("ice") or liquid form for the purpose of injection. It also comes in pill form. Yabba is a potent form of meth mixed with caffeine in a tablet small enough to fit in the end of a drinking straw, and is often stamped with a logo. Yabba tablets may also be scented or flavored.

How is Methamphetamine typically used?

Meth is typically ingested orally, injected intravenously, smoked, or snorted. After smoking or injecting meth, users experience a short but intense rush that lasts only a few minutes. Those who snort meth will feel euphoria rather than a rush within 3 to 5 minutes; oral ingestion produces the same effect within 20 minutes. After the initial euphoria, other effects include increased activity, decreased appetite, and a sense of well being, or agitation, that can last for 6 to 12 hours. Because tolerance occurs within minutes, chronic users binge on meth, taking increasingly higher and more frequent doses, in order to sustain their high.

What are some street names for Methamphetamine?

- Meth, crystal meth, crank, glass, yellow barn
- Poor man's cocaine, motorcycle crack, Tina, speed, ice chalk
- Trash

Smokable Meth Slang

- Hipron, Hot Ice, L.A. Glass, Cristy, Batu, Quart

Notes

ETC
SUBSTANCE ABUSE AWARENESS

How can I tell if someone has taken Methamphetamine?

The noticeable effects include loss of appetite, sleeplessness, performing repetitive and meaningless tasks, dilated pupils,
elevated body temperature, heavy sweating, nausea, vomiting, tremors, dry mouth, and bad breath. Chronic meth use can cause insomnia, anxiety, confusion, delusions, auditory hallucinations, paranoia, and violent behavior. Chronic meth users also often display poor hygiene, a pale, unhealthy complexion, and sores on their bodies from picking at "crank bugs" – the tactile hallucination that *tweakers* often experience. In addition, users may have cracked teeth due to extreme jaw clenching during a meth high. Withdrawal symptoms include depression, anxiety, fatigue, paranoia, aggression, and intense cravings for the drug.

Other Abused Drugs

Stimulants	Depress
Hallucinogens	Narcotics
Designer Drugs	Inhalants
Steroids	Sedatives
Psilocybin Mushrooms	

Summary

Risk of Addiction
Signs and symptoms of drugs
Family and coworker impact
EAP
Specific drugs (Alcohol, Marijuana and Cocaine, and Methamphetamine)

Look for signs of alcohol and drug abuse. Have the courage to report your observations. Your safety depends on a drug free workplace.

Notes

ETC
PREVENTION of WORKPLACE VIOLENCE

Objective:

Upon completion of the Prevention of Workplace Violence unit, employees will better understand what workplace violence is, worker responsibilities and sources of assistance.

Specific Objectives:

- Understand Zero Tolerance
- Discuss examples of workplace violence
- Explain the worker responsibilities
- Identify sources of assistance

Reference:

Bureau of Labor Statistics Census of Fatal Occupational Injuries
Company Emergency Action Plan

I. Introduction – Prevention of Workplace Violence

All employees should expect and receive a secure workplace; with a mutual respect toward all co-workers and personnel. However, it is impossible to plan for every event that may unfold on the worksite. All employees must prepare themselves with basic emergency planning, response and evaluation skills to handle unforeseen events.

II. Definition

- Workplace Violence is any behavior, act or statement that would be interpreted by a reasonable person to be aggressive, intimidating, harassing, or unsafe, and that carries an expressed or implied intent to cause harm to a person or property.

Notes

- This threat is a communicated intent to inflict physical or other harm on any person or property.

III. Zero Tolerance

- The company will not ignore, condone, or tolerate disruptive, threatening, or violent behavior by any employee while on company or customer property.

IV. Examples

- Most people will not become violent without warning. An escalating series of clues usually precedes an act of workplace violence.

- The risk of a violent outburst is greatly increased when a combination of warning signs are ignored.

  - **Boundary Crossing:** pushing the limits of acceptable workplace behavior and continual testing of established rules.
  - **Chemical Dependence:** personnel are dependent upon alcohol and/or drugs, which can agitate or create paranoia and aggressive behavior.
  - **Concentration Problems**: difficulty recalling instructions, forgetfulness, repetition of errors, and staring into space.
  - **Depression:** causes nearly one in seven sufferers to commit a violent act either upon themselves or others.
  - **Inconsistent Work Patterns:** attendance problems, including periods of very high and very low productivity and unexplained or improbable excuses for absences.

Notes

- **Obsessive Interest in Weapons:** can be revealed in casual conversation; common among unstable individuals.
- **Pathological 'blamers':** an employee that cannot take responsibility for their own actions. They will not admit wrong doing even for minor mistakes.
- **Romantic Obsession:** a fixation upon an idealized romantic love for another person. Behavioral signs may include stalking and numerous unwanted phone calls.
- **Safety Issues:** behaviors such as recklessness or a sudden increase in accident rates, which can reveal lapses in concentration and disregard for personal and co-worker safety.
- **Paranoia:** irrational thoughts of being 'set up'.

V. Employee Responsibilities

- Employees will become aware of a violent act by the sounds of an explosion, gunfire, scuffling or by observation of events that could only be intentional acts of violence.

- Employees are responsible for taking any threat or violent act seriously, and to report acts of violence or threats of violence to their Supervisor, or if necessary, the appropriate authorities.
  - It is important to stay calm, speak slowly and softly to reduce the momentum of the situations. Move away from any objects that may be used to harm you.
  - Position yourself, if possible, so that an exit route is readily accessible.

Notes

- **Explosion –** If an explosion occurs; leave the area immediately using pre-planned routes of egress.
- **Gunfire –** If you become aware of gunfire occurring in the area, take refuge in a secured area that provides limited visibility to anyone on the outside. Put as many objects between you and the gunman as possible.
- **Physical Threat –** If someone's actions pose a physical threat to you, evacuate the area.
- **Hostage Situation –** Immediately vacate the area; take no chances to endanger the life of the hostage.

Notes

ETC
JOB SAFETY & ENVIRONMENTAL ANALYSIS (JSEA)

Objective:

Upon completion of the JSEA unit, employees will have an overall understanding of a Job Safety and Environmental Analysis.

Specific Objectives:

- Define a JSEA and when to apply it.
- Know when to perform a JSEA.
- List 5 steps of an effective JSEA.

I. Introduction – JSA

A Job Safety Analysis is a management tool that can be used to define and control the hazards associated with a job, procedure or process. The purpose of an analysis is to ensure that the risk of each step of a task is reduced to as low a risk as possible. There are different names for different types of analysis.

1. Job Safety & Environmental Analysis (JSEA's) is a process of determining physical requirements, environmental conditions and safety factors relating to a specific job or task. JSEA's are best used for stationary or repetitive production tasks or product movement, in which the job, equipment and work environment change very little.

2. A Job Hazard Analysis (JHA) is a technique that focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship *between the worker, the task, the tools and the work environment.* Ideally, after you identify uncontrolled hazards, you will take steps to eliminate or reduce them to an acceptable risk level.

Notes

3. When is the most effective time to perform a JSEA?
   The most effective time to perform a JSEA can be dictated by the specific environment as well as the turnover of new employees. Before work is also the recommended time a JSEA should be performed, not just after an incident has occurred.

4. What is the value of a job hazard analysis?
   Supervisors can use the findings of a job hazard analysis to eliminate and prevent hazards in their workplaces. This is likely to result in fewer worker injuries and illnesses; safer, more effective work methods; reduced workers' compensation costs; and increased worker productivity. The analysis also can be a valuable tool for training new employees in the steps required to perform their jobs safely.

   For a job hazard analysis to be effective, management must demonstrate a commitment to safety and health and follow through to correct any uncontrolled hazards identified. Otherwise, management will lose credibility and employees may hesitate to go to management when dangerous conditions threaten them.

5. What jobs are appropriate for a JSEA?
   A JSEA can be conducted on many jobs in your workplace. Priority should go to the following types of jobs:
   - Jobs with the highest injury or illness rates;
   - Jobs with the potential to cause severe or disabling injuries or illness, even if there is no history of previous accidents;
   - Jobs in which one simple human error could lead to a severe accident or injury;
   - Jobs that are new to your operation or have undergone changes in processes and procedures
   - Jobs complex enough to require written instructions.

Notes

ETC
JOB SAFETY & ENVIRONMENTAL ANALYSIS (JSEA)

II. Application of JSEA

- The JSEA process need not require enormous amounts of time, or endless reams of paper. The approach suggested requires a few minutes of your time prior to each significant task.
- The steps of an analysis of job activities includes:

1. Write Down the Steps- each job or operation will consist of a set of observable steps/tasks. To determine where a step/task begins or ends, look for a change in activity, change in direction or movement.

2. Identify Hazards- hazards can only be mitigated if they are first recognized.

3. Recommend Actions for Hazard mitigation Control-measures may include:
   -Administrative Controls such as training, hazardous energy control, or changing how the task is completed.
   -Engineering Controls such as mechanical assistance, equipment redesign, housekeeping or ventilation.
   -Personal Protective Equipment such as respiratory equipment, hearing protection or chemical protective clothing.

4. Note the Supervisor and Safety contact number.

5. Develop a Work Site Diagram- that includes identified hazards and evacuation routes, and assembly area.

6. Conduct a Tailgate Safety Meeting with Affected parties.

7. Sign the Analysis Document.

8. Use the Stop Work Authority when work deviates from the analysis document.

ETC
HAZARD COMMUNICATION
(RIGHT TO KNOW STANDARD)

Objective:

To identify chemical hazards and to perform safe work practices while handling and working around chemical hazards, and how to react when coming in contact with a chemical hazard.

Specific Objective:

- Identify two basic types of chemical hazards.
- List seven most common classifications of hazards.
- List four ways a chemical exposure can enter the body.
- Identify the basic information required on a container label.
- Match the labeling agencies and their symbol.
- Read and apply the MSDS sheet for chemicals.
- Name a PPE application for a hazardous chemical used on a well site during service operations.
- Participate in the required training of the HazCom standard.
- Locate and use the company written hazard communication program.

Reference: Operators Safety Manual
Company Safety Manual
OSHA 29CFR 1910.1200

I. Introduction – Hazard Communication

There are two basic types of chemical hazards the regulation applies to. Chemicals are present in all aspects of our lives, home and work. Chemicals present a hazard when they are not properly used, stored, labeled, mixed and handled. The "Right to Know" standard is important to employees so they may protect themselves from chemical hazard injury.

The two types of chemical hazards are: *Health and Physical*.

Notes

A. **Health Hazards** exist where a chemical shows significant evidence of a potential injury or illness, when in contact with the chemical through absorption through body surface, ingestion, inhalation or through body openings. Examples of health hazards - acutely toxic carcinogenic, teratogenic, corrosive, irritant, mutagenic, chronically toxic.

B. **Physical** Hazards (solids, liquids, gas, crude oil, flammable liquid, natural gas, flammable gas & H2S gas) exist when the chemical has evidence that it is a compressed gas, oxidizer, reactive, organic peroxide, pyrophoric, explosive and flammable. Chemicals in one state may be harmless, while in another state the same chemical can be life threatening. Examples of physical hazards exist when chemical hazards are oxidized, explosive, unstable (reactive), combustible/flammable and pyrophoric.

Applications

- Discuss examples of Site Specific Health Hazards and their effect on the employee.
- Discuss and list specific examples of physical hazards at a well site when servicing a well or facility.

II. Classification of Hazards

The seven most common classifications of hazards are:

1. **Irritant** - a chemical that causes swelling or rash on the skin from chemical coming in contact with the body.

2. **Reactive -** chemical materials that are self explosive or have a violent reaction when used with another substance under certain temperatures, pressure or shock.

Notes

3. **Flammable** - chemical materials which have a flash point below 100 degrees. The flash point is achieved when the liquid or solid chemical gives off enough vapor to ignite.

4. **Corrosive** - chemical materials which cause a bad burn to the skin such as acids and ammonia.

5. **Explosive** - chemical materials which cause a sudden release of gas and heat when subjected to sudden pressure, shock or high temperature.

6. **Radioactive** - materials which give off harmful radiation which may cause death or serious lifetime physical effects.

7. **Toxic** - a toxic chemical may cause serious injury or death when exposed through the skin, swallowing, breathing, or by the chemical entering the body through openings (mouth, eyes, ears, nose, etc.) Factors which determine the toxicity of the chemical which may cause harm to the body are:

    - Length of exposure - contact with a chemical over a period of time (Acute - short time) (Chronic - long time).
    - Chemical combination - exposure to chemicals both on the job and elsewhere.
    - Sensitivity - the body's ability to resist the chemical (can differ among people).
    - Amount of exposure - size of the chemical dose.

Notes

Application

Identify a well site chemical in each of the seven hazard classifications.

- Irritant
- Reactive
- Flammable
- Corrosive
- Explosive
- Radioactive
- Toxic

III. Entry Ways for Chemical Exposure

1. **Through the skin** - the ability of the chemical to penetrate the skin and enter the body. Some effects are skin burn, irritation, or rash without the use of proper personal protective equipment.
2. **Inhalation/breathing** - inhaling of toxic vapors or dust from chemical exposure without proper air breathing equipment.
3. **Ingestion** - accidentally swallowing chemicals when coming in contact with such items as food or drink in a work area or contamination of chemicals on hands when touching food, eating, or drinking. Washing hands while using proper personal protective equipment in non-chemical area prohibits the intake of hazard chemicals.
4. **Body openings** - openings such as eyes, ears, mouth and cuts are locations where chemicals may enter the body if proper personal protective equipment is not used.

Application:

What chemicals used at production facilities can enter the body in each of the methods of entry?

- Skin
- Inhalation
- Ingestion
- Body openings

Notes

IV. Chemical Container Labeling

The hazcom standard requires all containers (in use or in storage) of hazardous chemicals to include three information items on each container label. They are:

A. Chemical name
B. Hazardous warnings
C. Name and address of the manufacturer or inspector

In-plant chemical labels must also include on the chemical container the target organ which may be effected and how. (Example - lung damage may occur if inhaled.)

Many container labels will inform the worker what type of personal protective equipment is required to handle the chemical.

The container labels will differ from the Material Safety Data Sheet (MSDS) since it is designed to give basic intermediate visual warning about the chemical for a quick response when a chemical hazard exists. The MSDS includes everything that is known about a specific chemical and may be stored in an area adjacent to the chemical.

Application:

- Examine a container label and identify the 3 basic information items on the label.
- Indicate from the container label the effect the chemical may have on an organ.

Unlabeled containers must be reported to your supervisor before handling the chemical.

Notes

V. Labeling Agencies

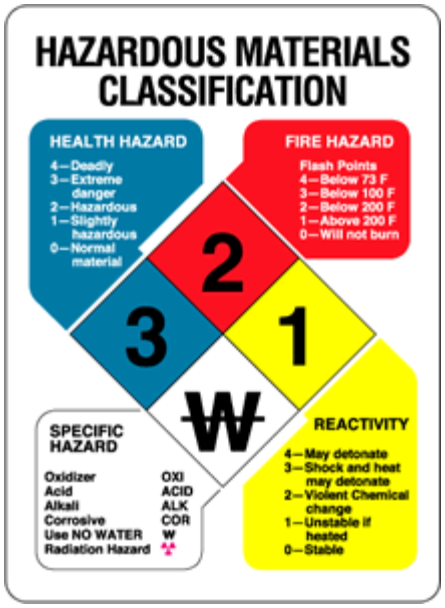
Containers may have one or a combination of labels which represent the four standard labeling agencies. The label information will consist of the following agencies or organizations. Each are described below:

A. National Fire Protection Association (NFPA)

The label has a diamond design using four squares each a separate color with a hazard designation in each square.

Red = Flammability
Yellow = Reactivity
White = Special Hazard
Blue = Health

The numbering system 0 to 4 indicates the hazard level with four the most extreme hazardous materials.



Notes

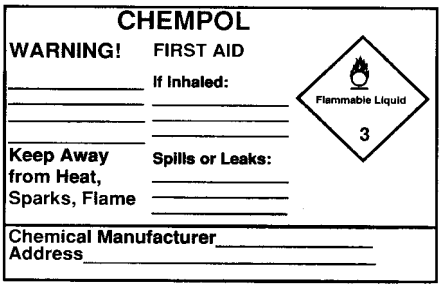
B. Department of Transportation (DOT)

This label is also diamond shaped and color coded to represent the different hazards.

- Orange = Explosive
- White = Toxic
- Black & White = Corrosive
- Yellow = Oxidizer
- Yellow & White = Radioactive
- Red = Flammable
- Red Striped = Solid Flammable

C. American National Standards Institute (ANSI)

This table is square shaped with information labeled in one of four categories: Flammable, Toxic, Reactive, or Corrosive. Extreme hazards will be labeled "Danger", Moderate – "Warning" and Low Hazard-"Caution".

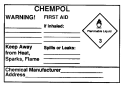


Notes

D. Hazardous Material Information System (HMIS)

This label is square shaped with four categories noted by the hazard number 0-4 for the first three areas with four being the greatest hazard. The four categories are - Health, Flammability, Reactivity and Personal Protective Equipment (PPE). Letter values are used to designate the PPE required.

Application:

- Identify the 4 symbols of each labeling
  - ANSI 
  - DOT 

  - NFPA 

  - HMIS 

Notes

VI. Material Safety Data Sheets (MSDS)

The Material Safety Data Sheets are required to be available for each chemical that an employee will be handling. The MSDS includes nine areas of information regarding the identification, safe use and hazards of the chemical. The nine areas of information contained in the MSDS are:

1. **Identification** - provides general information about the chemical, which relates to the label on the chemical container. Information such as chemical name, manufacturer, address, emergency plan and date prepared is located in this section.

2. **Hazardous Components** - indicates the composition, hazardous ingredients, permissible exposure limits and the threshold limit values. Exposure limits are: Threshold Limit Value (TLV) cannot exceed 8 hour workday without protection; Permissible Exposure Limit (PEL) same as TLV; Short Term Exposure limit (STEL) cannot exceed five minute exposure. Ceiling value is the limit not to be exceeded during any part of your workday.

3. **Physical/Chemical Characteristics Section** – indicates boiling point, vapor pressure and density, melting point, specific gravity, appearance and odor.

4. **Fire & Explosion Hazard Data Section** – provides information on explosive and fire properties, special fire fighting procedures and general fire extinguishing information.

5. **Reactivity Data** – rates the chemical stability, hazardous decomposition or byproducts.

6. **Health Hazard Data** – relates to health hazards (acute – chronic) symptoms, routes of entry and target organs.

Notes

7. **Precautions for Safe Handling & Use Section** – tells the employee the steps to be taken in case of a spill or release of the chemical; waste disposal and storage procedure.

8. **Special Protection** – states what PPE to use for protection to reduce chemical exposure and ventilation requirements.

9. **Special Precaution** – this section does not appear on all MSDS forms; however, if included it will explain required handling and storing precautions. MSDS have also been developed for materials such as flammable gas and oil, crude oil & natural gas, which are not in a container & labeled. These MSDS are to be available on each well site with other MSDS for containerized materials.

Application:

- Examine an MSDS and identify how each section may be applied when using a hazardous chemical.

VII. Personal Protective Equipment (PPE)

The purpose of the PPE, (suites, boots, gloves, eye, hearing and breathing protection), is to prevent injury or illness when handling hazardous or toxic chemicals. The use of PPE will keep the employee working with the chemical within a safe limit.

Employees should make every effort to use the least hazardous chemical when conducting a task where chemicals are required. Mechanical devices are to be used to assist in providing the protection needed.

Notes

VIII. Employee Training

Employers are to inform their employees of the following:

- OSHA Hazard Communication Standard. (Hazcom).
- The list of hazardous chemicals present in their company office, yard or at the well site.
- Hazardous communication plan to deal with chemical hazards.
- How to use MSDS sheets and labels.
- Protection to be used by the employee when working with hazardous chemicals.

Notes

ETC
INCIDENT PREVENTION AND TAGS

Objective:

Upon completion of this module, employees will be able to identify incident prevention signs and tags and know when to use them.

