HEALTH AND SAFETY PLAN

2021

COLORADO

Oil & Gas Conservation Commission

1.0 INTRODUCTION

1.1 POLICY STATEMENT

The Colorado Oil and Gas Conservation Commission (COGCC) recognize the importance of providing their employees a safe and healthy working environment. In an effort to prevent occupational accidents and illnesses, the COGCC has adopted this Health and Safety Plan (HASP). This HASP will be observed by COGCC personnel at all times and in work environments. Contractor personnel shall also be informed of this plan when working on COGCC projects and refer to it along with their own HASP.

The HASP is designed to:

- Ensure a safe working environment;
- Provide information about potential job hazards, appropriate protection, and individual rights and responsibilities;
- Define our training plan;
- Define our accident prevention and loss control plan; and
- Manage workplace safety and health to reduce injuries, illnesses, and fatalities by achieving and maintaining compliance with the United States Occupational Safety and Health Administration (OSHA) standards.

This HASP will be available to COGCC employees to develop safety and environmental awareness and thereby prevent personal injury and damage to property and the environment both on and off the job. It covers many situations you may encounter and provides safe and environmentally sound principles for you to follow, but it cannot cover every situation that arises, nor can every proper practice be listed. By following the guidelines set forth in this HASP, using common sense, good judgment, and always being mindful of safety and environmental issues, COGCC will operate in a safe and environmentally sound manner. Federal, state, and local laws, from which much of the procedures presented herein, are by extension, to be considered a part of this HASP and must be followed. It is the responsibility of each employee to protect themselves, their fellow workers, the public, and the environment. You are mandated to become familiar with this HASP, refer to it frequently, and to comply with all the principles contained herein. Every employee has stop work authority, and has the COGCC's support to do so if he/she believes a situation or environment to be unsafe.

If you have any questions regarding this HASP or the means necessary to operate safely and in an environmentally sound manner, please discuss them with your supervisor.

1.2 PURPOSE

The purpose of the HASP is to minimize job-related injuries and illnesses.

1.3 SCOPE

Although the COGCC as a division of the Colorado State Government is not subject to the Occupational Health and Safety Administration (OSHA) rules, this HASP has been developed to match the requirements established by OSHA as outlined in Title 29 of the Code of Federal Regulations (CFR), Section 1910, the HASP addresses the following:

- Management leadership and employee participation;
- Hazard identification and assessment;
- Hazard prevention and control;
- Information and training; and
- Evaluation of plan effectiveness.

1.4 HEALTH AND SAFETY PLAN ORGANIZATION

The HASP is comprised of the following sections:

Section 1 – Introduction
Section 2 – Hazard Communication
Section 3 – Personal Protective Equipment
Section 4 – Hydrogen Sulfide
Section 5 – Hearing Conservation
Section 6 – Fire Protection
Section 7 – Fall Protection
Section 8 – First Aid, CPR, and Bloodborne Pathogens
Section 9 – Safe and Defensive Driving
Section 10 – Incident Investigation
Section 11 – Respiratory Protection
Section 12 – Confined Space
Section 13 – Trenching and Excavation
Section 14 – Lockout-Tagout
Section 15 – Electrical Safety
Section 16 – Contractors

1.5 RESPONSIBILITIES FOR IMPLEMENTING THE HEALTH AND SAFETY PLAN

1.5.1 MANAGEMENT AND EMPLOYEE PARTICIPATION

COGCC Management is responsible for implementing the HASP through the following procedures:

- Establishing the plan responsibilities of managers, supervisors, and employees to ensure safety and health in the workplace and holding them accountable for carrying out those responsibilities;

- Providing managers, supervisors, and employees with the authority, access to relevant information, training, and resources they need to carry out their safety and health responsibilities;
- Championing and encouraging employee participation by performing the following tasks:
  - Regularly communicating with employees about workplace safety and health matters;
  - Providing employees with access to information relevant to the plan;
  - Establishing and encouraging a means for employees to report job-related fatalities, injuries, illnesses, incidents, and hazards promptly and to make recommendations about appropriate ways to control those hazards; and
  - Providing prompt responses to such reports and recommendations.

COGCC Management will not discourage employees from making reports and recommendations about injuries, illnesses, incidents, hazards, or fatalities in the workplace, or from otherwise participating in the workplace safety and health plan.

1.5.2 Hazard Identification and Assessment

COGCC Management will perform the following functions to systematically identify and assess hazards to which employees may be exposed and assess compliance with applicable OSHA standards:

- Conducting inspections of the workplace(s);
- Reviewing safety and health information; and
- COGCC Management will keep records of the hazards identified and their assessment and the actions that they have taken or plan to take to control or mitigate those hazards.

1.5.3 Hazard Prevention and Control

COGCC Management will comply with the hazard prevention and control requirements of applicable OSHA standards, such as Hazard Communication, as relevant to specific job sites.

1.5.4 Information and Training

COGCC Management will ensure that employees are provided with information and training regarding the safety and health plan and all hazards to which they may be exposed and what is being done to control these hazards.

1.5.5 Contract Workers

COGCC Management will provide information about hazards, controls, safety and health rules, and emergency procedures to contract workers at the workplace for information purposes only. Contract employees will comply with all federal, state, and local environmental, health, and safety regulations while working on COGCC projects. Contractors and their personnel and sub-contractors will be provided the COGCC HASP for informational purposes only, and as a

condition of their admittance to the work site, will comply with all federal, state, and local environmental, health, and safety regulations while working on COGCC projects. Additionally, Contractors, their personnel, and their sub-contractors will not cause, permit, or tolerate a hazardous, unsafe, unhealthy, or environmentally unsound condition or activity over which they have control. Contractors are hired as experts in their respective fields and, as such, are expected to be expert in the environmental, health, and safety aspects of their job requirements. The COGCC expects its contractors to follow and enforce their own HASPs as they pertain to their specific work responsibilities.

2.0 HAZARD COMMUNICATION

The Hazard Communication Plan (Plan) has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that their employees are protected from hazardous materials in the workplace.

2.1 PURPOSE

The purpose of the Hazard Communication Plan (also known as the Employee Right-to-Know Plan) is to ensure that all COGCC personnel are informed about hazardous substances that may be encountered with COGCC daily field task, projects and the protective measures for working safely with these substances. This Plan is written to comply with the Hazard Communication Standard (HCS) in Title 29 of the Code of Federal Regulations (CFR) Part 1910.1200.

2.2 SCOPE

This Plan sets forth procedures for the communication of hazards associated with chemicals and materials in the workplace and applies to COGCC employees. In addition, it applies to all personnel (including consultants, agency representatives, contractors, and subcontractors) that work on any COGCC project. All contractors or subcontractors working on COGCC projects must have a HASP and hazard communication plan equal to or more stringent than the COGCC's.

The COGCC will inform personnel about the hazards of chemical substances and hazardous physical materials which may be encountered in COGCC daily field task, projects and the protective measures for working safely with these substances and materials. A list of commonly encountered chemicals and materials found at oil and gas locations is included in Appendix A.

Many of the wastes produced at oil and gas facilities are not regulated as hazardous wastes under the Resource Conservation and Recovery Act (RCRA). However, these wastes may be hazardous to the health and safety of COGCC employees and personnel and are therefore included in this Plan.

2.3 RESPONSIBILITIES

All COGCC employees are responsible for:

- Complying with the contents of this Plan; and
- Participating in training as required by this Plan.

COGCC Managers and Supervisors are responsible for:

- Participating in training as required by this Plan;
- Implementing the employee training, documentation, and review requirements specified below.

2.3.1 TRAINING

COGCC Managers and Supervisors are responsible for:

- Ensuring that all personnel have proper training and that the training is documented;
- Ensuring that personnel understand their responsibilities under this Plan;
- Informing personnel of the hazards associated with chemicals or materials that may be encountered on the job;
- Informing personnel of the appropriate types of personal protective equipment (PPE) to use;
- Informing personnel of special precautions, training, or equipment required when a contractor is performing a non-routine operation that introduces new hazards to the work area; and
- Maintaining training records.

2.3.2 LABELING AND SAFETY DATA SHEETS

The HCS (29 CFR 1910.1200(g)), revised in 2012, requires that the chemical manufacturer, distributor, or importer provide SDSs (formerly MSDSs or Material Safety Data Sheets) for each hazardous chemical or product to downstream users to communicate information on these hazards. The information contained in the SDS is largely the same as the MSDS, except the SDSs are required to be presented in a consistent user-friendly, 16-section format.

The SDS includes information regarding the properties of each chemical, the physical, health, and environmental health hazards, protective measures, and safety precautions for handling, storing, and transporting the chemical. The information contained in the SDS must be in English (although it may be in other languages as well). In addition, the Occupational Safety and Health Administration (OSHA) requires that SDS preparers provide specific minimum information as detailed in Appendix D of 29 CFR 1910.1200. The SDS preparers may also include additional information in various section(s).

Sections 1 through 8 of each SDS contain Globally Harmonized System (GHS) pictograms (see Appendix B), general information about the chemical, identification, hazards, composition, safe handling practices, and emergency control measures (e.g., fire suppression). This information should be helpful to those who need to get the information quickly. Sections 9 through 11 and 16 contain other technical and scientific information, such as physical and chemical properties, stability and reactivity information, toxicological information, exposure control information, and other information including the date of preparation or last revision. The SDS must also state that no applicable information was found when the preparer does not find relevant information for any required element.