Specific Objectives:

- Identify types of signs and tags
- Know the difference between signs and tags
- Discuss where and when placement of signs and tags are necessary

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29CFR 1910.145

I. Introduction – Incident Prevention Signs and Tags

This unit is designed to cover all safety signs except those designed for streets, highways, railroads, and marine regulations. These specifications apply to the design, application, and use of signs or symbols that define specific hazards of such nature that failure to designate them may lead to incidental injury to workers or the public, or to property damage.

II. Definitions

- Sign - a surface prepared for the warning of, or safety instructions of, industrial workers or members of the public who may be exposed to hazards.

Notes

- Tag - small piece of paper, plastic, or other material attached to something as a label or means of identification.

Danger Signs

- The DANGER header is used when there is a hazardous situation which has a high probability of death or severe injury.
- There shall be no variation in the type of design of signs posted to warn of specific dangers and hazards.
    1. All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.
    2. The colors RED, BLACK, and WHITE shall be opaque and glossy.

Caution Signs

- The CAUTION header is used to indicate a hazardous situation which may result in minor or moderate injury.
- Caution signs should not be used when there is a possibility of death or serious injury. Caution signs should not be considered for property damage incidents unless personal injury risk is present.
- Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices.
- All employees shall be instructed that caution signs indicate a possible hazard against which proper precautions should be taken.
- Standard color of the background shall be YELLOW; and the panel, BLACK with YELLOW letters. Any letters used against the yellow background shall be black.

ETC
INCIDENT PREVENTION AND TAGS

Safety Instruction Signs

- General safety signs (i.e. Safety First, Be Careful, and Think) should indicate general instructions relative to safe work practices, reminders or proper safety procedures, and the location of safety equipment.
- Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.
- Standard color of the background shall be WHITE; and the panel, GREEN with WHITE letters. Any letters used against the white background shall be BLACK.

Notice Signs

- Notice headers provide information of a general type in order to avoid confusion or misunderstanding.

Biological Hazard Signs

- The biological hazard warning shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, or combinations thereof, which contain, or are contaminated with viable hazards.
- Shall include only those infectious agents presenting a risk or potential risk to the well-being of a person.

Notes

ETC
INCIDENT PREVENTION AND TAGS

Sign Design

- All signs shall be furnished with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts or other fastening devices shall be located in such a way that they do not constitute a hazard.

Nature of Wording

- The wording of any sign should be easily read and concise. The sign should contain sufficient information to be easily understood. The wording should make a positive, rather than a negative suggestion and should be accurate in facts.

Incident Prevention Tags

- **Incident Prevention Tags** – used to identify hazardous conditions and provide a message to employees with respect to hazardous conditions or to meet the specific tagging requirements of OSHA standards.
- **Major Message** – that portion of a tag's inscription that is more specific than the signal word and that indicates the specific hazardous condition or the instruction to be communicated to the employee.
  - Examples include: High Voltage, Close Clearance, Do Not Start, and Do Not Use.
- **Pictograph** – a pictorial representation used to identify a hazardous condition or to convey a safety instruction.

Notes

ETC
INCIDENT PREVENTION AND TAGS

- **Signal Word** – portion of a tag's inscription that contains the word or words that are intended to capture the employee's immediate attention.
- **Tag** – a device usually made of card, paper, pasteboard, plastic or other material used to identify a hazardous condition.

Use

- Tags shall be used as a means to prevent incidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment or operations which are out of the ordinary, unexpected or not readily apparent.
- Tags shall be used until such time as the identified hazard is eliminated or the hazardous operation is completed.
- Tags need not be used where signs, guarding or other positive means of protection are being used.
- All required tags shall contain a signal word and a major message.

Signal Word

- The signal word shall be either "Danger", "Caution", "Biological Hazard", "BIOHAZARD" or the biological hazard symbol.
- The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee.
- The signal word shall be readable at a minimum distance of five feet or such greater distance as warranted by the hazards.

Notes

ETC
INCIDENT PREVENTION AND TAGS

Tags

Tags shall be affixed as close as safely possible to their respective hazards by a positive means such as string, wire, or adhesive that prevents their loss or unintentional removal.

- **Danger Tags** – shall be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to employees.
- **Caution Tags** – shall be used in minor hazard situations where a non-immediate or potential hazard or unsafe practice presents a lesser threat of employee injury.
- **Warning Tags** – may be used to represent a hazard level between "Caution" and "Danger" instead of the required "Caution" tag, provided that they have a signal word of "Warning", an appropriate major message, and otherwise meet the general tag criteria.
- **Biological Hazard Tags** – biological hazard tags shall be used to identify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, or combinations thereof, that contains or is contaminated with hazardous biological agents.
- **Other Tags –** may be used in addition to those required or in other situations where situations do not require tags, provided that they do not detract from the impact or visibility of the signal word and major message of any required tag.

Notes

ETC
INCIDENT PREVENTION AND TAGS

Color Coding

While the standard does not specifically mandate colors to be used on incident prevention tags, the following color scheme is recommended by OSHA for meeting the requirements of this section.

- **Danger Tag** – "DANGER" – Red or predominantly red with lettering or symbols in a contrasting color.
- **Caution Tag** – "CAUTION" – Yellow or predominantly yellow with lettering or symbols in a contrasting color.
- **Warning Tag** – "WARNING" – Orange or predominantly orange with lettering or symbols in a contrasting color.

Biological Hazard Tag

- **Biological Hazard** – Fluorescent orange or orange-red, or predominantly so, with lettering or symbols in a contrasting color.
- The tag's major message shall be presented in either pictographs, written text or both.
- The signal word and the major message shall be understandable to all employees who may be exposed to the identified hazard.
- All employees shall be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.

Notes

ETC
PERSONAL PROTECTIVE EQUIPMENT (PPE)

Objective:

Upon completion of the Personal Protective Equipment (PPE) training unit, employees will be able to identify the PPE required for use when performing well service operations and know how to use each item properly.

Specific Objectives:

- Identify head, eye, hand, foot, hearing and clothing protection equipment.
- Wear or use the equipment properly.
- Determine defective equipment.
- Perform routine maintenance on equipment as required.
- Identify proper clothing to be worn on location.

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29CFR 1910.132F
ANSI & OSHA Standards for specific PPE

I. Introduction – PPE

Personal Protective clothing and equipment is designed to protect the employee from chemical or physical hazards. All other safety precautions must be in effect where possible before PPE is used. PPE must be worn to meet the hazard assessment conducted and/or MSDS requirements defined.

Notes

Specific equipment designed for ear, head, eyes, hands, and feet are the most common devices used for employee protection. Employees may be required to wear other specified equipment to reduce hazards to the individual when performing specialized job duties. Employees are also responsible for the sanitary condition of their PPE.

II. Personal Protective Equipment (PPE)

1. Head Protection - Hard Hat (Safety Helmet)

Anyone working or standing within the perimeter of identified hazardous areas on location is required to wear a hard hat at all times or while working on equipment in the yard or shop.

Hard hats must meet ANSI Z 89.1 & OSHA standards as applicable. The hat cannot be altered or changed in any way such as carving initials, cutting holes or removing parts from the hard hat. Hard hats must be plastic & not metal.

Hard hats and liners are to be washed with soapy water periodically; harsh solvents are not to be used. The hard hat is to be inspected before each use and replaced if there are cracks, if inadequate suspension/liners exist, if the hat becomes brittle or is otherwise damaged.

Safety Precaution:

The hard hat liner inside the hat, which is the hat's suspension system, must be adjusted so there is a one-inch gap between the hard hat liner and the hard hat. The hard hat should fit comfortably and securely to the head. This suspension system absorbs the impact of the blow and distributes its' affect evenly throughout the shell of the hat.

Notes

If a hard cap is worn, the bill must be worn in front to give greater protection to the facial area.

Application:

- Inspect a hard hat for damages.
- Adjust the liner to meet the required standards.

2. Eye Protection - Safety Goggles and Face Shields

All employees shall use approved eye or face protection when working on equipment in the yard, shop, on location areas identified as hazardous or inside the perimeter of the identified hazardous areas. Employees who wear prescription lenses while performing operations that involve eye hazards shall wear eye protection that incorporates the prescription in the design or shall wear eye protection that can be worn over prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.

When supervising, helping, or performing welding operations all filter lenses, when worn, must meet the requirements of OSHA 29CFR 1910.133. Contact lenses must be soft or gas permeable lenses or the type specified by the employer.

Sight protection can protect your eyes against a variety of eye hazards such as chemical splashes, flying particles, and dust.

The most common form of eye protection is safety glasses with side shields (prescription or nonprescription). They are designed to protect your eyes from airborne particles. Safety glasses and face shields should be worn when pouring a rope socket, grinding, chipping or performing any other function in which flying debris might cause injury to the eye.

Notes

Chemical goggles completely cover the eyes. They have indirect ventilation ports covered by small plastic overlays. These goggles give greater protection than safety glasses from potential hazards such as chemical splashes.

Face shields should be worn if greater protection from splashes and flying debris is needed. Face shields must be worn with safety glasses or goggles.

SAFETY PRECAUTION:

Safety goggles are required to be available on location at all times. Select the eye protection device(s) that gives you the greatest protection from the hazard. Check it for cracks, scratches and any other impairment which might affect its' performance. Regular cleaning and proper storage of eye protection equipment is recommended. All prescription eye-protection equipment must meet the Z-87 safety standards. Adequate protection against the highest level of each of the hazards should be provided.

Application:

- Discuss types of work at a well site where specific eye protection is required.
- Inspect eye protection devices for possible damage.

3. Hand Protection - Gloves

A high-quality, cotton glove as specified by your company is recommended to protect hands from pinch points, abrasive materials, hot and cold temperatures, mechanical parts, and static electricity. Leather gloves are not recommended. The selection of hand protection shall be based on a hazard assessment of the tasks being performed, conditions present, duration of the exposure, potential hazard and the glove materials.

Notes

SAFETY PRECAUTION:

Make sure there is no skin exposed between the glove and the sleeve when you are working with chemicals. Caution should be taken when wearing gloves around rotating and moving equipment. Barrier creams are not considered adequate hand protection.

Application:

- Identify operations where gloves are required and the type of glove to be used.

4. Foot Protection - Safety Toed Boots

The wearing of safety-toed boots is required on location at all times and in the shop, yard, or field locations while repairing equipment. These boots have a safety cap and rugged-nonskid soles. The safety caps are built into the toe, which protects the toes from being crushed. The soles prevent the wearer from slipping and falling. Some boots also have high lace-up tops specifically designed to protect workers against twisted and sprained ankles. Boots must meet Standard Z-41. Boots must be constructed with sturdy oil resistant soles and leather uppers. Sandals are not allowed on the location yard, shop, or field locations.

Safety Requirement

The wearing of safety toed boots is required on location at all times. New employees are expected to wear a pair of safety toed boots when they arrive for work on their first day. The type of safety toed boots worn is determined by the hazard assessment coordinated for the task to be performed.

Notes

Application:

- Identify acceptable safety boots that may be worn in the shop, yard, or on field locations.

5. Hearing Protection

It is recommended that earplugs or earmuffs be worn to minimize the amount of noise that reaches the inner ear and protect worker's hearing while on location. Employees working in areas where the noise level exceeds 85 d BA are required to wear hearing protection.

Earplugs can be reusable or disposable. Most importantly, they need to be properly cleaned and stored when they are not being worn.

Safety Precaution:

Always wash your hands before inserting clean earplugs. Carefully check them for hardening, tears, and cracks. Insert the earplug well into the ear. A tight, protective seal is created when the earplug expands. If the seal is not tight, it will not protect your hearing.

Earmuffs protect your hearing by forming a seal around the ears. They can be worn apart from the hard hat or they can be attached to the hard hat. They form a tight seal when attached to protective head gear.

Check the earmuffs for signs of wear before putting them on. Make sure that hair, jewelry, or side bars on safety glasses do not interfere with the seal of the earmuffs. Hair always needs to be pushed back and jewelry removed in many instances before putting on the earmuffs. Earplugs provide better protection than muffs.

Notes

Application:

- Demonstrate the correct method for inserting earplugs into the ear.

6. Clothing & Jewelry

Clothing:

Your work clothing is another safety feature. Personal protective equipment such as hard hats, cotton gloves, safety toed boots, and hearing protective devices should be worn at all times. Other protective devices such as safety glasses (prescription or nonprescription) and goggles should be worn as required by the company. Some companies require FRC approved clothing based upon the hazardous condition which exists on the job.

It is suggested that close-fitting cotton or wool clothes, including short, tight-fitting cotton gloves, sleeved work shirt, and full length trouser always be worn. Long hair should be tied up and secured under the hard hat. Loose clothing and long hair might be caught in the moving parts of the machinery pulling the worker into the machinery. Do not wear clothing such as dragging pants, loose or torn clothing which may cause falls or get caught in machinery otherwise causing an accident.

Jewelry:

Well-servicing or other workers should never wear rings, watches, and other jewelry that could catch on tools or machinery while on the job.

Application:

- Inspect your work clothing for possible problems, which may cause an accident.
- Discuss possible injuries which may be caused by wearing jewelry.

Notes

ETC
FALL PROTECTION

Objective:

Upon completion of the Fall Protection unit, employees will be able to know and perform proper fall protection techniques when working at elevated levels.

Specific Objectives:

- Perform 100% tie off
- Properly adjust a full-body harness
- Identify various equipment used for fall protection

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29CFR 1926.501

I. Introduction – Fall Protection

There are a number of ways to protect workers from falls including conventional systems such as guardrail systems, safety net systems, and personal fall protection systems (fall arrest systems, positioning systems, and travel restraint systems) as well as through the use of safe work practices and training.

Thinking about fall protection before the work begins will help to manage fall hazards and focus attention on correct work practices. If personal fall protection is used, particular attention should be given to identifying attachment points and to ensure employees are trained to use the specific equipment required for each job.

A full-body harness is worn anytime an employee goes up into the derrick or will be working at heights requiring fall protection. Attach one end of

Notes

the lanyard to the "D" ring, which is on the back of the full-body harness, and the other end to the climbing device or engineer-controlled personal fall arrest system which is approved by your company.

The full-body harness should not be exposed to corrosive materials or vapors, hazardous chemicals, or high temperatures. The body harness shall not be altered or misused to insure maximum protection during use.

When donning the full-body harness, the employee must follow the manufacturer procedure for fitting the harness to reduce injury if a fall occurs. A properly adjusted harness will be snug to the body and have room enough to place two fingers between the leg and the leg straps.

The harness should be cleaned with water and mild soap detergent solution and hung to air dry. The harness should be stored in a cool, dry, clean area out of direct sunlight.

II. Safety

The full-body harness must not be altered or changed in any way. Fall protection devices should never be used again once they have been involved in a fall. Defective fall protection equipment must be immediately removed from service and identified as "out of service" or destroyed.

The full-body harness should be inspected daily for wear and damage. Double-locking devices are to be used to prevent roll out.

When the derrick worker is ascending or descending in the derrick, the floor workers and crew leader should watch him to ensure that his tail rope (lanyard) is attached to the railing.

All movement of the rig's traveling blocks should cease until personnel are in the workstations and secured to proper fall protection. At no time, shall an employee be unattached from fall protection while in the derrick, or working above the required height, except in the event of emergency evacuation.

Notes

ETC
FALL PROTECTION

Application:

- Inspect a full-body harness for acceptable use.
- Identify fall protection devices.
- Properly don a full-body harness.
- Describe the procedure for ascending the derrick with proper fall protection equipment.

Notes	

ETC
HAND SAFETY

Objective:

Upon completion of the Hand Safety unit, employees will understand general safety rules, the right tools for the job and the causes of hand injuries.

Specific Objectives:

- Understand general safety rules as it relates to hand safety
- Select the right tools for the job
- Explain types of cutting tools
- Explain causes of hand injuries

I. Introduction – Hand Safety

Injuries to hands and fingers are typically the most frequent injury we have; ranking 25-30% higher than the next closest category. A sound understanding of what causes hand injuries and how to avoid those situations can go a long way in reducing injuries.

II. Things to Consider

- Most of the work we do is done with our hands. It stands to reason that they would be the most frequently injured body part.
- What effects are there from losing digits or a hand?
  - Financial effects
  - Lost work/wages
  - Home life

Notes

ETC
HAND SAFETY

III. General Safety Rules

Evaluation - A simple four step approach to eliminating, controlling, or minimizing potential hand hazards that are encountered in day-to-day activities.

- **STEP 1:** Complete a general survey for hazards in the work site.
  - Is the work site safe?
  - Are there tripping hazards?
  - Are all moving parts properly guarded?
  - Are there hidden hazards that need to be evaluated?
  - Have I identified the safe work zone?

- **STEP 2:** Complete a more specific survey for hazards in the areas where hand placement for the task will be most critical.
  - What task are you preparing for?
  - What is your role in the task?
  - How are your hands at risk?
  - Will others be involved in the task?
  - How will we coordinate everyone's actions to complete the task?

- **STEP 3**: Be Familiar.
  - All persons must be trained and competent in the work they do.
  - If you have not been properly trained or you do not understand your role and responsibilities, the situation is unsafe.
  - Everyone has an obligation to stop work if it is unsafe.
  - All personnel on a job site have the responsibility to work safe.

Notes

- **STEP 4**: Use the Right Tools.
  - Use gloves when appropriate. Gloves should not be used when working around rotating machines or in areas where the glove fabric could become entangled and endanger your hand.
  - Never use defective or damaged tools and always use a tool for its intended purpose.
  - When cutting or trimming with a knife:
    - Always place the item to be trimmed on a firm surface. Do not place items in your lap or support them with your arm.
    - Keep your knife sharp. Sharp knives require less operating hand pressure and therefore are less likely to result in slippage and stray cutting.
    - Always trim in a direction away from your body.

IV. Right Tools for the Job

- A combination of good engineering controls and the use of PPE can be effective in reducing hand injuries.
  - Machine guarding
  - Safety devices on tools (spring loaded knives)
  - Proper PPE for the job
  - Push sticks
- Never use a tool for a job it is not intended for.
- Never use a tool that is defective.

V. Types of Cutting Tools

- Pocket knife
- Machete
- Bush knife
- Hatchets

Notes

ETC
HAND SAFETY

VI. Causes of Hand Injuries

- Hand tools
- Sharps in trash and reject materials (metal shavings, broken glass, etc.)
- Pinch points
- Handling of abrasive materials

Notes

ETC
FIRST AID/ CPR/ AED

Objective:

Upon completion of the First Aid/CPR/AED unit, employees will have a general understanding of what each topic is and when to use the techniques.

Specific Objectives:

- Understand what HBV and HIV diseases are
- Explain Universal Practices
- Understand proper response procedures
- Understand reporting processes

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29CFR 1910.151

I. Introduction – First Aid / CPR / AED

Accidents can happen anywhere and anytime. The first response to an accident is the most important. Often times, first aid given at the scene can improve the victim's chances of survival and a good recovery. Employees may give first aid if they are trained to do so and must get help for the seriously injured.

As an employee, it is important to have a working knowledge of First Aid and CPR practices as well an understanding of AED machines. It is also important that you understand how and when the use of these practices is needed and to what extent you can respond to an emergency situation. The best time to understand your role is before an emergency happens.

Notes

II. HBV and HIV Diseases

- **HBV -** Hepatitis B virus.
- Hepatitis B spreads by contact with an infected person's blood, semen or other body fluid. An infected woman can give Hepatitis B to her baby at birth.
- If you get HBV, you may feel as if you have the flu, or you may have no symptoms at all. A blood test can tell if you have it.
- HBV usually gets better on its own after a few months. If it does not get better, it is called chronic HBV, which lasts a lifetime.

- **HIV** - Human Immunodeficiency Virus.
- HIV most often spreads through unprotected sex with an infected person. AIDS may also spread by sharing drug needles or through contact with the blood of an infected person.
- The first signs of HIV infection may be swollen glands and flu-like symptoms. These may come and go a month or two after infection. Severe symptoms may not appear until months or years later.

III. Universal Precautions

- **Universal Precautions** - Avoiding contact with patients' bodily fluids, by means of the wearing of nonporous articles such as medical gloves, goggles, and face shields.
- Everyone should be considered a possible carrier of blood-borne pathogens.
- First aid supplies are required to be readily available which will carry items to help protect you when responding to an emergency.

Notes

ETC
FIRST AID/ CPR/ AED

IV. First Aid / CPR / AED

One Person Per Shift:

- OSHA states in 29 CFR 1910.151 that the employer shall ensure the ready availability of medical personnel for advice and consultation on matters of health. In the absence of a medical facility, a person or persons shall be adequately trained to render first aid.

AED Training:

- Automated External Defibrillators are sometimes the only way for a Sudden Cardiac Arrest victim to survive; and to be effective that first shock should be delivered within the first 3-5 minutes.
- AED machines are self contained and provide step by step instructions walking the user through the application and activation process.
- More detailed information is provided in the hands-on First Aid/CPR course.

Responding:

- Employees may render first aid if they are trained to do so.
- Be aware at all times of the location of emergency equipment including first aid kits.

Reporting:

- Report all incidents or exposure to your supervisor immediately.
- Immediate notification can help ensure that anyone injured or exposed can receive the treatment they need to help reduce the chances of long-term health effects.

Who to Call:

- In the event of an emergency, notify your supervisor.
- If the event is life threatening - call 911.
- Be aware of the location of posted Emergency Numbers.

Notes

V. Shock

Shock usually accompanies severe injury or emotional upset. The signs are cold and clammy skin, pale face, chills, confusion, frequent nausea or vomiting and shallow breathing. Until emergency help arrives, have the victim lie down with the legs elevated. Keep the victim covered to prevent chilling or loss of body heat. Give non-alcoholic fluids if the victim is able to swallow and has not sustained an abdominal injury.

VI. Bleeding

Until emergency help arrives, try to control bleeding. If possible, first put on rubber or latex gloves before touching any blood. If these are not available, a clean plastic bag can be used to cover your hands. It is important not to come in contact with blood because of the health risks.

If finger or hand pressure is inadequate to control bleeding, place a thick pad of clean cloth or bandage directly over the wound, and hold in place.

As a last resort, a tourniquet can be applied to stop bleeding. There is a risk of sacrificing a limb to save a life. A tourniquet is a wide band of cloth or other material tightly placed just above the wound to stop all flow of blood. A tourniquet crushes the tissue and can cause permanent damage to nerves and blood vessels. Once in place, a tourniquet must be left there until a physician removes it. The victim must be taken to medical help as soon as possible.

Notes

VII. Choking

Choking occurs when food or a foreign object obstructs the throat and interferes with normal breathing. The following steps are advised if the choking victim is unable to speak or cough forcefully.

For adults and children over one year of age:

1. Ask, "Are you choking?".
2. Shout, "Help!" Call for help if the victim cannot cough, speak or breathe, is coughing weakly or is making high-pitched noises.
3. Phone emergency staff for help. Send someone to call an ambulance.
4. Do abdominal thrusts: Wrap your arms around the victim's waist. Make a fist. Place the thumb side of the fist on the middle of the victim's abdomen just above the navel and well below the lower tip of the breastbone. Grasp the fist with the other hand. Press the fist into abdomen with a quick upward thrust.
5. Repeat abdominal thrusts until the object is coughed up or the victim starts to breathe or cough. If the victim becomes unconscious, lower the victim onto the floor.
6. Do a finger sweep. Grasp the tongue and lower jaw and lift jaw. Slide the finger down inside of the cheek to base of tongue. Sweep the object out.
7. Open the airway. Tilt the head back and lift the chin.
8. Give two full breaths. Keep the head tilted back, pinch the nose shut, and seal your lips tight around the victim's mouth. Give two full breaths for one to one and a half seconds.
9. Repeat steps six through eight until the airway is cleared or the ambulance arrives.

Notes

VIII. Unconscious Victim

If the victim is unconscious, perform rescue breathing. If the victim's heart has stopped beating, perform cardiopulmonary resuscitation (CPR) if you have been properly trained to do so.

IX. Basic CPR

Approaching the Patient:

- **H**azards – identify all the hazards.
- **E**nvironment - consider your surroundings.
- **L**ook – be cautious in high traffic areas.
- **P**rotect against bloodborne pathogens – use universal precautions.
- **U**nknown hazards – consider the hazards you can't see.

- Tap and shout.

Activate EMS:

- Have another bystander activate EMS.
- If you're alone, call EMS yourself before rendering aid.

Perform Initial Assessment:

- Open Airway using head-tilt chin-lift. If foreign material is visible in patient's mouth remove it.
- Look, Listen and Feel for Breathing – Look for rise and fall of the chest, listen for sounds of breathing, and feel exhaled air. Assess no longer than 10 seconds, if breathing is absent perform CPR.

Patient *is not* Breathing:

- Give 2 ventilations.

Notes

Perform CPR:

- Provide continuous cycles of 30 compressions and 2 ventilations until another provider or EMS takes over.

Patient *is* Breathing

- Place in recovery position. If uninjured, placing the patient on their side will allow fluids to drain and prevent the tongue from blocking the airway.
- Monitor breathing.

Notes

ETC
BLOODBORNE PATHOGENS

Objective:

Employees will be able to know the hazards/exposures of bloodborne pathogens where applicable and to demonstrate how to manage potentially infectious materials and how to properly dispose of contaminated materials.

Specific Objectives:

- Define bloodborne pathogens
- List types of bloodborne pathogens
- Select the sign for bloodborne pathogen labeling
- Discuss what waste is regulated
- Discuss personal protective equipment (PPE) for universal precaution
- List the action for exposure procedure
- Check PPE kit for required materials

Reference:

OSHA - 29 CFR 1910.1030
Operator Manual
Company Manual

I. Introduction: What are Bloodborne Pathogens?

Bloodborne Pathogens (BBP) are micro-organisms such as viruses or bacteria that are carried in blood and can cause disease in people.

II. Types of Bloodborne Pathogens

Bloodborne Pathogens relating to people can be one or more of the following:

Notes

- Syphilis
- Malaria
- Brucellosis
- Hepatitis B (HBV)
- Human Immunodeficiency Virus (HIV) AIDS
- Hepatitis C Viral Infection

A. Hepatitis B (HBV)

Detailed information regarding Hepatitis B (HBV) is that it is a virus that is infection and inflammation of the liver, transmitted primarily through blood-to-blood contact. It can lead to serious conditions such as liver cancer, and the disease can survive in dried blood for seven days or more. There is no cure for the HBV virus; however, many people can develop antibodies to fight the disease, which may prevent future infection.

Symptoms of the HBV virus are:

- Mild flu-like symptoms
- Fatigue
- Possible stomach pain
- Loss of appetite
- Nausea
- Jaundice
- Darkened urine

Exposed HBV persons may seek help through the vaccination process. The process includes a series of three shots, one current, second one month later, third three months later which will gradually build up immunity to the HBV virus.

Notes

B. Hepatitis C

Hepatitis C also attacks the liver & has the same symptoms as Hepatitis B. A blood test can determine the difference between Hepatitis B & C. Currently there is no effective treatment or protective vaccine for Hepatitis C.

C. HIV (Aids)

The most serious bloodborne pathogen disease is the (HIV) Aids virus. The virus may be in a person's system many years before Aids actually develops. The HIV attacks the body's immune system to weaken it beyond the level the body cannot fight off other deadly diseases.

Aids are fatal since no known cure is available. The HIV cannot live long outside the human body. The HIV is primarily transmitted in a situation involving fresh blood or other potentially infectious materials. Possible symptoms of the HIV are:

- Fever
- Weakness
- White coating on the tongue
- Swollen lymph glands
- Nausea
- Headaches
- Weight loss

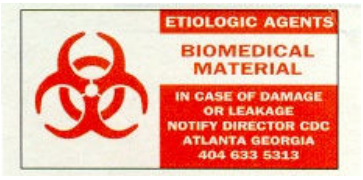
Bloodborne pathogen disease can be transmitted through contact with infected human blood or other body fluids such as: cerebrospinal, synodical, pleural, peritoneal amniotic fluids, saliva, semen and vaginal secretions. Transmittal can be by mucous membranes such as eyes, nose, and mouth.

Notes

ETC
BLOODBORNE PATHOGENS

III. Signs and Labels

Where bloodborne pathogen diseases exist warning labels must be displayed on containers indicating that a potentially infectious material exists. The biohazard label sign will be fluorescent orange or orange-red color and affixed to the container to prevent unintentional removal.



IV. Regulated Waste

Regulated waste includes liquid and solid blood, contaminated items that would release infectious materials in a liquid or semi-liquid state if compressed and items that are caked with dried blood or other infectious material.

Application

- Discuss how regulated waste may be disposed at a well site after a BBP incident.

V. Emergencies

All employees are required to ensure that someone on the well site location will be trained in first aid and CPR. Those employees may be exposed to a BBP incident when rendering first aid or CPR. Emergencies exist when a potential bloodborne pathogen hazard may be contacted during first aid or other emergency treatment. To minimize the employee's exposure the following PPE should be used; the person should wear gloves and splash goggles. Packets of mouth-to-mouth resuscitation masks or other preventative barrier devices should be used when the situation requires resuscitation.

Notes

ETC
BLOODBORNE PATHOGENS

VI. Exposure Incident Procedure

If you are exposed, the employee must wash the affected area immediately or flood contaminated mucous membrane areas with water for a minimum of 15 minutes using non-abrasive soap. Report the incident initially to your supervisor and document the events surrounding the event. Employees who have been exposed to a bloodborne pathogen should request blood testing Hepatitis B and HIV testing. Employees who are assisting in controlling an injury must have latex gloves (double glove if possible) for maximum protection. When completed the gloves are to be removed by pulling the gloves inside out.

Contaminated gloves, dressings and other materials such as drinking cups or other blood carrying items (sharp objects) are to be placed in a leak proof plastic bag and tied shut. Contaminated materials in plastic bags have to be disposed of in accordance with company policies. Employees are to wash their hands thoroughly or wipe with antiseptic wipes and then wash hands with soap as soon as possible.

If hard surfaces are involved, flood the spill area with a bleach solution (1 part to 100 parts of water) or disinfectant solution, if bleach solution will damage surfaces or equipment flood the area with alcohol. Carpeted areas may require special solutions to remove contaminated area.

Upon completing the exposure incident the attending employee(s) are to record information such as activity at time of exposure, protective equipment worn, injury or illness of the employee involved, those assisting, type of body fluid exposure (blood, urine, mucus, etc.). Employees are to follow company procedures and process for completing accident report or insurance forms.

Notes

ETC
BLOODBORNE PATHOGENS

VII. Bloodborne Pathogen Personal Protective Equipment Kit

Each well service crew/employee shall have available on site the following items in the event of a bloodborne pathogen contamination:

A. Emergency First Aid Kit
B. Pairs of latex gloves
C. Disposable towels
D. Chlorine concentrate
E. Plastic bags & ties
F. Scraper or scoop
G. Rubber apron, optional
H. Face masks/shields
I. Absorbent pads
J. Antiseptic wipes
K. Eye protection
L. One way CPR valve
M. Packing & handling materials for disposal

Any personal protective equipment, which is torn, damaged, or used, must be disposed of in proper fashion. Contaminated gloves, dressings and other materials are to be placed in a leak proof plastic bag and tied shut. Contaminated materials in plastic bags are to be disposed of in accordance with company policies. Employees are to wash their hands thoroughly or wiped with antiseptic wipes and then wash hands with soap as soon as possible. Where extreme danger exists through a large exposure from a major accident, employees may need to shower with soap and water and change into clean clothes.

All instruments that come in contact with blood or other body fluids are to be washed with germicidal disinfectant (Such as back boards, splints, etc) prior to storing for future use.

Notes

Application

- Check BBP emergency material equipment for completeness.
- Locate where the BBP kit is located on your drilling or well servicing rig, crew truck, or employee vehicle.

VIII. Post Exposure and Follow-up

The employer, after the employee has had exposure to a BBP incident, will make available a confidential medical evaluation and follow up. Additionally, employees who have a potential exposure to an incident may request HBV vaccination if the vaccination has not been provided previously. This should be done within 14 days of exposure and tested for HIV 6 weeks and 6 month after exposure.

Notes

ETC
PERMITTING

Objective:

Upon completion of this module, students will understand general permitting, safe & hot work programs and confined space as defined in the training.

Specific Objectives:

- Identify locations where permits are required.
- Discuss what is required to be on a permit.
- Evaluate a situation and determine if permitting is required.

I. Introduction – Permitting

1. Permits are job specific and site specific:
   a. Confined Space permits
   b. Hot Work permits
   c. Other permits

Permitting is in place to ensure the safety of you, co-workers and contractors while on the job site. It is important that you understand where permits are required, what must be on them and when to use them. For every permit required procedure, there are roles assigned to the work team. The people in each of these roles must be aware of their duties and be able to perform them in a safe and efficient manner.

II. Permitting/Safe Work

1. All permits must be written and kept in a location designated by the company.
2. Permits are:
   a. job specific
   b. site specific
   c. time specific
3. All permits must describe the location of the job task and the personnel involved.

Notes

4. All permits must identify all operations associated with the task to be performed, which include:
    a. operations
    b. precautions
    c. special situations related to operations and precautions
5. All permits must identify the hazards and controls for the job task.
6. All permits should outline Stop Work Authority.
7. All permits must include a return to service authorization and posting.

III. Confined Space

1. Confined space is defined as any space that:
    a. has limited entry or exits
    b. could contain hazards
    c. is not designed for continuous occupancy
    d. may not have adequate ventilation

2. Some confined spaces may not require a permit, which is determined by a proper job assessment.

3. Permit required confined spaces having identified an existing or potential hazard and must have the following:
    a. Isolated and controlled entry (including safe entry procedures)
    b. Atmospheric testing
    c. Special equipment for existing conditions
    d. Emergency procedures
    e. General permit system

Notes

IV. Hot Work

1. Hot Work is defined as any job task with the potential for introducing an ignition source.
    a. Ignition Source Examples:
        A. Rig welding
        B. Flame cutting
        C. Grinding
        D. Portable heaters
        E. Motor vehicles

2. Lower Explosive Limits (LEL) must be observed when Hot Work is performed around containers containing hydrocarbons and their residue.

3. All Hot Work Permits must include the elements of the general permit system.

Notes

ETC
CONFINED SPACE AWARENESS

Objective:

To identify a confined space and determine non-entry.

Specific Objectives:

- Identify characteristics of a confined space
- Recognize hazards which may exist in a confined space
- Discuss where confined space may exist on a well site
- List two types of confined space entry permits
- Explain the workers responsibility to a confined space

Reference:

Operator Safety Manual
Company Safety Manual
OSHA 29CFR 1910.146

I. Introduction: Confined Space

A confined space is a space that is large enough for personnel to enter, has limited or restricted means of entry or exit, and is not designed for continuous occupancy.

1. A permit required confined space means a confined space that has one or more of the following characteristics:
   A. It contains or has a potential to contain a hazardous atmosphere.
   B. It contains a material that has the potential for engulfing an entrant.
   C. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.
   D. It contains any other recognized serious safety or health hazard.

Notes

2. Hazards which may exist in a confined space:

A. Chemical hazards - H2S & toxic vapors
B. Fire - flammable vapors
C. Noise
D. Temperatures
E. Radioactive (NORM)
F. Oxygen deficiency
G. Electrocution
H. Falls
I. Caving - resulting in suffocation
J. Heat stress
K. Other hazards which could result in injury or death

3. Examples of confined space in energy related services:

A. Cellars
B. Vessels
C. Bell holes
D. Ditches
E. Sump
F. Pit
G. Oil storage tanks
H. Frac tanks
I. Vacuum trucks

Application:

- List additional areas that may be classified as a confined space on a well site.
    1. _____
    2. _____
    3. _____

Notes

ETC
CONFINED SPACE AWARENESS

II. Types of confined space entry:

1. Permit Required - a space where hazards exist and proper training, equipment and personnel are required for entry.
2. Non-Permit Required - a space where the potential to cause bodily harm is nonexistent.

Application:

- List locations at a well site where a permit would be required for entry:

1. _____
2. _____
3. _____
4. _____

****NOTE:** ADDITIONAL TRAINING WILL BE PROVIDED TO EMPLOYEES WHO ENTER AND PERFORM WORK IN A CONFINED SPACE.

Notes

ETC
CONFINED SPACE AWARENESS

CAUTION

PERSONNEL ARE TO BE AWARE OF A CONFINED SPACE AREA AND ARE NOT TO ENTER AT ANY TIME. NOTIFY YOUR SUPERVISOR IMMEDIATELY WHERE A HAZARD EXISTS & ENTRY MUST BE MADE. PROPERLY TRAINED PERSONNEL WILL BE CALLED TO CONDUCT THE CONFINED SPACE ENTRY.

Notes	

ETC
EXCAVATION - TRENCHING & SHORING

Objective:

Upon completion of the Excavation – Trenching & Shoring unit the employee will be familiar with types of workers on locations and work practices in regards to expectations and atmospheres present.

Specific Objectives:

- Define the difference between site worker and competent person.
- List hazards related to excavation work.
- Discuss methods of protection for hazards and use of PPE.
- Understand procedures regarding hazardous atmospheres and rescue procedures.

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29 CFR 1926.650

I. Introduction – Excavation – Trenching & Shoring

Excavating is one of the most hazardous forms of construction activity due to the possibility of cave-ins. All employees on the site have the responsibility to ask questions if they have concerns, to keep informed of any changes in work activities and to respond to the direction of the competent person in charge of the excavation site. Each employee will only be permitted to work at the competency level that they are trained.

II. Requirements of the Standard

All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

Notes

III. Site Worker vs. Competent Person

Site Worker
Site workers are those employees working on a site or location that has an excavation project. Site workers are not authorized to work on the excavation project.

Competent Person
A competent person is one who is capable of detecting conditions leading to cave-ins, failures in protective systems and hazardous conditions and/or atmospheres. Competency is gained through training, experience and knowledge. A competent person has AUTHORITY to fix what is wrong.

IV. Work Practices

- Good work practices shall include proper training of all employees on the dangers associated with trenching and shoring.
- No employee shall be allowed on or around an excavation without proper personal protective equipment including atmospheric monitoring devices.
- No employee shall be allowed on or around an excavation that does not have a shoring system in place, if necessary.
- Atmospheric testing shall be done before entering the trench and periodically during work to ensure things are still okay.
- All underground hazards shall be identified before work begins. Utilize ONE CALL – 811 to have those hazards clearly marked.
- Permits will be required for certain conditions or procedures. The competent person will determine the correct permit type.

Notes

Emergency Rescue Equipment

- Breathing equipment
- Safety harness and line
- Basket stretcher
- Attendees
- Employees shall not work in excavations where there is an accumulation of water unless precautions have been taken to protect employees.
- Precautions include but are not limited to:
  - Special support or shield systems
  - Water removal or control
  - Safety harness with lifeline

V. Hazards Relating to Excavation Work

Oxygen Deficient Atmospheres

- Where oxygen is deficient, the atmosphere in the excavation shall be tested before employees enter excavations greater than 4 feet in depth.
- Adequate precautions shall be taken to prevent employee exposure to oxygen deficient atmospheres.

Loose Rocks or Soil

- Care should be taken to scale and remove loose material, install protective barricades or take other means to provide equivalent protection.
- Place and keep equipment at least 2 feet from the edge of excavation or use retaining devices to keep equipment from falling or rolling into the excavation.

Loads

- Employees are not permitted underneath loads handled by lifting or digging equipment.

Notes

ETC
EXCAVATION - TRENCHING & SHORING

VI. Use of Personal Protective Equipment

What is required?

- Respirators – employees must be fit tested and have proper training
- Retrieval equipment – harness, lifeline etc.
- Attendant

VII. Procedures Regarding Hazardous Atmospheres

Hazardous or Toxic Atmospheres

- <19.5% or >23.0% Oxygen (MN 5207.300)
- Combustible gas >10% LEL (LFL)
- Concentrations of toxic materials >TLV established by ACGIH

Confined Space

- Some trenches qualify as a confined space. Therefore compliance with the Confined Space regulations would be required.

Testing

- Before employees enter, the atmosphere shall be tested.
- Periodic testing shall be done to ensure the environment has not changed and the worker is still safe.
- Periodic testing should increase if you are operating equipment in the trench.