The SDS must also contain Sections 12 through 15, to be consistent with the United Nations GHS of Classification and Labeling of Chemicals, but OSHA will not enforce the content of these sections because they concern matters handled by other agencies.

2.3.3 DOCUMENTATION AND REVIEW

COGCC Managers and Supervisors are responsible for:

- Ensuring that all personnel have proper training and that the training is documented;
- Implementing, supporting, and enforcing this Plan and periodically reviewing and evaluating its overall effectiveness.

2.4 TRAINING

The COGCC will provide employees with effective information and training on hazardous chemicals and materials that may be encountered on the job. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals.

- Training will be provided initially and periodically for all employees whose work assignment may cause them to encounter chemical substances or hazardous physical agents on the job. The training will instruct employees in the procedures to be followed to minimize these hazards;
- Retraining shall be provided for all personnel whenever there is a change in potential hazards from chemicals found in the workplace; and
- Employees shall also be retrained periodically so that they are familiar with the concepts of hazard communication and can react appropriately in an emergency situation.

Contract personnel working with COGCC employees shall be made aware of the contents and requirements of this Plan.

The appropriate COGCC office shall maintain training records. The records shall contain each employee's name and the dates of training. Training records shall be kept for at least three years after the employee leaves the COGCC.

2.5 DOCUMENTATION ON COGCC PROJECTS

The following types of documents will be maintained by Contactors

1. Chemical List – The Contractor shall maintain a comprehensive inventory of hazardous chemicals potentially present on the job.
2. Safety Data Sheets – All hazardous chemicals and materials shipped after June 1, 2015, must be labeled with specified elements, including GHS pictograms, signal words, and hazard and precautionary statements.

3. SDS contain the following 16 sections in this order:
    1. Identification and Pictograms;

2. Hazard(s) identification;
3. Composition/information;
4. First-aid measures;
5. Firefighting measures;
6. Accidental release measures;
7. Handling and storage;
8. Exposure control/personal protection;
9. Physical and chemical properties;
10. Stability and reactivity;
11. Toxicological information;
12. Ecological information;
13. Disposal considerations;
14. Transport information;
15. Regulatory information; and
16. Other information.

Copies of the SDSs will be maintained by the Contractors and made available to COGCC employees.

APPENDIX A: HAZARDOUS MATERIALS LIST

HAZARDOUS MATERIALS/CHEMICALS POTENTIALLY ENCOUNTERED AT COGCC LOCATIONS SDSs ARE AVAILABLE FOR EACH OF THESE SUBSTANCES		
Chemical Name	**Location/Use**	**Hazard**
Hydrogen sulfide (H_2S) - also referred to as sour gas or sulphuretted hydrogen	May occur naturally in crude oil, produced water, or gas stream	High levels can be fatal
Caustic or acid cleaners	Well site	High levels can be fatal
Constituents removed from produced water	Well site	Constituent chemical can be harmful
Cooling tower blowdown	Well site	Constituent chemical can be harmful
Cooling tower cleaning wastes	Well site	Constituent chemical can be harmful
Drilling fluids	Well site	Constituent chemical can be harmful
Fracturing fluids or acids	Well site	High levels can be fatal
Gas plant dehydration wastes, including glycol-based compounds, glycol filters, and filter media, backwash and molecular sieves	Well site	Constituent chemical can be harmful
Gas plant sweetening wastes for sulfur removal	Well site	Constituent chemical can be harmful
Gases from the production stream	Well site	High levels can be fatal
Geothermal production fluids	Well site	Constituent chemical can be harmful
Hydraulic fluids	Well site	Constituent chemical can be harmful
Hydrocarbons, solids, sands, and emulsion from production separators	Well site	Constituent chemical can be harmful
Hydrogen sulfide abatement wastes	Well site	Constituent chemical can be harmful
Light organics volatized from wastes	Well site	Constituent chemical can be harmful

HAZARDOUS MATERIALS/CHEMICALS POTENTIALLY ENCOUNTERED AT COGCC LOCATIONS SDSs ARE AVAILABLE FOR EACH OF THESE SUBSTANCES		
Chemical Name	**Location/Use**	**Hazard**
Liquid hydrocarbons	Well site	Constituent chemical can be harmful
Lubricating oils	Well site	Constituent chemical can be harmful
Packing fluids	Well site	Constituent chemical can be harmful
Paints and painting wastes	Well site	Constituent chemical can be harmful
Pit sludge's and contaminated bottoms	Well site	Constituent chemical can be harmful
Solvents and waste solvents	Well site	Constituent chemical can be harmful
Sulfur	Well site	Constituent chemical can be harmful
Waste crude oil	Well site	Constituent chemical can be harmful
Well completion, treatment, and stimulation fluids	Well site	Constituent chemical can be harmful