VIII. Emergency and Non-Entry Rescue Procedures

In the event of any emergency situation requiring rescue from an excavation, personnel **shall not** attempt to enter an unprotected trench to perform rescue.

- Call emergency services in your area.
- Rescue services that can be performed safely from outside the excavation, such as hoisting a harnessed victim, shall be undertaken. Other personnel in the excavation shall exit immediately, providing assistance only when not endangering their own safety.

Notes

ETC
HYDROGEN SULFIDE (H2S) AWARENESS

Objective:

Upon completion of the H2S training unit, the employee will be able to recognize H2S gas and precautions to counteract H2S exposure.

Specific Objectives:

The employee will be able to

1. Identify H2S gas
2. Identify properties of H2S gas
3. Identify symptoms of H2S on the body
4. List safety procedures relating to H2S gas
5. Demonstrate evacuation from a site
6. Identify types of detection devices

Reference: Contractor Safety Manual
Company Safety Manual
OSHA 29CFR 1910

I. Introduction – Identification of H2S

Hydrogen Sulfide, more commonly known as H2S, has been labeled with other names because of distinct odor. The H2S gas smells like rotten egg, stink, and sour or sulfureted hydrogen gas and is highly toxic. H2S is deadly therefore, employees must be prepared to deal with H2S gas exposure. Special situations may exist where a sulfide chemical may contact other chemicals to create H2S gas.

H2S gas is created by the decomposition of animal or vegetable matter. H2S gas may be found in oil and gas wells, storage tanks, sewers, mines, gas plants, and refineries.

H2S in high concentrations will present death, due to lung paralysis, before the odor is detected.

Notes

ETC
HYDROGEN SULFIDE (H2S) AWARENESS

Application:

- List areas where H2S gas may be located at a well site.

1. _____ 4. _____
2. _____ 5. _____
3. _____

II. H2S Properties and Characteristics

- Extremely Toxic: Six times more deadly than carbon monoxide, second only to hydrogen cyanide.
- Irritating to Skin: Not absorbed by skin but forms a sulfuric acid solution when combined with moisture such as perspiration.
- Eye Irritation: Causes severe pain.
- Colorless: Not visible in air.
- Rotten Egg Odor: At lower concentrations, higher concentrations will deaden sense of smell.
- Heavier than Air: Unless dispersed by wind, H2S will settle in low lying areas such as pits, cellars, ravines, or enclosures. Specific gravity of 1.189.
- Highly Corrosive: Causes metal fatigue.
- Highly Flammable: Does not require a spark to ignite! Any heated surface of at least 500 degrees Fahrenheit can cause ignition. Lower explosive limit of 4.3% or 4,300 PPM (L.E.L.) and upper explosive limit of 46% or 460,000 PPM (U.E.L.).
- Burns with a Blue Flame: When burning, H2S will produce sulfur dioxide which is also extremely toxic and has a pungent smell. Sulfur Dioxide (SO2) is easily disbursed by the wind.

Notes

- H2S Combines Easily with Other Liquids: It frees itself when released into the air.

Application:

- List location where H2S may settle at a well site.

_____

_____

- What is the 1st sense of when H2S may be present?

_____

_____

III. Symptoms Experienced by H2S Exposure

A. Eye irritation
B. Fatigue
C. Throat irritation
D. Skin irritation
E. Loss of consciousness
F. Headache
G. Dizziness
H. Vomiting
I. Irrational behavior
J. Coughing
K. Excitement
L. Nausea

Notes

ETC
HYDROGEN SULFIDE (H2S) AWARENESS

ACUTE:
Results in almost instantaneous asphyxia with respiratory paralysis. Acute poisoning, or strangulation, may occur after even a few seconds inhalation of a high concentration causing panting, cramps, paralysis and almost immediate loss of consciousness. Death may follow with extreme rapidity from respiratory and cardiac paralysis. **ONE SNIFF of a sufficiently high concentration may bring this about.**

SUB-ACUTE:
Results in irritation, principally smarting of the eyes, persistent cough, tightening or burning in the chest and a skin irritation. A concentration of a few hundredths of one percent higher than that causing irritation can cause asphyxia and death–in other words, there is a very narrow margin between consciousness and unconsciousness and death. A concentration of only 0.07 percent (700 parts per million in air) of H2S may cause collapse, unconsciousness and death.

NOTE:
Where high concentrations cause respiratory paralysis, spontaneous breathing does not return unless artificial respiration is applied. Although breathing is paralyzed, the heart may continue beating for a few minutes after the attack. Therefore, it is of utmost importance that artificial respiration is given as quickly as possible and continues until medical aid is available or until the victim resumes natural breathing.

OTHER EFFECTS:
There is no way of knowing what will happen when a person is affected by H2S. Hysteria is not uncommon. Violent convulsions may result with the victim becoming very rigid before falling. Some victims have received injuries as a result of falling. The victim may be difficult to handle and will invariably need some form of artificial respiration to assist or restore breathing.

Notes

ETC
HYDROGEN SULFIDE (H2S) AWARENESS

There does not appear to be any cumulative effect to the body from repeated exposures, but there are reported cases in which the victim appears to have less resistance to subsequent exposures. Speed is essential in rescuing and administering first aid and the need for training in artificial respiration where workers may be exposed to H2S cannot be over emphasized.

The effects of H2S to employees can be fatal if exposed to H2S gas; therefore it is necessary to evacuate the work area immediately. Persons are to go up wind or cross wind and to high ground when H2S gas is emitted from the well bore.

H2S is measured in parts per million (PPM) (1 part H2S to a million parts of air). 1 ppm = .0001% or equal to 1" in 16 miles or 1 second in 11.5 days.

0.13 PPM	Odor is apparent to most people.
4.60 PPM	Odor is easily smelled.
10 PPM	Eye irritation (threshold limit or permissible exposure limit) Beyond 10 PPM H2S always wear breathing equipment.
15 PPM	Short Term Exposure Limit (STEL).
20 PPM	Strong unpleasant odor.
100 PPM	Loss of smell in 2 to 15 minutes. Throat hurts, cough, I.D.L.H. Immediately dangerous to your health.
200 PPM	Respiration irritation after one hour, kills smell rapidly, burns eyes and throat.
500-700 PPM	Loss of consciousness after short exposure needs prompt artificial resuscitation.
700-1000 PPM	Rapid unconsciousness, failure of respiratory process.
1000-2000 PPM	Immediate unconsciousness, permanent brain damage may result unless rescued promptly.

Notes

500 PPM will paralyze long muscles of lungs. Breathing will not start on its own. Rescue breathing must be started immediately.

There is no immunity to H2S and no tolerance can be developed. You can smell as little as one part H2S in a million parts of air. Concentrations of H2S gas in the 100-500 PPM range, the sense of smell is quickly lost giving false sense of security that no gas is present.

Application:

- List some symptoms that might occur when H2S is present and their effects upon the body.
- Describe how to evaluate the well site if H2S is detected.

IV. Well Site Safety

H2S warning signs are to be posted when H2S gas may be present at the well site. The company official should also notify the service contractor that H2S is a potential hazard at that particular well location so employees can be aware of such hazard.

Caution: Detection of H2S solely by smell is highly dangerous as the gas rapidly paralyzes the sense of smell.

At sites where concentrations exceed the action levels, H2S gas detectors (portable or fixed) with an alarm, guy wire flagging, wind socks, and appropriate warning signs are to be placed around the well site to provide the employee with a warning and wind direction information in the event of a H2S gas release.

Notes

Colored flags may also designate the potential danger of the H2S exposure. The following are flag designations:

Stage 1 – Green Flag – Normal Operations
Stage 2 – Yellow Flag – Potential Danger (1 ppm to 20 ppm)
Stage 3 – Red Flag – Extreme Danger (over 20 ppm)

Employees are to be trained on the use of breathing equipment, its location for use in an emergency and CPR/First Aid techniques. A pre-work safety meeting is to be conducted to review the various H2S safety evacuation and rescue procedures. The buddy system is to be used to account for all personnel at the well site. At a H2S (sour gas) location, an assembly area(s) will be designated depending on the wind direction prior to beginning work at the well site by the crew chief.

In the event of an H2S alert and the monitor alarm sounds, employees are to evacuate the area quickly moving up wind or crosswind, and to high ground, **not in a low area**, after checking the wind sock or guy wire flags which indicate the wind direction.

In the event of exposure to a H2S environment, persons overcome by the gas will require prompt first aid treatment; however, it is imperative for the safety of the rescuers that certain emergency procedures are followed:

1. Rescue must not be attempted without the proper breathing equipment.
2. Victim should be moved either upwind or crosswind away from the H2S.
3. Initiate rescue breathing procedures immediately if breathing has stopped.
4. Only trained personnel should operate emergency breathing equipment such as a resuscitator.
5. After victim has received treatment, seek medical attention.

Notes

6. Keep victim warm.

7. Wash eyes with saline or clear water if eyes are affected.

8. Medical observation by a doctor is required until the victim is released to return to work.

Application:

- Describe well site safety precautions to evacuate the area.
- When the wind is from the South where would be the best assembly area located?
- During wind direction changes how might employees determine the best evacuation direction?

Detection Devices

The detection of H2S can only be accomplished with the use of special equipment. Federal laws stipulate a maximum exposure or threshold limit for workers during an eight-hour work day will not exceed 10 PPM of H2S (OSHA) (TLV).

The most common H2S detection devices are:

1. Piston Pump or Bellows Pump: Both use hydrocyanic acid tubes. Tubes are marked in ppm or percent. These are accurate and dependable and must be NIOSH certified.

Notes

2. Lead acetate or coated strips: These are strips that change color depending on the level of H2S concentration. The darker the color the more presence of H2S. Strip indicators are not accurate and are used only to note H2S presence.

3. Electronic Personal Detectors: The personal detectors are mounted on belts or handheld and are designed to give off an alarm when exposed to a predetermined level of H2S.

4. Fixed Systems: Fixed systems continuously monitor air for H2S presence and an alarm is activated when the sensing unit detects H2S. These systems are used in larger plants or when continuous monitoring is required at a well site.

Notes

ETC
FIRE SAFETY- PREVENTION AND PROTECTION

Objective:

To identify the types of fire, fire triangle components, types of fire extinguishers, proper use of extinguishers, and applications for well servicing fire prevention, control & protection.

Specific Objectives:

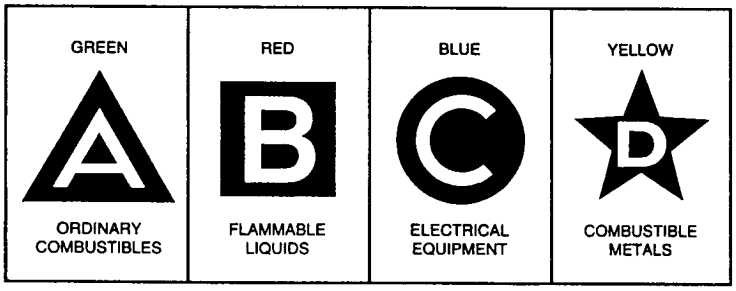
- List the types of fires by the fuel they burn
- Identify the symbols for the type and class of fires
- List the four elements of a fire
- Match the fire extinguisher classes and the type of fire they are used for
- Describe the proper steps used in applying an extinguisher to a fire
- Apply safety procedures to well site fires

Reference:

Operator Safety Manual
Company Safety Manual
OSHA 29CFR 1910

I. Introduction: Types of Fires

Fires are classified by the type of fuel they burn. The four types are:



Notes

1. Class A fires
Wood, paper, plastic, and rags: The symbol for a Class A fire is a green triangle with the letter "A".

2. Class B fires
Gasoline, diesel, oil, grass, and paint (picture): The symbol for a Class B fire is a red square with the letter "B".

3. Class C fires
Electrical fires, office equipment, motors, switchgear, and heaters: The symbol for a Class C fire is a blue circle with the letter "C".

4. Class D fires
Metals, potassium, sodium, aluminum, and magnesium: The symbol for a Class D fire is a yellow star with the letter "D".

II. The Four Elements of a Fire:

1. Air - air can be obtained from the oxygen in the air or from the fuel itself.
2. Fuel - something that can burn.
3. Heat - a source of ignition or heat to bring the fuel to a combustion level.
4. Chemical Reaction - when the existence of air, fuel, and heat are combined together in the proper amounts and under the right conditions and a chain reaction occurs and rapid oxidation will take place. The rapid oxidation will create a fire.

Notes

5. When one leg of the fire triangle is removed combustion stops.

Ways of Extinguishing a Fire:

- Reducing the temperature
- Removing the fuel
- Breaking the chain of reaction
- Reducing the oxygen

Applications:

- List methods of elimination for the prevention of fires through removal of a fire element.

1. _____
2. _____
3. _____
4. _____

III. Classes of Extinguishers:

Fire extinguishers are designed for a specific type and size of fire. The National Fire Protection Association (NFPA) has developed and labeled fire extinguishers according to the type of fires: A, B, C, or D.

Notes

A. Common combustible - anything that produces ash.
B. Flammable liquids - associated with barrels of fluids (oils and gasoline).

C. Electrical fires - associated with current.
D. Combustible metals - not common in the oil industry.

Class A fire extinguishers are used to extinguish fires where plastic, wood, rags, cloth and trash exist. The extinguishers use foam, water, loaded steam, waterless chemicals or a multipurpose dry chemical to put out the fire. The purpose of this fire extinguisher is to wet & cool down the area. Class A extinguishers are labeled by the size of the fire they are designed to extinguish. Example a 1-A extinguisher can handle half of the 2-A extinguisher's capacity and the 3-A can handle a three times larger fire than the 1-A extinguisher. Do not use carbon dioxide or ordinary dry chemical extinguisher on Class A fires.

The class A fire extinguisher is designed for wastebasket fires & smaller fires.

Caution. Be careful not to make the fire larger while using the class A fire extinguisher. Class A fire extinguisher shall be located within 75' or less of the fire scene. (29CFR1910.157 (d)(2))

Class B extinguishers are used to extinguish fires which contain gases or flammable liquids. Examples of such materials are: diesel, gasoline, oils, grease, paint & solvents. The extinguishers may use dry chemicals, foam, or carbon dioxide to extinguish the fire by cutting off the oxygen source or reducing the heat flame.

Class B extinguishers are numbered to indicate the number of square feet the fire extinguisher can handle. A 10-B is able to put out a fire 10 square feet area. The class B extinguisher shall be located within 50' or less of the fire scene. (29CFR1910.157 A(d)(4))

Notes

Class C extinguishers are used on electrical equipment fires and the surrounding area. The class C extinguishers usually use carbon dioxide or dry chemicals to extinguish the fires. No numbering system is used on these extinguishers. Water should never be used on electrical fires since it conducts electricity and could mean electrical shock to the extinguisher operator.

Class D extinguishers are for special fire uses, mostly on combustible special metal fires. Special metals such as aluminum, potassium, zinc and magnesium which generate combustion from flakes, chips and powdered metal. The class D extinguishers are considered special hazard extinguishers. No numbering system is used to designate this type of extinguisher. Class D extinguishers shall be located within 75' or less of the fire scene. (29CFR1910.157(d)(6))

All extinguishers should be inspected by an authorized person every month. (OSHA Regulations) A tag with the date of inspection or service must be attached to the extinguisher.

Multiple Rated Fire Extinguisher:

AB - Class A fires or B fires
BC - Class B fires or C fires
ABC - Class A, Class B or Class C fires

Application:

- List types of well site fires where each class of extinguisher may be used:
  1. A _____
  2. B _____
  3. C _____

Notes

IV. Proper Use of Extinguishers

Where a fire exist the extinguisher should be secured and apply the **PASS** techniques.

P = Pull the pin to allow the operator to discharge the extinguisher.
A = Aim the hose at the base of the fire to hit the fuel.
S = Squeeze the handle or lever to release the extinguishing agent.
S = Sweep from side to side until the fire is completely out.

Aim is very important since the operator has only a few seconds to extinguish the fire. The use time of an extinguisher may only last 3 to 20 seconds. If the fire appears to be larger than the operator can handle, don't attempt to extinguish the fire, call the professionals. Employees are to be aware of the capacity of the extinguisher and the size of the fire that the fire extinguisher can extinguish. Company policies should outline how much fire the employee is to fight. Once that decision is made, the employer will provide the appropriate extinguishers, equipment and training. Fires larger than what the employee is to fight, employee is to leave the well site immediately moving across or upwind from the fire if possible.

When extinguishing a fire never turn your back on any fire in the event the fire area does reflash. If a reflash occurs you will be in a better position to protect yourself. Approach the fire from the upwind side to eliminate the possibility of you not getting to the fire or to reduce the flames being blown on you.

Well site fires may be small fires caused by oil, gasoline, grass, grease or other combustibles or larger wellhead fires. Caution is to be exhibited in storing flammables in proper storage containers, storage of flammables away from the well site and reducing the possibility of static electricity, oily rags and other combustibles must be stored to eliminate spontaneous combustion which can result in major fires.

Notes

ETC
FIRE SAFETY-PREVENTION AND PROTECTION

V. Well Site Fire Safety Precautions

- Smoke in designated area only.
- All flammables in containers should be grounded & bonded prior to liquid transfer.
- Install spark arresters on mufflers.
- Store all flammables (oily rags and waste) in proper drums or metal containers with tight fitting lids.
- Use a grounding device between the well head and carrier to prevent static electricity build up.
- Eliminate all plastic buckets, styrofoam cups and other materials which cause occurrence of static electricity.
- Locate fire extinguishers on location as required by contractor. Example 2-30F or 3-20# extinguishers on each site located outside dog house and one on the opposite side of the unit. All extinguishers must be inspected daily.
- Brass hammers should be used within the well site area to reduce spark possibility.
- Never fight a fire where toxic gases may occur.
- Always leave yourself a safe out when extinguishing the fire.
- If caught on fire, the employee must STOP, DROP, & ROLL until the fire has been extinguished. *STOP* - where you are, *DROP* - to the ground or floor, *ROLL* - around on the ground or floor.
- If a co-worker catches on fire, smother the flames by grabbing a fire blanket and wrap them up in it.
- Matches and smoking equipment must be left in the designated safe area.
- Do not use natural gas or liquefied petroleum gas to operate pneumatic tools or spray guns.
- All cleaning materials should have a flash point of 100 F or more.
- When a Hot Work Permit is issued for welding or cutting in locations where a fire can occur, a person shall be designated as a fire watch, with a fire extinguisher available.

Notes

- Fire Watches shall be properly trained and equipped to watch hot work performance areas, as well as bordering areas, looking for fires and combustibles that have been exposed to fire.
- When the watch locates a fire:
  - ✓ They must warn the hot work worker(s).
  - ✓ The watch attempts to put out the fire with the appropriate fire extinguisher, *only if trained* in fire fighting and properly equipped. If not, the alarm must be sounded and proper fire fighting personnel summoned.
  - ✓ Upon completion of the hot work, the watch must stay at their post a minimum of thirty minutes.
- Prior to beginning work, the crew will discuss their Emergency Action Plan in the event of a fire or disaster.

Notes

ETC
ELECTRICAL SAFETY

Objective:

To identify electrical sources and determine methods to prevent electrical hazard for non-qualified personnel.

Specific Objectives:

- Identify the types of electrical sources
- Discuss locations where electrical hazards may occur on rigs
- Demonstrate preventative measures to eliminate possible electrical hazards to prevent injury

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29CFR 1910.301

I. Introduction – Electrical Safety Awareness

Electricity can exist from two sources:

1. Electricity generated from a generation source.
2. Static electricity, which is the buildup of electron particles in an object.

Electricity flows through a conductor such as water flows through a pipe. Electrical pressure is called voltage, the electrical current is amperage and the electrical resistance is considered as impedance.

Notes

II. Electrical Safety

Electricity takes multiple paths, flowing through the path of least resistance. The body can act as an excellent conductor, since it is made up of water, chemicals, and minerals. Because the passage of electrical current depends on contact between two different voltages at the same time, the body acts as a bridge to conduct the electricity since the body provides the path of least resistance. Bridging the gap between the two voltage levels with any part of the body results in electricity flowing from a higher voltage to lower voltage. Therefore, only when a conductor connects two unique sources is a circuit created. Precaution must be taken to eliminate the possibility of the body becoming the conductor.