APPENDIX B: GHS SDS AND LABEL PICTOGRAMS

Physical hazards pictograms

 **Explosive**	**Usage** • Unstable explosives • Explosives, divisions 1.1, 1.2, 1.3, 1.4 • Self-reactive substances and mixtures, types A, B • Organic peroxides, types A, B
 **Flammable**	**Usage** • Flammable gases, category 1 • Flammable aerosols, categories 1, 2 • Flammable liquids, categories 1, 2, 3 • Flammable solids, categories 1, 2 • Self-reactive substances and mixtures, types B, C, D, E, F • Pyrophoric liquids, category 1 • Pyrophoric solids, category 1 • Self-heating substances and mixtures, categories 1, 2 • Substances and mixtures, which in contact with water, emit flammable gases, categories 1, 2, 3 • Organic peroxides, types B, C, D, E, F
 **Oxidizing**	**Usage** • Oxidizing gases, category 1 • Oxidizing liquids, categories 1, 2, 3 • Oxidizing solids, categories 1, 2, 3

 **Compressed Gas**	**Usage** • Compressed gases • Liquefied gases • Refrigerated liquefied gases • Dissolved gases
 **Corrosive**	**Usage** • Corrosive to metals, category 1
no pictogram required	**Usage** • Explosives, divisions 1.5, 1.6 • Flammable gases, category 2 • Self-reactive substances and mixtures, type G (see HAZMAT Class 4 Flammable solids) • Organic peroxides, type G

Health hazards pictograms

Toxic

Usage

- Acute toxicity (oral, dermal, inhalation), categories 1, 2, 3

Harmful

Usage

- Acute toxicity (oral, dermal, inhalation), category 4
- Skin irritation, categories 2, 3
- Eye irritation, category 2A
- Skin sensitization, category 1
- Specific target organ toxicity following single exposure, category 3
  - Respiratory tract irritation
  - Narcotic effects

Not used[3]

- with the "skull and crossbones" pictogram
- for skin or eye irritation if:
  - the "corrosion" pictogram also appears
  - the "health hazard" pictogram is used to indicate respiratory sensitization

Health Hazard

Usage

- Respiratory sensitization, category 1
- Germ cell mutagenicity, categories 1A, 1B, 2
- Carcinogenicity, categories 1A, 1B, 2
- Reproductive toxicity, categories 1A, 1B, 2
- Specific target organ toxicity following single exposure, categories 1, 2
- Specific target organ toxicity following repeated exposure, categories 1, 2
- Aspiration hazard, categories 1, 2
- Acute toxicity (oral, dermal, inhalation), category 5
- Eye irritation, category 2B
- Reproductive toxicity – effects on or via lactation

Physical and Health Hazard Pictograms

	Usage
 **Corrosive**	• Explosives, divisions 1.5, 1.6 • Flammable gases, category 2 • Self-reactive substances and mixtures, type G (see HAZMAT Class 4 Flammable solids) • Organic peroxides, type G • Skin corrosion, categories 1A, 1B, 1C • Serious eye damage, category 1

Environmental hazards pictograms

	Usage
 **Environmental Hazard**	• Acute hazards to the aquatic environment, category 1, 2 • Chronic hazards to the aquatic environment, categories 1, 2 • Acute hazards to the aquatic environment, categories 2, 3 • Chronic hazards to the aquatic environment, categories 3, 4

Appendix C

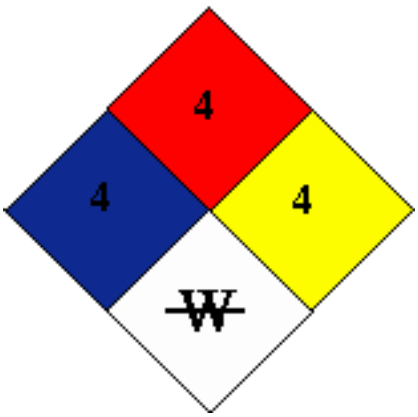
NATIONAL FIRE PROTECTION AGENCY (NFPA) 4-COLOR CHEMICAL HAZARD LABEL

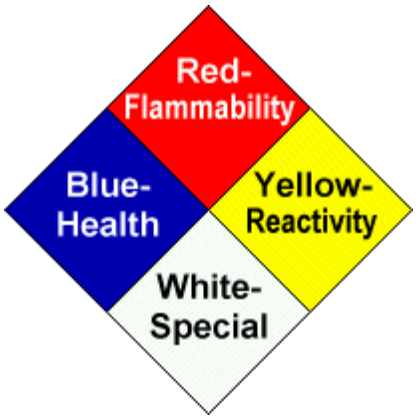
APPENDIX C: NATIONAL FIRE PROTECTION AGAENCY 4-COLOR CHEMICAL HAZARD LABEL

a) The recommended labels for chemical containers are the diamond-shaped National Fire Protection Agency (NFPA) 4-Color Chemical Hazard Labels (see below). The labels have four colors corresponding to health (blue), flammability (red), reactivity (yellow), and special (white) concerns.