Grounding is an important point in electrical safety and many times not understood. Grounding is providing a safe path for stray electricity to enter the ground. A properly installed ground offers a low resistance path for the electricity to enter the ground. Ground faults occur due to the loss of a ground connection. Most ground accidents are caused by malfunctions in equipment, tool casing, machine enclosures, and other conductive materials that surround electrical wires. Double casing and properly installed grounding connection helps keep stray current and electrical leakage from passing through the body.

Properly grounding of electrical supplies and equipment protects the worker from excess voltage and line surges. Bypassing grounds or improper handling of grounding connections can result in electrical fires or other accidents that may be fatal.

Notes

ETC
ELECTRICAL SAFETY

III. Electrical Safety Requirements

1. Employees are not to wear rings, watches, or carry keys, lighters or similar objects while working on electrical systems.

2. Hands, clothing and footwear shall be dry when handling energized electrical equipment.

3. Lockout/Tagout procedures shall be followed when performing service or maintenance of electrical equipment.

4. Avoid being near electrical boxes and other power equipment during an electrical storm.

5. Interlocks shall not be removed or modified on equipment.

6. Prior to opening or closing a disconnect on an electrical control box, confirm box in not energized by use of a non-contact voltage proximity meter.

7. Do not work on electrical equipment without proper training.

8. Proper personal protective equipment must be used when working on electrical equipment designating special use protection.

9. Only qualified persons are allowed to perform service or repair on electrical equipment.

10. Overload protection shall be properly sized to protect the circuit's maximum current capacity.

11. Clean and dry fuse pullers are to be used when removing fuses from breaker boxes. Safety glasses are to be worn when replacing a fuse.

Notes

ETC
ELECTRICAL SAFETY

12. Extension cords are to be free of splices, three wire grounded type, properly sized for the electrical service, and free from damage to the insulators and connectors.

13. Rig wiring shall be installed in a manner to protect it from abrasion and damage.

14. Ground Fault Circuit Interrupters (GFCI) are to be used in wet areas or in areas required by electrical code.

15. Employees who may be exposed to electrical hazards must wear hard hat with dielectric properties.

16. Tools used during electrical equipment repair must be insulated and approved for electrical work.

17. De-energize and LO/TO all circuits before starting work.

18. Pennies or modified fuses are not to be used as a circuit protection device.

19. Bridging or bypassing a current protection device is prohibited.

20. When engaging electrical power, stand on dry ground or insulated material.

21. Ground all electrical power plants when in use.

Caution – Electricity is silent and an invisible force that can kill without warning if ignored. Treat with respect and caution.

Notes	

Application

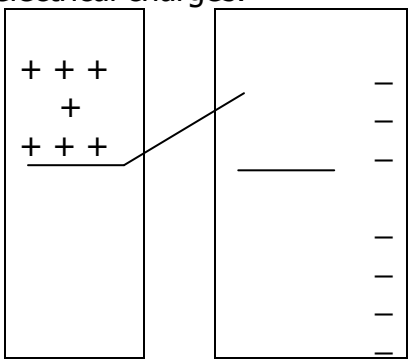
- Discuss locations where you work that an electrical hazard may exist.
- Identify types of hazards and corrective action required to eliminate the defined hazards.
- Relate experiences where an electrical hazard has existed and the corrective action taken.

IV. Static Electricity

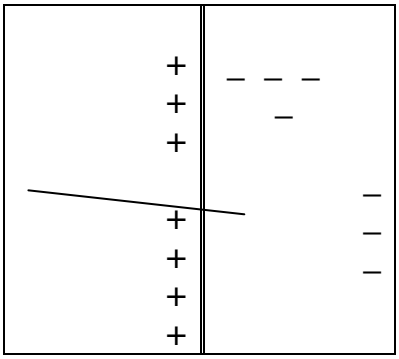
Static electricity exists when the flow of free electrons, which is the basic makeup of all matter, build up in unequal amounts on two different objects. When build up becomes large enough, electricity flow in the form of a static discharge or a spark occurs.

Static charge can be transferred to another object in two ways:

1. **Induction** – when objects do not have to be touching to transfer electrical charges.
2. **Conduction** – when two objects have to touch in order to transfer electrical charges.



Induction
(Separated Objects)



Conduction
(Touching)

Charged objects will transfer to a non-charged object until there is a balance of charges on both items. The balance is known as equilibrium.

Notes

Examples of well site items which build up charges are: gases, pipes, machinery, tanks, buckets, liquids, dust particles, and people.

Static electricity buildup must be discharged to a non-charged object to return equilibrium to objects. To avoid an explosion, equilibrium can be achieved in two methods – BONDING and/or GROUNDING.

BONDING – is the procedure of electrically connecting two objects so they may obtain the same electrical potential – equilibrium.

Bonding can be achieved by making direct contact between the two objects, if the contact is not interrupted by paint or other materials or by the use of a bonding metal wire connecting the two objects, which will equalize the electrons. Objects can also be connected to a ground to enable the static electricity to dissipate. Containers should always be kept closed until after bonding takes place prior to and after use.

GROUNDING – is connecting an object to an electrical ground or earth potential. Grounding is considered the best method of controlling static electricity.

Because of the extreme danger that static electricity poses, which can cause fatal and costly explosions, care should be taken to eliminate the following conditions to reduce possible hazards that can create an explosion:

1. Presence of flammable atmosphere, gas, or vapor condition with oxygen.

2. Generation of static charge when material is transferred from one location to another through pipes, filtering, pouring, mixing or agitating.

3. Static electricity charge buildup.

4. Static discharge to achieve equilibrium in the form of a spark.

Notes

The longer the charged liquid is left at rest, the more static charge will be equalized; this is known as charge relaxation.

The more the material is moved the more static charge is developed.

Static Electricity Safety Requirements

1. Use extreme care not to rub objects together when transferring materials to other containers.
2. Wear specially designed clothes that reduce electrostatic buildup and discharge.
3. Wear non-conductive footwear such as leather footwear.
4. When handling power type materials ground all personnel and ground all conductive parts such as funnels, pipes, and containers.
5. Use of metal buckets and containers are required for use within the well site area when contained with flammable material.
6. Properly bond and ground containers to balance and dissipate electrostatic charges.
7. Transport liquids slowly from one container to another.
8. Reduce liquid misting, spraying and splashing.
9. Allow time for the static electricity charges to equalize between the two containers.
10. During well servicing operations, grounding is to be provided between the rig and the wellhead with a grounding cable securely connected in the casing.

Notes

11. Derrick personnel must vacate the derrick during thunderstorms and all workers are to move away from the derrick.

12. Keep containers closed when not in use and until after grounding or bonding procedures have been completed.

13. Non-conductive hand gauges, chains and sample devices are to be used to reduce static spark when working on tanks with flammable materials.

14. Cell phones and two-way radios are to be turned off on well site locations. Pagers can be used only if they are designated as intrinsically safe.

15. When performing maintenance and repairs on the rig, or other vehicles, disconnect the battery ground cable before working.

Application

- Identify locations where static electricity is present on a well site.
- Discuss methods of preventing static electricity hazards to eliminate injury or death.
- What common examples have you experienced where static electricity hazards exist while working on a well site, and what precautions were taken to reduce static electricity occurrence?

Notes

ETC
ELECTRICAL SAFETY AWARENESS
SUBPART B

Objective:

Upon completion of this module, students will understand how to prevent harm to employees while working around electrical equipment.

Specific Objectives:

- Describe causes of electrical accidents
- Discuss the results of unsafe work practices around electricity
- Discuss the difference between energized and de-energized equipment
- Describe working near exposed de-energized equipment and energized equipment
- Discuss overhead line safety
- Discuss portable electrical equipment
- Be able to inspect welding leads, electrical cords, and GFCI
- Discuss use and types of electrical PPE

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29CFR 1910.301

I. Introduction – Electrical Safety Awareness Subpart B

There are two types of unsafe acts:

1. Intentional
2. Unintentional

Notes

II. Results of Unsafe Work Practices around Electricity

Electrical injury is a term for all injuries caused by contact with electrical energy. Most electrical injuries are classified as one of the following:

- Burns
- Electric shock injuries
- Eye injuries

1. Burns

- Flash burns
- Arcing burns
- Flame burns
- Contact burns
- Electrical burns

2. Electrical Shock Injuries

- Electric shock is caused by electric current passing through the body.
- Electric shock symptoms can range from a barely perceptible tingle to immediate heart stoppage. As well as the electric burn injuries discussed there may be internal bleeding, unconsciousness, respiratory paralysis and cardiac disorders.
- Electric current can cause involuntary muscle contractions. These may prevent the injured worker from letting go of the live conductor.
- Sometimes involuntary movements lead to bruises or bone fractures—or even death from collisions or falls.

Notes

3. Eye Injuries

Like any other part of the body, the eyes can be burned. Regular safety glasses may not protect against flash burns from electric arcs. Directly reflected light from an electric arc may cause a surface burn to the cornea. Although flash burns are very uncomfortable, most of those caused by shorter flashes are not serious and usually heal in 12 to 24hours. With longer flashes of a couple of seconds, permanent retinal damage may occur from the ultraviolet light. If there is a fire, the eyelids are frequently burned. The treatment of burned eyelids requires specialized medical care.

III. Energized and De-Energized Equipment

- **Energized Equipment-** means anything connected to an electrical source having a greater potential than that of the earth.
- **De-Energized Equipment-** being free from any electrical connection to a source of a potential different from that of the earth.

IV. Working Near Exposed De-energized Parts

Treat any conductors and parts of electric equipment as energized that have been de-energized, but have not been properly locked or tagged out and tested to a zero energy state. ***LOCKOUT/TAGOUT SHOULD ALWAYS BE USED.***

V. Working Near Energized Equipment

Only qualified employees may work on or with exposed energized lines or parts of equipment. Only qualified employees may work in areas containing unguarded, un-insulated energized lines or parts of equipment operating at 50 volts or more. Additional training is required with this line of work.

Notes

VI. Overhead Line Safety

- Don't operate equipment around overhead power lines unless you are authorized and trained to do so.
- If an object (scaffold, crane, etc.) must be moved in the area of overhead power lines, appoint a competent worker whose sole responsibility is to observe the clearance between the power lines and the object. Warn others if the minimum distance is not maintained.
- Never touch an overhead line if it has been brought down by machinery or has fallen. Never assume lines are dead.
- When a machine is in contact with an overhead line, **DO NOT** allow anyone to come near or touch the machine. Stay away from the machine and request outside assistance.
- Never touch a person who is in contact with a live power line.
- If you should be in a vehicle that is in contact with an overhead power line, **DO NOT LEAVE THE VEHICLE**. As long as you stay inside and avoid touching metal on the vehicle, you may avoid an electrical hazard. If you need to get out to request help or because of fire, jump out without touching any wires or the machine, keep your feet together, and jump to safety.

Notes

- When mechanical equipment is being operated near overhead power lines, employees standing on the ground should not come in contact with the equipment unless it is located so that the required clearance cannot be violated even at the maximum reach of the equipment.
- To maximize his or her own safety, an employee should always use tools that work properly. Tools must be inspected before use and, those found questionable, removed from service and properly tagged. Tools and other equipment should be regularly maintained. Inadequate maintenance can cause equipment to deteriorate, resulting in an unsafe condition.
- Tools that are used by employees to handle energized conductors must be designed and constructed to withstand the voltages and stresses to which they are exposed.
- Use the personal protective equipment appropriate for the job that is performed. This equipment may consist of rubber insulating gloves, hoods, sleeves, matting, blankets, etc. These items must be inspected prior to each use and tested annually.
- When working near overhead power lines, the use of non-conductive wooden or fiberglass ladders is recommended. Aluminum ladders and metal scaffolds or frames are efficient conductors of electricity.
- Avoid storing materials under or near overhead power lines.

Notes

ETC
ELECTRICAL SAFETY AWARENESS
SUBPART B

VII. Portable Electrical Equipment

Portable equipment is not part of a fixed installation but when used is connected to a fixed installation (or a generator), by means of a flexible cable, plug and socket. It includes equipment that is hand held or hand operated while connected to the supply. It also includes extension leads, plugs and sockets, and cord sets that supply portable equipment and are not part of the fixed installation, since they operate in the same environment and are subject to similar use as the equipment they serve.

VIII. Inspecting Welding Leads, Electrical Cords, and Ground Fault Circuit Interrupters

1. **Welding Leads-** Welders should inspect welding leads prior to and during work for signs of damage and/or exposed wire that could cause a short.
2. **Electrical Cords-** Once the cord is unplugged; you will want to visually inspect the cord from one end to the other for any type of damage, cuts, crimped areas, wires sticking out, etc. Damaged cords shall be replaced.
3. **Ground Fault Circuit Interrupters-** Should be checked each month, and after severe thunder and lightning storms, to ensure proper operation. A simple way to test a GFCI is by using the plug in; press the test button. The power should go out and stay out until the reset button is pressed.

IX. Personal Protective Equipment

It's important to look at the job task at hand when selecting PPE to be worn when working with electrical hazards. For example: hard hat, gloves, safety glasses, safety toed boots, properly treated clothing and proper face protection when applicable. It is just as important that you select non-conducting tools to help further protect you.

Notes

ETC
LOCKOUT/ TAGOUT

Objective:

After completion of the Lockout/Tagout unit the employee will be able to define and demonstrate the Lockout/Tagout process for various power sources.

Specific Objectives:

- Define Lockout (LO)
- Define Tagout (TO)
- List the two levels of employee designations
- List types of energy sources
- Outline a LO/TO procedure
- Outline restoring power procedure
- Identify lock & tag devices
- List examples of LO/TO application
- Identify the elements of required training

Reference:

Operator Safety Manual
Company Safety Manual
OSHA 29CFR 1910.147

I. Introduction

Lockout is the process of blocking the flow of energy (electrical, fluid, air etc.) from a power source with a blocking device to eliminate the power to disable the equipment. A Lockout device may be a lock, chain, block or special locking device that keeps the power in an "off" position. The energy isolation device or Lockout device is a mechanical device that physically prevents the transmission or release of power to the equipment.

Notes

ETC
LOCKOUT/ TAGOUT

II. Employee Designation

Employees are to be trained in the **LO/TO** procedures outlined in the written plan. Employees are designated as **AUTHORIZED EMPLOYEES.** Usually the crew chief, physically locks and tags equipment for maintenance or servicing. **AFFECTED EMPLOYEES** are persons who may operate or work in areas where equipment is subject to the **LO/TO** process. **AFFECTED EMPLOYEES** become **AUTHORIZED EMPLOYEES** when that employee's duties include performing servicing or maintenance activities.

III. Types of Energy Sources

Energy can come from different sources, but will come from one of two types:

- Kinetic Energy - the force caused by the motion of an object.
- Potential Energy - the force stored in an object that isn't moving.

Energy sources may include any one or combination of the following:

- Electrical
- Mechanical
- Hydraulic
- Thermal/steam
- Fluid under pressure/oil, water
- Gravitational
- Gases
- Pneumatic
- Nuclear
- Chemical

Notes

This program does not apply to handheld power tools or stationary equipment whose electrical power may be controlled by the unplugging of equipment from the energy source when the plug and cord are under the control of the employee performing the servicing or maintenance.

IV. Lockout and Tagout Procedure

1. Employees involved in the Lockout must be knowledgeable of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy before turning off well operating and/or service equipment. Actual Lockout/Tagout procedures used must be equipment specific, therefore, **EMPLOYEES** both **AUTHORIZED** and **AFFECTED** are to refer to company procedures.

2. **AUTHORIZED EMPLOYEES** will notify all **AFFECTED EMPLOYEES** (before and after) of the Lockout/Tagout and the prohibition regarding attempts to restart or energize equipment that may be locked/tagged out.

3. Well operating and service equipment shall be turned off or shut down using the procedures established by the operator or company. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of equipment shutdown.

4. All energy isolating devices, which are needed to control the energy to machinery or equipment, shall be physically located and operated as appropriate to isolate the machinery or equipment from the energy source(s). The location for the Lockout/Tagout center (locks & tags) is located in designated areas such as the Dog House for easy access.

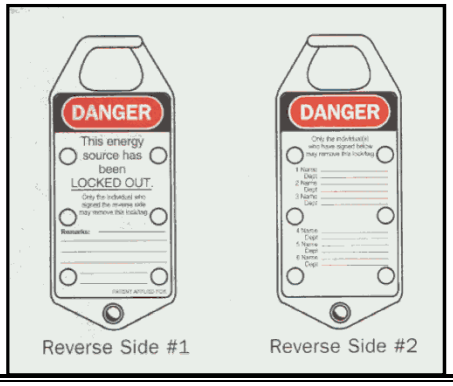
Notes

ETC
LOCKOUT/TAGOUT

5. Lockout the equipment with a personal lock used by the **AUTHORIZED EMPLOYEE** in charge. The tag placed on the equipment should be dated and signed by the person performing the work.

6. The **AUTHORIZED EMPLOYEE** must affix Lockout or Tagout devices to each energy source or isolating device. The devices shall be attached in a manner that will hold the energy isolating devices in a "safe" or "off" position. Turn the power source on after Lockout to assure the power source has been deactivated. **NOTE** - always look for **hidden** energy sources.

7. No lock shall be affixed without a tag dated and signed by the person performing the isolation and stating the reason it was locked out.



Notes

ETC
LOCKOUT/TAGOUT

8. It is policy to use locks whenever possible; however, Tagout devices, where used, shall be attached to clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited. Where Tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as closely and safely as possible to the device, in a position that will be immediately obvious to anyone attempting to operate the equipment. If a lock cannot be applied, a tag without a lock must be supplemented by at least one additional safety measure that provides a level of safety equal to that of a lock. Guards and interlock devices cannot be used as a substitute for Lockout devices.

9. Group Isolation- When a crew, department or group performs service or maintenance; they must use a procedure that provides all employees a level of protection equal to that provided by a personal Lockout or Tagout device. Personal control is achieved when each authorized employee affixes a personal Lockout/Tagout device to a group Lockout mechanism instead of relying on a supervisor or other person to provide protection against hazardous energy (i.e. multiple hasp and lock box) and will sign and date the **DANGER, DO NOT START** tag. Signature and date information can be obtained from log sheet. Each **AUTHORIZED PERSON** or group will test at the start station to determine that the equipment is inoperable. Never use another employee's lock and never loan yours out. This is a protection for all workers.

Notes

10. Following the application of Lockout or Tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe. If there is a possibility of re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists. Always look for hidden energy sources, since some equipment has more than one power source.

11. After ensuring that all personnel are clear, the equipment must be tested to verify that it is properly isolated and will not operate.

V. Specific Energy Isolation Procedures

Every power source has its own procedure for Lockout. The procedure may include one or more of the following: pulling a plug, opening a disconnect switch, removing a fuse, closing a valve, bleeding a line or placing a blind in a line. The following methods and devices will be used either separately or in a combination, depending on the equipment to locked and tagged out; the following energy sources may be encountered.

1. Electrical (Motor Controllers, Capacitors, Circuit Breakers, etc.)

A. Shut down the equipment using the selector switch followed by the master disconnect.
B. Ensure that <u>all</u> power sources are locked and tagged out.
C. Stored electrical energy must be dissipated to obtain zero energy state. Short circuit and ground all high capacitance elements.
D. When working on or near exposed de-energized electrical equipment, an electrical qualified person shall use test equipment and shall use a tester to ensure that all circuits are dead.

Notes

E If additional energy sources are present follow the applicable method of energy isolation listed in this section.
F. Disconnect battery ground when repairing or servicing the carrier engine or vehicles.

Application

- List equipment where electrical LO/TO is required at a well site:
  1. _____
  2. _____
  3. _____
  4. _____
- Discuss electrical applications where electrical energy must be removed prior to making repairs.

2. Pneumatic (Starting air, Control Valves, Instrument Air, etc.)

A. Identify system to be isolated.
B. Close block valve(s) upstream and downstream of section.
C. Release pressure to reach zero energy state, utilizing a controlled bleed-off.
D. Use chains, energy isolation air valves, shut off valves, padlocks and Lockouts to Lockout energy source. Disconnecting the line is the preferred means of isolation.
E. If additional energy sources are present, follow the applicable method of energy isolation listed in this section.