b) Numbers on the labels range from 0-4, indicating the following:

0	Minimal hazards		
1	Slight hazards	3	Serious hazards
2	Moderate hazards	4	Extreme hazards





DEFINITIONS OF NFPA NUMBERING SYSTEM	
HEALTH	
4-Extreme	Highly toxic material. Will have one or more of the following characteristics: • On very short exposure could cause death or major residual injury even though prompt medical treatment is given. • A known or suspected human carcinogen, mutagen, or teratogen.
3-Serious	Toxic material. Will have one or more of the following characteristics: • May cause serious temporary or residual injury on short term exposure even though prompt medical attention is given. • A known or suspected small animal carcinogen, mutagen, or teratogen.

HEALTH	
2-Moderate	Moderately toxic material. Will have one or both of the following characteristics: • Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment is given.
1-Slight	Slightly toxic material. Will have one or more of the following characteristics: • May cause irritation but only minor residual injury even without treatment. • Recognized innocuous material when used with responsible care.
0-Minimal	No chemical is without some degree of toxicity. This designation is rarely used.
FLAMMABILITY	
4-Extreme	Extremely flammable. Flash point below 73° F (22.8° C)
3-Serious	Flammable. Will have one or more of the following characteristics: • Vaporizes readily and can be ignited under almost all ambient conditions. • May form explosive mixtures with or burn rapidly in air. • May burn rapidly due to self-contained oxygen. • May ignite spontaneously in air. • Flash point at or above 73° F (22.8° C) but less than 100° F (37.8° C).
2-Moderate	Combustible. Will have one or more of the following characteristics: • Must be moderately heated or exposed to relatively high temperatures for ignition to occur. • Solids which readily give off flammable vapors. • Flash point at or above 100° F (37.8° C) but less than 200° F (93.4° C).
1-Slight	Slightly combustible. Will have one or more of the following characteristics: • Must be preheated for ignition to occur. • Will burn in air when exposed at 1500° F (815.5° C) for 5 minutes. • Flash point at or above 200° F (93.4° C).
0-Minimal	Will have one or more of the following characteristics • Will not burn. • Will not exhibit a flash point. • Will not burn in air when exposed at 1500° F (815.5° C) for 5 minutes.

REACTIVITY	
4-Extreme	Will have one or more of the following characteristics • Can explode/decompose violently at normal temperature and pressure. • Can undergo a violent self-accelerating exothermic reaction with common materials or by itself. • May be sensitive to mechanical or local thermal shock at normal temperature and pressure.
3-Serious	Will have one or more of the following characteristics: • Can detonate or explode but requires a strong initiating force or confined heating before initiation. • Readily promotes oxidation with combustible materials and may cause fires. • Is sensitive to thermal or mechanical shock at elevated temperatures. • May react explosively with water without requiring heat or confinement.
2-Moderate	Will have one or more of the following characteristics: • Normally unstable and readily undergoes violent change but does not detonate. • May undergo chemical change with rapid release of energy at normal temperature and pressure. • May react violently with water. • Forms potentially explosive mixtures with water.
1-Slight	Normally stable material which can become unstable at high temperature and pressure.
0-Minimal	Normally stable material which is not reactive with water.
SPECIAL	
W	Water Reactive
Ox	Oxidizing Agent
	Radioactive
	Poison

3.0 PERSONAL PROTECTIVE EQUIPMENT

The Personal Protective Equipment (PPE) Plan has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that employees know what PPE to use for each type of physical or chemical hazard that they may encounter in the workplace, and the limitations of each PPE.

3.1 PURPOSE

The purpose of the PPE Plan is to ensure that all COGCC personnel are trained to recognize chemical and physical hazards in the workplace and select and don the appropriate PPE to protect themselves from those hazards. The plan is written to comply with Title 29 of the Code of Federal Regulations (CFR) Parts:

- 1910.132 – General Requirements;
- 1910.133 – Eye and Face Protection;
- 1910.135 – Head Protection;
- 1910.136 – Foot Protection; and
- 1910.138 – Hand Protection.

3.2 SCOPE

COGCC Management will provide for the proper selection and use of PPE for COGCC personnel in the workplace. All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this policy. Contractors and subcontractors are required to provide all necessary PPE for their personnel to comply with their COGCC's PPE standards as well as the COGCC's requirements.

3.3 RESPONSIBILITIES

COGCC employees shall be responsible for:

- The proper use, care, maintenance, and limitations of PPE;
- Reporting any damaged or lost PPE to their supervisor;
- Observing fellow workers to ensure the proper use of PPE;
- Reporting any hazards encountered that require a change in PPE; and
- Participating in appropriate training when requested by COGCC management.

COGCC Supervisors shall be responsible for:

- Completing PPE Hazard Assessments (Appendix A) for all types of hazards encountered in the work environment;
- Ensuring all personnel have the PPE necessary to perform their work (Contractors and subcontractors shall be responsible for providing their own PPE);
- Ensuring that all personnel are trained in the proper care and use of PPE;
- Ensuring that personnel understand the limitations of PPE;
- Ensuring that all personnel use PPE consistently and properly;
- Reporting any defective PPE to COGCC management and taking it out of service; and
- Forwarding requests to COGCC management for assistance in selecting proper PPE.

COGCC Management shall be responsible for:

- Ensuring that PPE Hazard Assessments are completed for all types of hazards encountered in the work environment;
- Ensuring that appropriate PPE is identified for protection of personnel;
- Ensuring that training is provided to COGCC personnel for PPE they are expected to use;
- Implementing, supporting, and enforcing the PPE Plan and periodically reviewing and evaluating its overall effectiveness.

3.4 TRAINING

Training shall be provided to all personnel required to use PPE. The training shall be specific to the type of PPE to be worn and shall cover the following topics:

- When PPE is necessary;
- What type of PPE is necessary;
- How to properly don, doff, adjust, and wear PPE;
- Limitations of PPE;
- How to obtain the appropriate PPE; and
- Proper care, maintenance, useful life, and disposal of PPE.

Initial training shall be provided before employees are assigned to tasks requiring the use of PPE. Additional training will be provided when job conditions or PPE changes, or when deficiencies are noted in the use and care of PPE or the training plan.

3.5 DOCUMENTATION

Employee training records and PPE Inspection Records must be signed and dated to be considered valid documentation.

Employee training records, PPE Inspection Records, and copies of the PPE Plan must be retained for the length of time specified in the following table.

RECORD	CUSTODIAN	RETENTION
Employee Training Records	Appropriate COGCC Office	36 months after separation of employment
PPE Inspection Records	Appropriate COGCC Office	60 months
Personal Protective Equipment Plan	Appropriate COGCC Office	12 months after revised, superseded, or obsolete

3.6 PROCEDURES

3.6.1 HAZARD ASSESSMENTS

Hazard assessments will be conducted as necessary to identify and characterize the hazards that personnel may be exposed to during the course of their work. Assessments should include:

Chemical Hazards

- Chemical Byproducts of Oil and Gas Production;
- Pesticides and Herbicides;
- Hydrogen Sulfide (H2S) Gas;
- Naturally Occurring Radioactive Materials (NORM); and
- Technically-Enhanced NORM (TENORM).

Physical Hazards

- Impact/Penetration from foreign objects;
- Tripping Hazards;
- Vehicle Accidents;
- Heat and Freezing Temperatures;
- Harmful Dust;
- Light (Optical) Radiation;
- Ionizing Radiation;
- Sources of Motion;

- High/Low Temperatures;
- Fires;
- Falling Objects;
- Sharp Objects;
- Poisonous snakes and spiders, and mice/rodents/birds (possible bearers of Hantavirus).

The data from the hazard assessments will be used to determine where hazards exist. When feasible, hazards will be eliminated or reduced through the use of engineering controls or other hazard reduction methods. For hazards that are not readily controlled, PPE will be identified and selected to protect the employee from the hazard. Hazard assessments shall be completed using the PPE Hazard Assessment Form in Appendix A.

3.6.2 Cleaning and Maintenance of PPE

PPE shall be inspected before each use and cleaned and maintained as necessary to ensure it provides adequate protection. COGCC personnel should follow cleaning and decontamination procedures developed by the PPE manufacturer. PPE that cannot be decontaminated shall be removed from service and disposed of appropriately. COGCC Management will provide assistance in determining the appropriate disposal method for the contaminated PPE.

3.6.3 General Work Attire

Tank tops or sleeveless shirts and other apparel which leave the shoulders or upper chest exposed are unacceptable, as are loose or poorly fitting or torn clothing.

Jewelry, such as rings, chain bracelets, dangling earrings, etc. can cause injuries and are prohibited, especially when working around machinery or moving parts. Long hair (shoulder length or longer) should be tied back or restrained underneath head protection to prevent entanglement in machinery or moving equipment.

3.6.4 Head Protection

Hard hats shall be worn at all times when impact hazards that may injure an employee's head are present. Hard hats must meet the requirements of American National Standards Institute (ANSI) Safety Requirements for Industrial Head Protection, (Z89.1-2009). Metal head protection is not permitted.

3.6.5 Eye and Face Protection

All eye and face protection must meet the requirements of ANSI Standard Z87.1: Safety Requirements for Eye and Face Protection.

Safety glasses with side shields shall be worn by all employees when there is a potential for injury to the eyes or face from:

- Flying particles (blowing dust, etc.);

- Liquid chemicals;
- Acids or caustic liquids; and
- Chemical gases and vapors.