Application

- Name locations on a well site where pneumatic LO/TO procedures would be utilized and the LO/TO device which may be applied.
  _____
  _____
  _____
- Discuss procedures which may be used on the above application for removal of energy

Notes

3. Hydraulic (Valve Actuators, Presses)

A. Identify system to be isolated.
B. Isolate the system
C. Release pressure to reach zero energy state.
D. Use Lockout valves, chains, padlocks, and Lockouts to Lockout energy source.
E. If additional energy sources are present, follow the applicable method of energy isolation listed in this section.

Application

- Indicate where hydraulic LO/TO procedures would be used:

_____
_____
_____

4. Fluids and Gases (Piping systems, Vessels, Production/Process Equipment, and Storage Tanks, etc.)

A. Identify system to be isolated.
B. Isolate all inlet and outlet piping so that all sources of hazardous energy are controlled. Examples of energy isolating devices or means of isolation for fluids and gases include blinding or blanking, use of a line valve(s), depressurizing and disconnecting lines, misaligning pipes and capping or blinding ends, or double block and bleed. **(In most cases, double block and bleed is not considered acceptable isolation for entry into permit required confined spaces).**

NOTE: if the isolation method selected requires the opening of any flange or line connection, that flange or line connection point must first be isolated and depressured and those isolation points subject to Lockout/Tagout.

Notes

C. Release pressure to reach zero energy state.
D. If additional energy sources are present, follow the applicable method of energy isolation listed in the section.

Application

- List areas at a well site requiring LO/TO of fluids, and gases in production equipment or vessels.

_____

_____

_____

5. Mechanical (Pumping Unit, Counter Weights, Flywheels, Block etc.)

A. Release all stored mechanical energy or block the energy. Be aware of gravity, springs, tension, and other sources of energy that are not always obvious.
B. Use blocks, pins, or chains to restrain energy when equipment cannot be brought to a zero potential energy state.
C. Padlocks, Lockouts, and tags should be used to Lockout and Tagout mechanical energy.
D. If additional energy sources are present, follow the applicable methods of energy isolation listed in this section.
E. Place counterbalance weights in the down position, set brake and secure with a chain when required.
F. When servicing the derrick, the blocks are to be placed on the ground to reduce release of potential energy

Notes

ETC
LOCKOUT/TAGOUT

Application

- Discuss areas where mechanical equipment may require LO/TO procedure and the type of application that may be applied to each area.

_____
_____
_____

6. Blinding of Piping

A. Purpose

1. A blind is a metal plate inserted on the end of a pipe or between gasketed pipe flanges to prevent the flow of gas or liquid in either direction. A blind shall be of sufficient strength to withstand the pressure it could reasonably be expected to encounter.

B. Blinding Procedure

1. The decision to install and/or remove a blind shall be performed by an authorized employee.
2. Blinds shall be installed on or in all piping connected to tanks/vessels or equipment scheduled for maintenance, entry or hot work. **(Blinds shall be near the tank/vessel, preferably on the first flange from the tank/vessel shell.)** A list of blinds is to be developed for use when the removal of blinds is preformed to insure all blinds have been removed.

NOTE: In instances where a blind cannot be installed near the tank/vessel, other methods such as inflatable plugs with pressure bleeds, can be used as long as they provide equal protection for **EFFECTED EMPLOYEES** as would be provided by blinds

Notes

3. In some instances a valve, spool piece or other device shall be removed from the line and a blind flange installed on the line and the tank/vessel.
4. A blind shall be installed with three major considerations in mind:
   a) Will the blind effectively accomplish its purpose in the location selected?
   b) Can the blind be safely removed?
   c) Is there access to the selected location?

Application

- List locations where pipe blinding is required in your job.
- Indicate types of blinds required for the above application such as blinds for various pressures.

_____
_____
_____

Application

- What types of well site pipe blinding is required at well sites?

_____
_____
_____

7. Restoring Power to Equipment

A. The individual locks may be removed, after each phase of the work is complete, by the **AUTHORIZED EMPLOYEE** who placed the lock on the energy source.

Notes

The work area shall be inspected to ensure that nonessential items have been removed and that machine or equipment components are operationally intact. The work area shall be checked to ensure that all **AFFECTED EMPLOYEES** have been safely positioned or removed. The **AUTHORIZED EMPLOYEES** must be notified that the repairs are complete and ready for service. After Lockout or Tagout devices have been removed and before a machine or equipment is started, **AFFECTED EMPLOYEES** shall be notified that the Lockout or Tagout device(s) have been removed. Contractors will not be authorized to return equipment to service. In the event the **AUTHORIZED EMPLOYEE** who performed the LO/TO is not available, an authorized person may remove the lock or tag after ensuring that energizing the locked or tagged equipment will create no hazard.

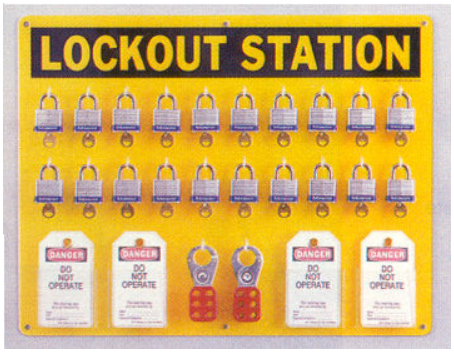
B. Each Lockout or Tagout device shall be removed from each energy-isolating device by the **AUTHORIZED EMPLOYEE** who applied the device. The **AUTHORIZED EMPLOYEE** who applied it must follow written procedure for the removal of a Lockout device. The specific procedure shall include at least the following elements:
    1. Determine conclusively the job has been completed and no **AFFECTED EMPLOYEE(S)** remains in the affected area. Remove all tools from the area and replace all guards and other safety protection devices.
    2. Verify that the **AFFECTED EMPLOYEE** is not at the hazard site. Conduct a head count to make sure everyone is clear of the equipment prior to restarting.

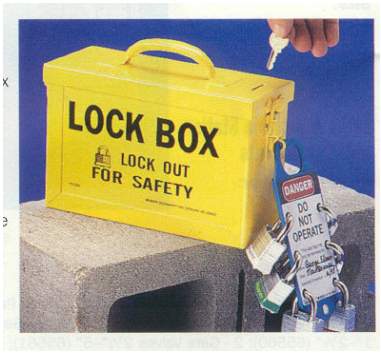
Notes

ETC
LOCKOUT/TAGOUT

8. Locking & Tagging Device

A. Each unit should provide standardized tags and individually keyed or combination locks as required to execute the above outlined procedure. The uniquely keyed locks shall be of a specific design used only for the Lockout/Tagout program. Employees are to become familiar with the location of the lock and tag center at each location.





B. Special tags or their equivalent shall be used.

C. Tag attachment devices must be of a non-reusable type, attachable by hand, self-locking with a minimum unlocking strength of no less than 50 pounds. A one-piece all-environment tolerant nylon cable tie-type device is acceptable for this application.

D. Critical systems locked and tagged should include identity and job title of person installing the lock and tag.

Notes

9. Lockout/Tagout Application

The control of energy hazards must be contained when equipment is being serviced, repaired, renovated, modified or making adjustment to equipment. When these conditions occur the LO/TO procedure must be initiated.

Examples of equipment where LO/TO may be used are:

1. Derrick
2. Draw works
3. Pump jack
4. Block
5. Engine
6. Power tongs
7. Flow lines
8. _____
9. _____
10. _____
11. _____
12. _____

LO/TO procedures are stated in writing in company manuals, which clearly explains all steps for implementing the LO/TO process. **AUTHORIZED** and **AFFECTED EMPLOYEES** are to become familiar with specific procedures required by your employer

10. Training

A. All employees who participate in the Lockout/Tagout program or who may be affected by the program must be trained prior to their participation in the program and annually thereafter.

Notes

Each **AUTHORIZED** employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control. Each **AFFECTED** employee shall be instructed in the purpose and use of the energy control procedure. All other employees whose work operations restart or reenergize machines or equipment, which are locked out or tagged out.

B. The training shall ensure that the purpose and function of the Lockout/Tagout program is understood and that the knowledge and skills required for the safe application, usage and removal of energy controls are conveyed to the employees.

C. Periodic Inspection- A periodic inspection of the energy isolation procedures should be conducted at least once a year to ensure that they provide adequate worker protection. As a part of the review it is required to correct any deviations and inadequacies identified in the energy control procedure or application.

D. Training should specifically encompass recognition of hazardous energy sources, type and magnitude of energy in the workplace, methods and means necessary for energy control and the purpose and use of the Lockout/Tagout program. The training shall also include rules and techniques to be used for authorization and the means that will be used for enforcement of the program.

Notes

E. Retraining shall be provided whenever there is a change in the Lockout/Tagout program and whenever job changes or changes in equipment or processes present a new hazard.

F. All training must be documented, including the date and names of employees attending the training.

11. Summary

A. The control of energy must be isolated according to the following steps:

1. Prepare for shutdown
2. Shutdown the equipment
3. Isolate the equipment

Notes

ETC
MATERIAL HANDLING

Objective:

Upon completion of the Material Handling unit, employees will understand why it is important to understand the proper care and use of equipment and know the different types. Additionally, the effects that material handling can have on the back.

Specific Objectives:

- Understand the types of material handling equipment
- Understand the importance of forklift safety
- Understand the importance of rigging and tag lines
- How to properly work with hand tools
- Understand the use of a cheater bar or pipe
- Understand why back injuries occur
- Explain how to lift safely
- List ways to move an item without lifting it

Reference:

Operators Safety Manual
Company Safety Manual

I. Introduction – Material Handling

Material handling equipment is all equipment that relates to the movement, storage, control and protection of materials, goods and products throughout the process of manufacturing, distribution, consumption and disposal.

II. Types of Material Handling Equipment

Storage and Handling Equipment

The equipment that falls under this description is usually non-automated storage equipment. Products such as pallet racks, shelving, and carts belong to storage and handling. Many of these products are referred to as "catalog" items because they generally have globally accepted standards and are often sold as stock materials out of material handling catalogs.

Notes

ETC
MATERIAL HANDLING

Engineered Systems

Engineered systems are typically custom engineered material handling systems. Conveyors, handling robots, and most other automated material handling systems fall into this category. These systems are often a combination of products integrated into one system.

Industrial Trucks

Industrial trucks usually refer to operator driven motorized warehouse vehicles. They assist the material handling system with versatility; they can go where engineered systems cannot. Forklift trucks are the most common example of industrial trucks. Tow tractors and stock chasers are additional examples.

Bulk Material Handling

Bulk material handling equipment is used to move and store bulk materials. This equipment is often seen in refineries and workplace facilities.

Manlifts

Systems designed to be operated by an individual from within the basket or from the ground. These types of systems are designed to work safely from heights with the ability to maneuver around. A full-body harness shall be worn and a lanyard attached to the boom or basket when working from an aerial lift (exception: a harness is not required in a scissor lift or personal man lift with surrounding guardrail system and closing gate or latch chain).

Forklift Safety

Each year, tens of thousands of injuries related to powered industrial trucks (PIT) or forklifts occur in US workplaces. Many employees are injured when lift trucks are inadvertently driven off loading docks, lifts fall between docks and an unsecured trailer, they are struck by a lift truck, or when they fall while on elevated pallets and tines. Most incidents also involve property damage, including damage to overhead sprinklers, racking, pipes, walls, and machinery. Unfortunately, most employee injuries and property damage can be attributed to lack of safe operating procedures, lack of safety-rule enforcement, and insufficient or inadequate training.

Notes

a. Pre-Operation Inspection

OSHA requires that all forklifts be examined at least daily before being placed in service.

- Before starting your vehicle, conduct a pre-operation (or pre-start) inspection that checks a variety of items, including but not limited to:

  - Fluid levels - oil, water, and hydraulic fluid.
  - Leaks, cracks or any other visible defect including hydraulic hoses and mast chains. NOTE: Operators should not place their hands inside the mast. Use a stick or other device to check chain tension.
  - Tire condition and pressure including cuts and gouges.
  - Condition of the forks, including the top clip retaining pin and heel.
  - Load backrest extension.
  - Finger guards.
  - Safety decals and nameplates. Ensure all warning decals and plates are in place and legible. Check that information on the nameplate matches the model and serial numbers and attachments.
  - Operator manual is on truck and legible.
  - Operator compartment. Check for grease and debris.
  - All safety devices are working properly including the seat belt.

b. Operational Inspection

After completing the pre-operation inspection, operators should conduct an operational inspection with the engine running.

Notes

ETC MATERIAL HANDLING	
	This inspection includes: ▪ Accelerator linkage ▪ Inch control (if equipped) ▪ Brakes ▪ Steering ▪ Drive control: forward and reverse ▪ Tilt control: forward and back ▪ Hoist and lowering control ▪ Attachment control ▪ Horn ▪ Lights ▪ Back-up alarm (if equipped) ▪ Hour meter ***NOTE: Unusual noises or vibrations should be reported immediately.*** **c. Removal from Service** ○ **Potential Hazard** While driving, be aware of these potential hazards: • Mechanical breakdown • Fire • Overheating • Leakage ○ **Requirements and Recommended Practices** • *Any powered industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel. [29 CFR 1910.178(q)(1)]* **Defects when found must be immediately reported to a supervisor or mechanic and corrected. [29 CFR 1910.178(q)(7)]**
Notes	

- *Any vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service and not returned to service until the cause for the emission of such sparks and flames has been eliminated. [29 CFR 1910.178(q)(8)]*
- *When the temperature of any part of any truck is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated. [29 CFR 1910.178(q)(9)]*
- *No truck shall be operated with a leak in the fuel system until the leak has been corrected. [29 CFR 1910.178(p)(4)]*

d. Maintenance

Scheduled maintenance is critically important to the safe operation of your vehicle. Never operate a forklift requiring maintenance and always report repair problems to your supervisor.

- **Potential Hazards**
  - Forklift skidding or sliding due to grease, leakage, or spills.
  - Mechanical breakdown due to poor maintenance.
  - Accidents and injuries due to improperly working equipment.

Notes

- **Requirements and Recommended Practices**
  - *Never operate a vehicle that requires maintenance or is in any way unsafe.* ***[29 CFR 1910.178(p)(1)]***
  - *Remove from service any powered industrial truck not in safe operating condition. All repairs must be made by authorized personnel. Do not attempt to fix it yourself unless you are trained and authorized to do so.* ***[29 CFR 1910.178(q)(1)]***
  - *Perform preventive maintenance according to manufacturer's scheduled recommendations.*
  - *Keep industrial truck in clean condition, free of lint, excess oil, and grease.* ***[29 CFR 1910.178(q)(10)]***
    - Use non-combustible agents for cleaning trucks.

Cranes, Rigging, and Taglines

a. Definitions.

- Cranes- A lifting machine, generally equipped with a winder (also called a wire rope drum), wire ropes or chains and sheaves that can be used both to lift and lower materials and to move horizontally.
- Rigging- The equipment and method used in lifting, pulling, or tying down an object.
- Tag Lines- Lines to keep you out of the line of fire.

b. Lifting Capacity

Cranes illustrate the use of one or more simple machines to create mechanical advantage.

1. The lever. A balance crane contains a horizontal beam (the lever) pivoted about a point called the fulcrum. The principle of the lever allows a heavy load attached to the shorter end of the beam to be lifted by a smaller force applied in the opposite direction to the longer end of the beam.

Notes

2. The pulley. A jib crane contains a tilted strut (the jib) that supports a fixed pulley block. Cables are wrapped multiple times round the fixed block and around another block attached to the load. When the free end of the cable is pulled by hand or by a winding machine, the pulley system delivers a force to the load that is equal to the applied force multiplied by the number of lengths of cable passing between the two blocks.
3. The hydraulic cylinder. This can be used directly to lift the load or indirectly to move the jib or beam that carries another lifting device.

    - Cranes, like all machines, obey the principle of conversion of energy. This means that the energy delivered to the load cannot exceed the energy put into the machine.

c. Types of Cranes

- **Truck-mounted Crane-**A crane mounted on a truck carrier provides the mobility for this type of crane.
- **Side lift Crane-** A side lift crane is a road-going truck or semi-trailer, able to hoist and transport ISO standard containers.
- **Rough Terrain Crane-** A crane mounted on an undercarriage with four rubber tires that is designed for pick and carry operations and for off-road and "rough terrain" applications.
- **All Terrain Crane-** A mobile crane with the necessary equipment to travel at a higher speed on public roads and on rough terrain at the job site using all-wheel and cab steering.
- **Crawler Crane-** A crawler is a crane mounted on an undercarriage with a set of tracks that provide stability and mobility.

Notes

ETC
MATERIAL HANDLING

Working with Hand Tools

- Hand and power tools are a common part of our everyday lives and are present in nearly every industry. These tools help us to easily perform tasks that otherwise would be difficult or impossible. However, these simple tools can be hazardous and have the potential for causing severe injuries when used or maintained improperly. Special attention toward hand and power tool safety is necessary in order to reduce or eliminate these hazards.

- **Points when working with Hand Tools**
  - Use the correct tool for the job.
  - Make sure your tools are in good condition. Inspect them regularly and/or before each use.
  - Electric hand tools will be properly insulated and grounded.
  - The face of all hammers, chisels, punches and hammer wrenches will be smooth.
  - Replace/repair damaged tools immediately.
  - Do not use natural gas to drive pneumatic tools.
  - Use only explosion-proof tools in classified areas.
  - Keep all tools clean and store them neatly in their proper place.

Use of a Cheater Bar/Pipe

- A cheater bar or cheater pipe is an improvised breaker bar made from a length of pipe and wrench.
- Used to free screws, bolts, and other fasteners that are difficult to remove with a ratchet or wrench alone, also used to operate valves.

Notes

- **Problems in using such bars include:**
  - If the component frees suddenly the worker can become a projectile that is propelled into whatever is in the line of fire. This could (and has) resulted in falls, impacts, punctures, and other injuries.
  - The cheater bar itself can become part of a catapult with the worker in the line of fire.
  - If the over-torque results in the failure of any of the items in the rig, the fragments can injure workers in the line of fire.
  - The use of the cheater bar can result in component damage that can, in turn, harm workers.

III. Back Injury Prevention

The back is critical in daily operations. It is used in every aspect of life – before, during and after your work shift. After suffering one back injury, you are much more likely to experience another one later on. It is important to learn how to avoid injuring or re-injuring your back.

IV. Statistics

More than 1 million workers suffer back injuries each year, accounting for 1/5 of all workplace injuries or illnesses.
One fourth of all compensation claims involve back injuries, which cost employers billions of dollars. Add to that the employee's pain and suffering …

V. Why Back Injuries Occur

- Poor physical condition.
- Poor posture.
- Extra weight.

Notes

- Stress.
- Overdoing it.
- Heavy lifting - especially repetitive lifting over a long period of time.
- Twisting at the waist while lifting or holding a heavy load.
- Reaching and lifting over your head, across a table, or over the back of a truck.
- Lifting or carrying objects with awkward or odd shapes.
- Working in odd, uncomfortable positions or doing tasks that require you to bend over for long periods of time.
- Sitting or standing too long in one position.

VI. The Human Back

- It takes 10 pounds of pressure to lift a 10 pound object.
  - When you add in the 105 pounds of an average human's upper torso, lifting a 10 pound object puts 1,150 pounds of pressure on the human back.
  - If you were 25 pounds overweight, it would put an additional 250 pounds of pressure on your back every time you bend over.

VII. Alternatives to Lifting

- Avoid lifting and bending whenever you can.
- Use cranes, hoists and lift tables whenever you can.
- Place objects up off the floor or ground.
- Raise/lower work surfaces when possible.

Notes

- Use carts and dollies to move objects instead of carrying them yourself.
- Get a partner to help you lift or carry objects that are:
  - Too heavy for one person
  - An awkward size or shape
- Reduce the amount of weight lifted.