Impact resistant safety goggles or safety glasses with side shields shall be worn with a full-face shield when the nature of the work is likely to produce flying projectiles that are an injury hazard to the face as well as the eyes.

Approved non-prescription safety glasses with side shields are available for all employees.

3.6.6 FOOT PROTECTION

All protective footwear must meet the requirements of ASTM International standards, F 2412, Test Methods for Foot Protection, and F 2413, Specification for Performance Requirements for Protective Footwear. Appropriate protective footwear must be worn whenever the potential for foot injuries exists.

Protective footwear made of materials which may absorb hazardous substances or hydrocarbons shall not be worn in environments where splash or spill hazards exist. Where liquid or chemical splash hazards exist, appropriate chemical-resistant safety-toed boots or other specialized protective footwear shall be worn. Specialized chemical safety protective boots will be made available for employee use when necessary.

Employees whose duties require them to climb ladders must wear safety shoes or boots with at least a ¼-inch external heel while climbing.

3.6.7 HAND PROTECTION (GLOVES)

Hand protection (gloves) should be worn to protect employees from hazards including cuts, abrasions, puncture wounds, chemical burns, high temperature burns, frost-bite, and contact with harmful substances.

Gloves must fit properly. Loose-fitting gloves are a major cause of employees being caught and pulled into machinery.

Impermeable gloves shall be used when working with chemicals or liquid hydrocarbons. Supervisors should assist employees in selecting the appropriate gloves based on the hazard assessment, the Safety Data Sheet (SDS), and the duration of use.

3.6.8 CHEMICAL PROTECTVE CLOTHING

Considerations to be included when evaluating PPE are: resistance to abrasion, cutting, and puncturing, tear and tensile strength, flammability, resistance to the effects of heat and cold, closure strength, flexibility, weight, thermal insulation as well as rates of degradation, permeation, and penetration (breakthrough time).

3.6.9 FLAME RESISTANT CLOTHING

Clothing made of synthetic materials such as polyester has been shown to contribute to the severity of burns received from fires, because it melts and adheres to the skin. Synthetic materials are discouraged or prohibited depending on the fire potential of the area. Clothing made of certain natural fabrics, such as 100% cotton, can provide additional burn protection in flash fires. Flame resistant clothing shall be required on any live well site or gas plant.

Flame resistant clothing must cover the entire body (trunk, arms, legs, and waist). Shirt sleeves or coveralls must remain rolled down and buttoned at all times.

3.6.10 RESPIRATORY PROTECTION

If necessary, appropriate respiratory protection will be provided to employees.

3.6.11 HEARING PROTECTION

Hearing protection shall be worn in all work areas where the noise level reaches or exceeds 85 decibels and may include compressor locations, gas plants/processing areas, and operations such as venting pressure from lines. In areas where high noise levels are present, disposable ear plugs shall be available. Refer to the COGCC Hearing Conservation Plan for additional information.

3.6.12 GAS DETECTION EQUIPMENT

Toxic gas detectors, combustible gas detectors, and oxygen deficiency detectors shall be used as specified in work procedures and shall provide early warning to the presence of developing hazardous atmospheres. These detectors/instruments shall be calibrated and maintained in accordance with the manufacturer's instructions. Calibration/service logs shall be maintained and stored with the instruments.

Detectors/instruments utilized in high noise areas shall alarm by vibration and audible alert.

All personnel working at locations where sour gas (H2S) may be present are required to wear a personal H2S monitor. Refer to the COGCC Hydrogen Sulfide Exposure Control Plan for additional information.

3.6.13 SUNSCREEN AND SUNGLASSES

Due to the incidences of skin cancer associated with exposure to ultraviolet (UV) rays from sunlight, it is recommended that COGCC employees apply sunscreen to all exposed skin prior to working outdoors. It is advised to use a sunscreen with a minimum Sun Protection Factor (SPF) of 15.

Exposure to the sun has been shown to increase a person's chances of developing eye cataracts. It is recommended that all COGCC employees wear sunglasses when working outdoors. The sunglasses should protect against both UVA and UVB rays.

APPENDIX A: HAZARD ASSESSMENT FORM

Location: _____ Date:_____

SOURCE	ASSESSMENT OF HAZARD	REQUIRED PPE

I certify by signing this document that a hazard assessment has been performed at the above named workplace.

_____
Print Name

_____ _____
Signature Date

NOTE: Send a copy of this completed form to your Supervisor.

4.0 HYDROGEN SULFIDE

The Hydrogen Sulfide (H2S) Awareness Plan (Plan) has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to minimize the risk of exposure to H2S and to ensure that employees are knowledgeable and trained in the hazards and warning signs of exposure.

4.1 PURPOSE

The COGCC will assess H2S hazards and provide engineering controls, safe workplace practices, and, as necessary, respiratory protection to protect personnel from exposure. In addition, the COGCC will provide H2S Awareness Training to employees.