VIII. Proper Lifting Techniques

- Bend your knees to help keep your spine in alignment.
- Take a balanced stance with your feet about a shoulder-width apart. One foot can be behind the object and the other next to it.
- Squat down to lift the object, but keep your heels off the floor.
- Get a firm grip on the load. Make sure you will be able to maintain a good grasp without switching your grip later.
- Lift gradually without jerking while using your legs, abdomen and buttock muscles.
- Keep the load as close to you as possible.
- Once you are standing, change directions by pointing your feet in the direction you want to go and turning your whole body.
- Avoid twisting at your waist while carrying a load.
- When you put a load down, use these same guidelines in reverse.

Notes

ETC
WALKING-WORKING SURFACES

Objective:

Upon completion of the Walking-Working Surfaces unit, employees will better understand the importance of guarding work areas, how housekeeping can affect safety and how to properly use scaffolding and ladders.

Specific Objectives:

- Understand general requirements of walking-working surfaces.
- Discuss when to guard floors, wall openings and holes.
- List good housekeeping practices.
- Explain proper use of ladders.
- Explain proper erection and use of scaffolding.

Reference:

Operators Safety Manual
Company Safety Manual
OSHA 29 CFR 1926

I. Introduction – Walking - Working Surfaces

Slips and trips can happen in any part of the workplace, inside or outdoors. Slips and trips often result in falls and more serious outcomes, including disabling injuries and even death. The costs to both worker and employer can be great. Contributing factors can be poor housekeeping, poor guarding of hazards and lack of general knowledge.

It is important to remember that fall protection must be worn at OSHA's required heights. The fall protection used will depend on the job – full body harnesses and lanyards are examples of fall protection. Specific fall protection training will be provided for those employees that are required to use it.

Notes

ETC
WALKING-WORKING SURFACES

II. General Requirements

- Employees must be extremely cautious when working near and around floor and wall openings, stairways, platforms, ladders, scaffolds, and all elevated work areas.
- Always use handrails.
- Avoid ascending and descending any climbing surface with awkward loads or without handrails.
- Always provide adequate lighting.
- Always wear fall protection when required.

III. Dropped Objects:

Provide Adequate Warning

If you're going to be doing work overhead, warn those in the area:

- Verbally
- With signs
- Ropes
- Barricades

Secure The Load

- If you'll be lifting a load to a higher level, make sure the load is balanced and secured so it won't slip off.
- Restraints such as nylon strapping bands can be used to secure overhead objects.
- If you're placing a load on a scaffold or platform, make sure there are guard rails and toe boards to prevent material from falling off.

Notes

ETC
WALKING-WORKING SURFACES

IV. Guarding:

- Floor openings and holes, wall openings and holes, and the open sides of platforms can create hazards.
- People can fall through the openings or over the sides to the level below.
- Objects such as tools or parts can fall through the holes and strike people or damage machinery on lower levels.
- Every open-sided floor or platform 4 feet or more above the adjacent floor or ground level shall be guarded by a standard railing on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder. Toe boards shall be provided on open sides if people can pass underneath the work area.
- Wherever tools, machine parts, or materials are likely to be used, a toe board shall also be provided on each exposed side.
- Do not use barricade tape or flagging as a temporary railing or fall restraint.
- Never leave a floor opening unprotected.
- Covers and/or guardrails must be provided to protect employees from hazards.
- Every floor hole into which persons can accidentally walk shall be guarded by either a standard railing with mid-rail and toe board or floor hole cover of standard strength and construction.

Notes

- While the cover is not in place, the floor hole shall be constantly attended by someone or shall be protected by a removable standard railing.
- Regardless of height, open sided floors, walkways, ramps and platforms that are above, or adjacent to, dangerous equipment shall be guarded by standard railing and toe boards.

V. Definitions

- Floor Hole: opening less than 12 inches but more than 1 inch in any platform, floor, pavement or other working surface through which tools or materials, but not a person, can fall.
- Floor Opening: opening larger than 12 inches in any platform, floor, pavement or other working surface, through which a person might fall.
- Standard Railing: railing that consists of a top rail that is 42 inches high with a mid-rail.

VI. Dos and Don'ts of Housekeeping

- Keep aisles, walkways, stairways and emergency escape routes free of clutter.
- Clean up all spills immediately. Do not leave them for someone else.
- Prevent oil accumulation on floors.
- Pick up trash and store in proper disposal containers. Do not allow trash to collect in corners, under machinery, in stairwells or in other out-of-the-way places.

Notes

- Return tools, parts and portable equipment to their proper storage areas after completing task.
- Notify the person in charge of any potential hazards such as irregular walking surfaces. Do not assume someone else sees the hazard.
- Keep tools and other materials away from edges and off of railings or sills
- Stack tools on a flat surface; cross-tie or cover them, if necessary, to keep them in place.
- If you're working overhead, watch that you don't kick, throw or sweep material off that could fall on anyone below.

VII. Scaffolding

- If you suspect that a scaffold is not safe, contact your supervisor immediately to address the situation before any work begins.
- Scaffolds should be erected for any work that cannot be done safely from the ground or from solid construction.
- Scaffolds must be fully planked with gaps no larger than 1 inch.
- Scaffold walkways must be at least 18 inches wide.
- Scaffolds must be inspected and have a tag in place that is good for a 60-day duration.
- Fall protection will be worn for heights required by OSHA standards.
- Scaffolds 6 – 10 feet in height shall have 4-inch toe boards and a properly braced single handrail unless adequately protected by walls, conduit, pipe etc.
- Scaffolds 4 – 10 feet in height that are 45 inches or less in any direction horizontally, shall have guardrails on all open sides and ends of the platform.

Notes

- Employees shall not work on scaffolds during storms and high winds.
- Slippery conditions, including ice and snow, shall be eliminated as soon as possible after they occur, or discontinue work from scaffolds.
- All materials being hoisted onto a scaffold shall have a hoist line.

VIII. Ladders

- The main hazard when using a ladder is falling.
- A poorly designed, maintained, or improperly used ladder can collapse under the load placed on it and cause the employee to fall.
- Ladders must be inspected before each use.
  - Any ladder that has developed defects should be removed for repair or destruction and tagged or marked as such.

- Types of Ladders Include:
  - Step ladder
  - Single ladder
  - Extension ladder
  - Fixed ladder

- General Safety:
  - Maintain ladders in good condition at all times.
  - Ladders used to gain access to a roof or other area shall extend at least 3 feet above the point of support.
  - Place portable ladders so that they have a secure footing.
  - Do not use make-shift ladders.
  - Never use a ladder in the horizontal position as scaffolds or work platforms.

Notes

ETC
WALKING- WORKING SURFACES

- Do not leave placed ladders unattended.
- Place ladders away from unlocked or unguarded doors that can open toward the ladder.
- Do not use ladders in areas with vehicles or traffic unless barricades are put in place and all affected personnel are informed.
- Do not place ladders on boxes, barrels, or other unstable bases to obtain additional height.
- Always face a ladder when climbing up or down.
- Use both hands when climbing and descending ladders keeping 3 points of contact at all times.
- Keep your body centered on the ladder – a good rule of thumb is to keep your belt buckle within the rungs.
- Carry tools on a tool belt.
- Where possible, haul materials up on a line rather than carrying them.
- Do not use metal ladders near electrical equipment.
- Only one person should stand on a ladder at a time unless the ladder is specifically designed to hold two.
- Keep ladders clean and free from grease.
- Never use a defective ladder.
- Do not drop or throw ladders.
- Make sure portable ladders have non-slip feet.
- Maintain a 4 to 1 ratio for the angle of the ladder. This means that the base should be set out one-fourth of the ladder's height to its top support point.

For example, if a ladder is to be supported at a point 20 feet off the ground, its base should be set 5 feet out from the wall (20 feet divided by 4= 5feet). An easy way to measure this, if the ladder top will rest against the wall, is to pace off the length of the ladder or count the rungs, and divide by four to get the proper distance from the wall for placing the foot of the ladder.

Notes	

ETC
OCCUPATIONAL HEALTH

Objective:

Upon completion of the Occupational Health unit, employees will better understand atmospheric hazards within the workplace that can affect health.

Specific Objectives:

- Know the signs and symptoms of over exposure to occupational hazards in the workplace.

I. Introduction – Occupational Health

Occupational health hazards are a part of working in our industry. However through training, knowledge and an understanding of the hazards, we can work safely in these environments. **Occupational health and safety** is focused on protecting the safety, health and welfare of people engaged in work. The goal of all occupational health and safety programs is to foster a safe work environment. Each workplace shall have a supervisor who is responsible for the safety and health of everyone on the job site. Any concern or questions should be directed to the onsite supervisor.

II. Routes of Exposure

- Inhalation- the most common exposure type occurring in atmospheres with hazardous vapors or dust.
- Ingestion- occurs when hazardous chemicals are eaten or swallowed.
- Absorption- occurs when hazardous chemicals come into contact with the skin and pass into the blood or muscle tissue.
- Injection-occurs when a sharp object contaminated with hazardous chemical penetrates the skin.

Notes

III. Monitoring and Mitigation

- Monitoring is the systematic measurement of key factors.
- Mitigation if the implementation of measures designed to reduce the undesirable effects of any exposure to hazardous chemicals or environments.
- All employees on a work site have the responsibility to monitor conditions that may affect their safety and take steps to reduce the possibility of harm to themselves or the environment.

IV. Specific Situational Training

1. Lead
   - Lead is poisonous, bluish white, metallic element used mostly in combination with other material and found in pipes, cable sheaths, batteries, bearing for machinery, bullets, paint, gasoline and solder.
   - In certain doses, lead can be a toxic substance when absorbed into your body. Our goal is to prevent absorption of harmful quantities of lead into your body.
   - Typical work activities which may generate lead exposure:
     - Welding
     - Buffing
     - Grinding
     - Torch cutting
     - Sand blasting on coated surfaces
   - Lead can enter the body by inhalation or ingestion.
   - Symptoms of over-exposure are: headaches, fatigue, anemia, irritability, constipation, muscle and joint pain, and stomach cramps.
   - Where engineering and work practice controls do not reduce employee exposure, respirators shall be used.

2. Benzene
   - Benzene is an aromatic hydrocarbon that occurs naturally in petroleum crude oils and natural gas condensates.

Notes

- Acute health effects of benzene are: headache, dizziness, drowsiness and respiratory irritation.
- The chronic health effect is cancer of the blood forming organs (leukemia).
- Benzene concentrations are usually greater in lighter crude oils and condensates.
- Under normal operating conditions, benzene should not be present in hazardous airborne concentration in customer facilities or on location.
- If a customer site has areas with hazardous airborne benzene concentrations, the area should be identified by signs.
- Benzene can be detected by:
  - Odor – aromatic, slightly sweet odor.
  - Physical Symptoms – headaches, dizziness, drowsiness and respiratory irritation.
  - Gas Monitor – such as a fixed monitor or personal gas monitor.
- If you suspect a benzene spill or leak has occurred, vacate the area immediately and notify the appropriate personnel.

3. H2S – Hydrogen Sulfide
   - Hydrogen Sulfide (H2S) is a highly toxic, colorless gas, heavier than air, with the odor of rotten eggs.
   - Since H2S is heavier than air, it tends to collect in low places.
   - Burns with a blue flame to produce Sulfur Dioxide which is also a very irritating gas with a pungent odor.
   - Forms explosive mixtures with air, the lower limit of complete vapor density being 4.3% H2S and upper limit of complete vapor density being 46.0%.
   - It is soluble in water.
   - Most frequently encountered in the production and refining of high-sulfur petroleum, and in natural gas.

Notes

- H2S is particularly dangerous when encountered in tanks, vessels, low places in the terrain, and enclosed spaces.
- H2S is an extremely toxic and irritating gas. The principal hazard is poisoning by breathing the gas; it reduces the blood's oxygen-carrying capacity and depresses the nervous system.
- The 'rotten egg' odor of H2S is not a reliable warning sign because higher concentrations temporarily destroy the sense of smell.
- The only positive means of determining the amount of H2S present is to be tested with an approved detector. TO RELY SOLEY ON THE SENSE OF SMELL CAN BE FATAL.
- Olfactory Response Table:
  - 0.02 ppm – No odor.
  - 0.13 ppm – Minimum perceptible odor.
  - 0.77 ppm – Faint, but readily perceptible odor.
  - 4.60 ppm – Easily detectable, moderate odor.
  - 27.00 ppm – Strong, unpleasant odor, but not intolerable.

4. CO2
   - Carbon Dioxide gas is formed from the combination of two elements: carbon and oxygen. It is produced from the combustion of coal or hydrocarbons, the fermentation of liquids and breathing by humans and animals. Found in small proportions in the atmosphere, it is assimilated by plants which in turn produce oxygen.
   - CO2 gas has a slightly irritating odor, is colorless and heavier than air.
   - It cannot sustain life.
   - It freezes at -78.5 C to form carbon dioxide snow. In an aqueous solution it forms carbonic acid, which is too unstable to be easily isolated.

Notes

- Wear insulating gloves if handling solid carbon dioxide. If working with carbon dioxide in confined spaces where the concentration of gas may build up, ensure adequate ventilation.

5. NORM – *Naturally Occurring Radioactive Materials:*
   - NORM is a broad group of radioactive substances found naturally in our environment.
   - Crude oil, natural gas, and other substances extracted from the ground, in some cases, are found to possess measurable levels of radioactivity.
   - Exposure can occur when the radioactive materials become airborne during welding, cutting, reaming, piping or equipment that contains radioactive scale or precipitate.
   - Radiation exposure levels encountered by persons working around NORM have not been shown to be high enough to pose an external health risk.
   - The primary hazard is not the exposure to NORM itself, but when these materials are taken into the body.
   - NORM can be taken into the body through:
     - Breathing
     - Eating
     - Open cuts and wounds which can result in NORM being deposited in the bloodstream.

6. Fibers (Man-made fibers, Asbestos)
   - 29 CFR 1910.1001 indicates that all affected personnel shall be trained in a way to ensure the employee's understanding and must contain the following:
     - Health effects associated with asbestos exposures.
     - Relationship between smoking and exposure to asbestos in producing lung cancer.
     - Nature of workplace operations that could result in exposure.

Notes

- Specific measures implemented to protect employees, including respirators and personal protection.
- Purpose and description of the medical surveillance program.

- Asbestos is mainly used in fiber form before being processed into sheets of various goods.
- The medical surveillance program shall cover all employees who are or will be exposed to airborne concentrations of fibers of asbestos at or above the action level and/or excursion limit. Such examination shall be performed by a licensed physician and shall include as a minimum, a medical and work history, and a complete physical examination of all systems.
- Employees will be taught how to use respiratory protection before it use is required.
- Air samples will be taken in the breathing zone every 6-months where action level and/or the excursion limits are reached and results will be provided to employees within 15 days after results are received in writing.

7. Organic Solvents
   - Solvents are substances that are capable of dissolving or dispersing one or more other substances.
   - Many organic solvents are recognized by NIOSH as carcinogens (e.g., benzene, carbon tetrachloride, and trichloroethylene).

Notes

- Examples of organic compounds and their industrial uses:
  - Methane – Industrial settings
  - Toluene – Fuel oil, cleaning agents, lacquers, paints and paint thinners
  - 1,1,1-Trichloroethane (methyl chloroform) – Degreaser and propellant

8. Fumes
   - Avoid breathing vapors.
   - Use only in well ventilated areas.
   - Always wear rubber gloves when using solvents.
   - Wash solvents from skin immediately after use.

9. Mercury
   - Found in wastewater from oil and gas production.
   - Mercury can enter the body through the lungs, through the skin, and via the digestive system.

10. Diethanolamine (DEA)
    - Purifies gases, particularly natural gas for the bulk removable of Carbon Dioxide and also used as a scrubbing and extracting agent in gas treatment.
    - Clear, colorless or pale yellow liquid.

11. Hexavalent Chromium
    - Commonly used in hydraulic fracturing compounds.
    - Yellowish-green liquid.

Notes

- Hexavalent chromium is recognized as a human carcinogen via inhalation.

- Problematic exposure is known to occur among workers who handle chromate-containing products as well as those who arc weld stainless steel.

12. Methanol
    - Most commonly produced from the methane component in natural gas.

    - Volatile, colorless, highly flammable, liquid with a distinctive odor that is very similar to but slightly sweeter than ethanol. Burns with a clear flame.

13. Nitrogen Gas (N2)
    - Normally colorless, odorless, tasteless, non-metal gas.

    - Liquid Nitrogen (LN2) is an effective alternative used to frac shallow wells.

V. Insect Bites

- Stings and bites from insects are common. They often result in redness and swelling in the injured area. Sometimes a sting can cause a life-threatening allergic reaction.
- Insects do not usually attack unless they are provoked. Most bites and stings are defensive. The insects sting to protect their hives or nests.
- Insect bite symptoms

The response to a sting or bite from insects is variable and depends on a variety of factors. Most bites and stings result in pain, swelling, redness, and itching to the affected area. The skin may be broken and become infected if the bite area is scratched. If not treated properly, these local infections may become severe and cause a condition known as cellulitis.

Notes

- You may experience a severe reaction beyond the immediate area of the sting if you are allergic to the bite or sting. This is known as anaphylaxis. Symptoms of a severe reaction include hives, wheezing, shortness of breath, unconsciousness, and even death within 30 minutes.
- Stings from large hornets or multiple (hundreds or thousands) bee stings have been rarely reported to cause muscle breakdown and kidney failure.
- Bites from a fire ant typically produce a pustule, or a pimple-like sore, that is extremely itchy and painful.

- When to Seek Medical Care
  - If you start to experience symptoms that are not just at the site of the bite or sting (and you don't have a history of severe reactions), seek medical attention. These symptoms (systemic symptoms affect the whole body) may progress to fatal anaphylactic shock.

- Prevention
  - You can minimize your exposure to insect bites by changing your patterns of activity or behavior.

    - Some vector mosquitoes are most active in twilight periods at dawn and dusk or in the evening, so avoid outdoor activity during these periods.
    - Wear long-sleeved shirts, long pants, and hats to minimize the areas of exposed skin. Shirts should be tucked in.

Notes

- Use insect repellants. Repellents applied to clothing, shoes, and other gear will enhance protection.

V. Staph

- Staph infections are caused by staphylococcus bacteria, a type of germ commonly found on the skin or in the nose of even healthy individuals. Most of the time, these bacteria cause no problems or result in relatively minor skin infections.
- Staph infections don't always remain skin-deep. In some circumstances, they may invade your bloodstream, urinary tract, lungs or heart.
- Severe staph infections usually occur in people who are already hospitalized or who have a chronic illness or weakened immune system. But it is possible for otherwise healthy people to develop life-threatening staph infections.
- Symptoms:
  - Staph infections can range from minor skin problems to endocarditic, a life-threatening inflammation of your heart valve lining. As a result, signs and symptoms of staph infections vary widely, depending on the location and severity of the infection.
- You may want to consult your doctor if:
  - Skin infections are being passed from one family member to another.
  - Two or more family members have skin infections at the same time.

Notes

- Causes

Many people carry staph bacteria and never develop staph infections. If you have a staph infection, there's a good chance that it stemmed from bacteria you've been carrying around for some time. These bacteria also can be transmitted from person to person. Because staph bacteria are so hardy, they can live on inanimate objects like pillowcases or towels long enough to transfer to the next person who touches them.

Staph bacteria are able to survive:

- Drying
- Temperature extremes
- High levels of salt

Even cooking won't kill the toxins produced by staph bacteria, which is why they can cause food-borne illness.

- Risk factors

A variety of factors — ranging from the status of your immune system to the types of sports you play — can increase your risk of developing staph infections.

Notes

- Tests and diagnosis

Most often, doctors diagnose staph infections by checking a tissue sample or nasal secretions for signs of the bacteria.

- Treatment and drugs

Your doctor may want to identify what type of staph bacteria is behind your infection, to help choose the antibiotic that will work best.

- Prevention
  - **Wash your hands.** Careful hand washing is your best defense against germs. Scrub hands briskly for at least 15 to 30 seconds, then dry them with a disposable towel and use another towel to turn off the faucet. If your hands aren't visibly dirty, you can use a hand sanitizer containing at least 62 percent alcohol. These sanitizers are convenient and may actually kill more germs than soap and water do.
  - **Keep wounds covered.** Keep cuts and abrasions clean and covered with sterile, dry bandages until they heal. The pus from infected sores often contains staph bacteria, and keeping wounds covered will help keep the bacteria from spreading.
  - **Keep personal items personal.** Avoid sharing personal items such as towels, sheets, razors, clothing and athletic equipment. Staph infections can spread on objects, as well as from person to person. If you have a cut or sore, wash your towels and linens using detergent and hot water with bleach, and dry them in a hot dryer.

Notes

ETC
ENVIRONMENTAL AWARENESS

Objective:
Upon completion of the environmental awareness unit the employee will become aware of the conditions related to maintaining a safe oil and gas well site environment.

Specific Objectives:

- Identify types of pollutants, which exist at a well site
- Identify when a HAZWOPER emergency exists
- List environmental safety procedures

Reference:
Operators Safety Manual
Company Safety Manual

I. Introduction – Environmental Awareness

The primary goal of the well site owner, well owner/operator, and well service contractors is to provide a safe and clean work site. An environmentally safe work site relates to proper containment of solid, liquid and gaseous hazardous materials. When pollutants are released into the air, soil, or on equipment, unnecessary exposure may occur to personnel and the environment. Failure to contain hazardous materials may expose the company and its employees to serious civil and criminal penalties, as well as adverse publicity which may damage your company's competitiveness and profitability.

The company is committed to conducting its operation in a manner that will protect both the employee and the environment. Practicing all designated procedures and rules will insure compliance with all environmental laws and regulations.

Federal regulation requires discharges in quantities that may be harmful to public health or the environment be reported immediately. Each state can mandate guidelines more stringent if desired.

Notes

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ENVIRONMENTAL AWARENESS

The employee is responsible for carrying out, in a consistent manner, all defined policies, procedures, and defined practices outlined by the company regarding environmental matters. All employees are to be aware of their responsibility to maintain a safe environment as a condition of employment.

II. HAZWOPER Incidents

Hazardous waste operations and emergency response (HAZWOPER). A HAZWOPER situation may occur when an uncontrolled amount of gas or oil flows from a well bore and is not contained on the well site. Also, it may apply when fire presents an explosive hazard or when gas is released which requires special attention by specially trained personnel. When a HAZWOPER situation exists, the Crew Supervisor will notify their supervisor who will arrange for the HAZWOPER trained personnel to handle the specific situation. Personnel who are not trained are to follow the direction of their supervisor regarding their responsibility at the site.

III. Environmental Safety Procedure

1. Only approved containers are to be used to store hazardous materials or flammable liquids.

2. Signs are to be posted designating hazardous and flammable materials.

3. Valves and discharge devices are to be quick, self-closing when placed on containers.

4. All waste materials must go in specific containers meant to hold that type of waste. (i.e. acid would not be stored in a plastic container).

Notes

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5. All tanks, containers, and vessels are to be marked to indicate contents as per Hazcom Regulations.
6. Used cleaning rags and combustible waste materials are to be kept to a minimum, stored outside the identified hazardous area in a closed metal container and properly disposed of daily.
7. Rig floors and well cellars are to be kept free from water, oils, and other contaminated waste.
8. All spills of hazardous materials are to be cleaned up immediately, if the employee is trained and authorized. Other spills are to be removed by authorized personnel as may be determined by company policy. All spills regardless of the type and volume are to be reported to your supervisor upon discovering the accident.
9. Oils, hydraulic fluids and engine fluids from well service equipment are to be contained to prevent damage to the soil and environment.
10. Proper personal protective equipment is to be used when handling and cleaning up hazardous waste.
11. All lines connecting tank truck, vessels and pumping equipment to the well head or other storage containers are to be equipped with a check valve to prevent loss of fluid in case of a line rupture.
12. Cease operations immediately if a rupture or a connection leak occurs. Report spills to your supervisor immediately.

Catch pans should be utilized when running rods or tubing to prevent oil spill onto the well site. Other specially designed equipment may be used as required to prevent the loss of oil or the escape of gas at the well site.

Notes

14. Minimize waste to reduce the amount of hazardous material that permanently leaves the production process as waste; including source reduction and on-site recycling.
15. The rig site is to be kept clean of all trash during the period you are on the well location. Dispose of trash in the recommended manner, in designated trash dispensers outside the identified hazardous area. When leaving the location, transport all trash with you and properly dispose the trash in the yard collection container.

Application:

- Name types of hazardous solids, liquids and gases that may be present at a well site.
- Relate hazardous material incidents that may have occurred and the method to be used to clean up the hazard and its effects on the environment.
- What are some HAZWOPER conditions which may occur during well operations?

Notes

ETC
ONSHORE ORIENTATION and EMERGENCY EVACUATION

Objective:

Upon completion of this module, students will understand the requirements involved in working for onshore operations and proper emergency evacuation procedures.

Specific Objectives:

- Identify appropriate types of PPE to wear
- List the types of banned items
- Know the short service guidelines
- Understand proper "report to work procedures"
- Define emergency evacuation
- Know the different types of thermal stress
- Know what types of insects and snakes to watch out for
- Know what to do in adverse weather
- Know what to do in certain driving situations

I. Introduction – Onshore Orientation and Emergency Evacuation

Onshore Orientation is an overview of what is required of employees while working on a land location. It is important that all requirements are understood and followed in order to decrease opportunity for incidents.

II. Define Emergency Evacuation

Emergency Evacuation is the immediate and rapid movement of the people away from the threat and immediate danger. This should be planned prior to any type of emergency that could exist in your field of operation. It is important to be aware of alarm systems in work areas. Upon the sounding of an alarm, all employees must evacuate to a pre-determined assembly area.

Notes

III. Industrial Hygiene

Industrial Hygiene is the evaluation of environmental factors through measurement of exposure intensity, exposure frequency, and duration. An Industrial Hygienist is a person who by study, training, and experience can: anticipate, recognize, evaluate and control workplace environmental hazards.

Job hazards include:

- Air contaminants: dusts, fumes, mists, aerosols and fibers.
- Chemical agents: solids, liquids, gases, mists, dust, fumes and vapors exert toxic effects by inhalation (breathing), absorption (skin), or ingestion (eating/drinking).
- Biological hazards: viruses, fungi, and other living organisms that can cause acute and chronic infections by entering the body either directly or through breaks in the skin.
- Physical hazards: excessive levels of ionizing and non-ionizing electromagnetic radiation, noise, vibration, illumination, and temperature.
- Ergonomic hazards: including but not limited to - lifting, holding, pushing, walking, and reaching.

Worksite analysis is a good way to find and eliminate job hazards that may exist on your worksite. Any potential hazards that you identify should be immediately reported to your supervisor for proper investigation.

If hazards cannot be completely eliminated, there are steps that can be taken to monitor the situation and minimize risk; machine guarding or changing work practices are examples of how to control a hazard. If you cannot eliminate or control the hazard, protecting yourself with PPE can help to minimize the hazard. It is important to remember PPE does not remove the risk; it lessens the impact of the risk.

Notes

IV. Work Clothes/Personal Protective Equipment

It is important when choosing PPE that you select items that fit you properly. Select the right size, weight, shape and type for the job you are performing. If you have a change in body type that would potentially cause your PPE to not fit properly, immediately contact your supervisor.

Clothing:
Employees are to be trained when and where PPE is required. PPE should be inspected on a regular basis and replaced when damaged or worn.

1. Fire Resistant Clothing must be worn when the task or contractor requires it.
2. 100% cotton is recommended.
3. Long sleeve and long pants are recommended.
4. Hard Hats shall be worn when required and inspected on a regular basis.
5. Safety glasses with side shields shall be worn when required.
6. Gloves shall be worn when required.
7. Safety toe footwear shall be worn when required.

Respirators:
There are two main categories of respirators: *air-purifying*, which forces contaminated air through a filtering element, and *air-supplied*, which an alternate supply of fresh air is delivered.

Air-purifying respirators are used against particulates such as smoke, fumes, gases and vapors that are at atmospheric concentrations less than immediately dangerous to life and health (IDLH). Classes of air-purifying respirators include:

- Negative-pressure which uses mechanical filters and chemical media.
- Positive-pressure such as air-purifying respirators.
- Escape only or hoods such as air-purifying escape respirators for use by the general public.

Notes

ANSI/ISEA 110 provides design guidance for respirators to ensure your protection and safety during use.

Air purifying respirators can also require different types of filtering media:

- Mechanical filters remove particulates when air is passed through the filter media.
- Chemical cartridges remove gases and other vapors through absorption.
- Powered air removes pollutants using a powered fan, forced air and filter media.

Self-Contained Breathing Apparatus (SCBA)
SCBA's typically have three main components: high-pressure tank, pressure regulator and an inhalation connection such as a mouthpiece or mask.

Most SCBA's are open-circuit which means a full-face mask, regulator, air cylinder, pressure gauge, and a harness with shoulder straps. Commonly an SCBA will be "positive pressure" but some are "demand" type which only supply air on demand when you inhale.

<u>Employees must be fit tested and medically qualified BEFORE using a respirator of any kind.</u>

V. Types of Banned Items
The following is a list of banned items that shall not be in possession of the employee at any time during working hours or on work locations.

1. Weapons including:
   a. Firearms
   b. Ammunitions
   c. Bows and Arrows
   d. Knives
2. Illegal Drugs
3. Alcohol
4. Explosives

Notes

ETC
ONSHORE ORIENTATION and EMERGENCY EVACUATION

VI. New Personnel/Short Service Guidelines

A short service employee is new to the company and/or position they are working in. Mentoring and identification of short service employees can range from color coding of hardhats for easy recognition to partnering that employee with a trainer to help ensure the proper skills and processes are conveyed. Some general rules are:

1. No fighting or horseplay.
2. Avoid working alone.
3. Report hazards or at-risk conditions to immediate supervisor.
4. Smoke only in designated areas.
5. Machine guards and protective coverings must be in place while operating all equipment.
6. Rings, jewelry, loose hair and loose clothing are prohibited.
7. Do not ride on forklifts or use forklifts as man lifts.
8. All crew changes require communication between crews.
9. Never work on or service moving equipment. Use Lockout/Tagout.
10. Use the proper tool (in good condition) for each job task.

VII. Reporting for Work

Fitness for Duty:

- Being under the influence of drugs or alcohol poses unnecessary and unacceptable safety and health risks not only to the user but to all those that work with him or her.
- Watch alcohol consumption the day before reporting to work.
- Companies reserve the right to test for drug & alcohol misuse to ensure you are fit for duty.

VIII. Emergency Evacuation

- Each employee shall be trained and familiar with the emergency evacuation program. The program shall be displayed in an accessible area for all employees.
- Keep all exits clear of obstructions.
- Know your muster point in the event of an evacuation.
- Be familiar with the company notification protocol and alarm systems in preparation for evacuation procedures.

Notes

IX. Thermal Stress

Employees need to look for signs and symptoms of both heat and cold stress. If severe, employee shall seek medical treatment immediately.

- **Heat Stress**-symptoms can include:
  - Heavy sweating
  - Nausea
  - Headache
  - Fatigue
  - Vomiting
  - Fast pulse
    - ✓ Move the victim to a cooler area and cool with wet towels.
    - ✓ Give fluids only if conscious.
    - ✓ Follow up with a medical examination.
- **Heat Exhaustion**-symptoms can include:
  - High temperature
  - Dry skin
  - Rapid breathing
  - Nausea/vomiting
  - Confusion
  - Seizures
    - ✓ Move the victim to a cooler area and cool with wet towels.
    - ✓ Give fluids only if conscious.
    - ✓ Follow up with a medical examination.
- **Hypothermia**
  - The entire body cools because its ability to keep warm starts to fail.
  - Symptoms can include shivering, numbness, glassy stare, fatigue, or loss of judgment.
  - Carefully move the victim to a warm place and remove any wet clothing.
  - Keep the victim warm and dry.

Notes

- **Frostbite**
  - Any part of the body freezes due to exposure to the cold.
  - Symptoms include lack of feeling in the affected area and the skin appears waxy and cold to the touch.
  - The skin can also be discolored.
  - Carefully move the victim to a warm place and use warm water until normal color returns.
  - Never rub the affected area.

X. Insects and Snakes

1. Snakes-Identify poisonous species.
   - Wash the wound and keep the injured area still and lower than the heart.
   - Seek medical attention.
2. Spiders and scorpion stings
   - Spiders
     - Two types to be aware of:
       - Black Widow
       - Brown Recluse or Fiddleback
     - Black Widow:
       - Call Poison Control (1-800-222-1222)
       - You will be given symptoms to watch for
         - Dull, aching, or numbing sensation appears in 20 to 40 minutes.
         - Muscle pain and cramps start near the bite site within 30 to 120 minutes and then move to large muscle groups.
         - Board-like rigidity of the abdomen, shoulders, and back may develop.
         - Pain generally peaks at 2 to 3 hours.

Notes

- Brown Recluse:
  - Physical reaction depends on the amount of venom injected and the person's sensitivity to the venom.
  - Bite may feel like a pinprick or go unnoticed and may take 2 – 8 hours for symptoms to occur.
  - Typically a small white blister will form surrounded by raised, reddened skin.

3. Bee/Wasp: Remove the stinger
   - Care:
     - Wash area with soap and water.
     - Apply ice pack or cold compress.
       - (15 minutes on / 15 minutes off)
       - Do not place ice directly on skin
     - Elevate extremity.
     - Watch for signs and symptoms other than at location of sting for at least 30 minutes.
     - Watch for signs of infection to show up later.

4. Mosquitoes
   - Care: Wash area thoroughly with warm water and soap
   - Mosquitoes can transmit serious diseases such as West Nile virus, Malaria, Yellow Fever and Dengue Fever. Signs and symptoms of a more serious infection may include:
     - Fever
     - Severe headache
     - Body aches
     - Nausea

Notes

- Vomiting
- Swollen glands
- Rash
- Lethargy
- Confusion
- Sensitivity to light
- Jaundice

These signs and symptoms may indicate West Nile fever or another serious infection. Prompt diagnosis and treatment are important.

- Who's At Risk

  Mosquitoes select their victims by evaluating scent, exhaled carbon dioxide and the chemicals in an individual's sweat. A few factors may put you at greater risk of getting bitten. Mosquitoes are more likely to bite:

  - Men
  - Those with type "O" blood
  - Overweight individuals
  - In addition, mosquitoes are attracted to heat. So, wearing dark colors, which absorb heat, may attract mosquitoes.

5. Rabid animals and precautions
   - The rabies virus travels to the brain by following the peripheral nerves.
   - The incubation period of the disease is usually a few months in humans, depending on the distance the virus must travel to reach the central nervous system.

Notes

- Once the rabies virus reaches the central nervous system and symptoms begin to show, the infection is effectively untreatable and usually fatal within days.
- Symptoms:
  - The period between infection and the first flu-like symptoms is normally two to twelve weeks, but can be as long as two years.
  - Early-stage symptoms of rabies are malaise, headache and fever, progressing to acute pain, violent movements, uncontrolled excitement, depression, and hydrophobia.
  - Patient may experience periods of mania and lethargy, eventually leading to coma.
  - The primary cause of death is usually respiratory insufficiency.
- Treatment:
  - Rabies Shots

XI. Adverse Weather

1. Lightning
   - Seek shelter avoiding trees and metal objects that can attract lightening.
   - Avoid open areas.
   - If you are caught outside, crouch down and put your weight on the balls of your feet.
   - If you seek shelter in a vehicle, avoid touching anything that conducts electricity. The rubber tires will help act as a buffer between you and the ground.

2. Windstorm
   - Avoid climbing or working in the derrick.

Notes

3. Hurricane
   - Be advised on the weather conditions.
   - Keep in close contact with your supervisor or dispatch.
   - Know your emergency evacuation plan.

4. Tornado
   - Be advised on the weather conditions.
   - Keep in close contact with your supervisor or dispatch.

5. UV Exposure
   - Use sunscreen.
   - Wear a hard hat with a full brim.
   - Use UV-absorbent sunglasses.
   - Limit your exposure.
   - Wear light weight, long sleeved clothing.

6. Snow and Ice
   - Use ice melting materials when needed.
   - Clear your vehicle of any snow and ice that may be on it.
     - Make sure your lights are visible to others.
     - Ensure the top of your vehicle is clear to prevent ice from striking other vehicles while traveling.
     - Remove snow and ice from steps and ladders.
   - Slow down in bad weather conditions.
   - Wear proper footwear to help prevent slipping.

7. Flooding
   - Never enter a roadway that is covered by water.

XII. Simultaneous Operations

When simultaneous operations are going on, you must be aware of all the hazards that could potentially affect your safety and the safety of others. Communicate any necessary information with other employees, workers, and company representatives that may be on location. Examples of simultaneous operations would be drilling and wire line or drilling and cementing being done at the same time.

Notes

XIII. Driving

There were nearly 6,420,000 auto accidents in the United States in 2005. The financial cost of these crashes is more than 230 billion dollars. 2.9 million people were injured and 42,636 people killed. Approximately 115 people die every day in vehicle crashes in the United States - one death every 13 minutes. When taking on the responsibility of driving, it is important that you are knowledgeable about factors that can affect you and others on the roadway.

1. Valid Driver License
   - A current license is required to drive company equipment. A commercial license is required when operating vehicles that are DOT regulated.
   - No employee shall operate a Commercial Motor Vehicle (CMV) without proper endorsements for the equipment and materials being handled.

2. Journey Management
   - A system to manage the risks associated with driving operations.
   - The system is important to reduce the risks associated with driving activities and to ensure a rescue plan is in place if needed.
   - Journey management includes route planning, reviewing weather and road conditions, equipment operating conditions and communication

3. Road Conditions
   - Talk with your supervisor or dispatcher regarding road conditions in the area.
   - Each state has a phone number to check road conditions before starting a trip.

4. Fatigue
   - Ensure you are getting enough rest.
   - Follow Hours of Service guidelines if you are regulated by DOT.
   - Avoid starting a trip tired.
   - Make frequent stops to avoid fatigue.

Notes

5. Cell Phone Usage
   - Texting while in a CMV is prohibited by law. Best practice requires all vehicles be stopped while making or receiving a phone call.

6. Driving to the job
   - Plan ahead and check road conditions.
   - Be alert to wildlife and be prepared to stop if necessary.

7. Adverse Weather
   - Always slow down and allow extra room between vehicles.
   - Drive defensively at all times.
   - Allow extra time for your trip.

8. Seat Belt Usage
   - Seatbelts shall be utilized in all company vehicles.

9. Driving under the influence
   - No employee shall report to work while under the influence of drugs and/or alcohol.

XIV. Vehicle Condition/Inspections

The vehicle is the responsibility of the operator even when it is parked. A walk-around inspection is required before each trip to ensure the vehicle is in good mechanical condition and is properly equipped for the job.

In addition to required state inspections, all company vehicles should be thoroughly inspected by a qualified person on an annual basis.

No vehicle should be driven with obvious mechanical problems affecting the safety of the vehicle.

XV. Backing/Parking/Location Hazards

- When possible, park where your first move will be forward.
- Avoid backing when possible.

Notes

- Walk around your vehicle before backing to ensure enough clearance to safely back. Make sure to look at the terrain, overhead obstacles and other objects that may be in the way.
- Use a ground guide when possible.

XVI. Loading Securement

Federal Motor Carrier Safety Administration has specific guidelines in regards to load securement. This includes all types of articles of cargo, except commodities in bulk that lack structure or fixed shape (e.g., liquids, gases, etc.) and are transported in a tank or device that forms part of the structure of a commercial motor vehicle.

- All cargo securement devices must be in good working order, free of defects.
- Each tie down must be attached and secured in a manner that prevents it from becoming loose, unfastening, opening or releasing while the vehicle is in transit.
- Commodity-specific requirements take precedence over the general rules when additional requirements are given for that commodity.

XVII. Off-Loading

- Be aware of potential hazards on location before beginning the process.
- Bond your vehicle to the source container to reduce risk of sparking.
- Ground your vehicle to ensure that any electrostatic charges that might be generated can be "bled off" to the earth.
- Position your vehicle on level ground, at the required distance and preferably upwind or crosswind of the source or receiving tank, vessel, or container.

Notes