4.2 SCOPE

This plan applies to all COGCC employees encountering the potential for hazardous exposure to H2S, as well as all contractors and their personnel and subcontractors.

4.3 RESPONSIBILITIES

All COGCC employees are responsible for:

- Being knowledgeable of the provisions of the Plan and participating in training when requested; and
- Complying with the contents of this Plan.

COGCC Supervisors are responsible for:

- Identifying potential exposure to H2S;
- Evaluating the associated hazards with the Hazard Assessment Form (See Appendix A);
- Selecting appropriate personal protective equipment (PPE) for use by employees;
- Ensuring that PPE is used properly;
- Maintaining required documentation; and
- Assuring that employees receive appropriate training in accordance with this Plan.

COGCC Management is responsible for:

- Ensuring that appropriate employees are trained in H2S safety;
- Ensuring that all COGCC employees understand their responsibilities under this plan;
- Maintaining, periodically reviewing, and, when necessary, modifying the plan as required;
- Maintaining required records;
- Arranging for employee training;

- Providing the resources necessary to implement the H2S Plan.

4.4 TRAINING

H2S Awareness Training shall be provided to COGCC employees who may be exposed to H2S. Employees shall be trained prior to performing a job that requires work around H2S. Affected employees shall be trained on the hazards of H2S, use, calibration, and maintenance of monitoring equipment, and first aid procedures for H2S exposure prior to any potential exposure. Refresher training shall be conducted at least every year and more often if necessary.

4.4.1 HYDROGEN SULFIDE

H2S is a flammable, toxic, colorless, corrosive gas. Physical properties and some characteristics of H2S are:

- Low concentrations of H2S are recognized by the smell of rotten eggs;
- The perceived odor does not increase with higher concentrations; therefore, the sense of smell should not be depended upon to detect any level of H2S;
- At high concentrations, greater than 100 parts per million (ppm), loss of the sense of smell can occur;
- Prolonged exposure to low concentrations decreases the sense of smell and may irritate the eyes;
- Most people can smell H2S at concentrations ranging from 0.003 ppm to 0.3 ppm;
- H2S is heavier than air (Vapor Density = 1.17) and can accumulate in low-lying areas such as sewers, pits, bottoms of tanks, and tank impoundments;
- H2S is moderately soluble in water and is less soluble in hot water (steam) than cold water;
- H2S is corrosive to many materials, including metals, in the presence of water or water vapor and is reactive with oxidizing agents;
- H2S is converted to sulfur dioxide (SO2) when burned with excess air and can be converted to elemental sulfur when burned in an oxygen-deficient environment;
- H2S is a highly flammable gas; the lower explosive limit (LEL) is 4.4 percent (%) by volume, the upper explosive limit (UEL) is 46.0% by volume;
- Sulfides of iron will oxidize (iron oxides) more rapidly in moist air; and
- In the presence of other readily oxidized combustibles such as petroleum hydrocarbons in an oily rag, the heat liberated from this oxidation is sufficient to result in spontaneous ignition.

Inhalation is the primary exposure route of H2S to the human body. H2S can be irritating at low concentrations to the eyes (conjunctivitis), skin, and respiratory tract. At higher concentrations, respiratory paralysis, and death may occur. The following table lists some reported physical impacts of various concentrations of H2S.

Concentrations of H2S (PPM)	Reported Physical Impacts
10	Eye irritation.
100	Coughing, headache, dizziness, eye irritation, loss of smell. Immediately Dangerous to Life and Health (IDLH).
200 - 300	Marked eye inflammation and respiratory tract irritation after one hour of exposure.
500 - 700	Loss of consciousness and possibly death in 30 minutes to one hour.
700 – 1,000	Rapid loss of consciousness, cessation of respiration and death.
1,000	Unconsciousness in seconds with early cessation of respiration and death within minutes unless victim is removed from exposure and breathing is restored. Death may still result regardless of being removed from hazardous condition.

IDLH is an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or is sufficiently debilitating to impair an individual's ability to escape.

The various exposure limits as defined by the United States Occupational Safety and Health Administration (OSHA) for H2S are as follows:

- Short-term exposure limit (STEL), or the maximum concentration to which an employee may legally be exposed continuously for up to 15 minutes (4 times per day maximum): 20 ppm; and
- Maximum Peak (One-time exposure): 50 ppm.

NOTE: If an employee's personal monitor sounds an alarm and the employee is exposed to 50 ppm H2S or higher, the employee must work in an environment free of H2S for the remainder of the workday.

4.4.2 PERSONAL GAS MONITORES

This procedure requires that personnel working in areas where they may potentially be exposed to H2S wear a small single gas monitoring unit. The COGCC will select and provide the appropriate gas monitor.

4.4.3 EXPOSURE HAZARD ASSESSMENTS

COGCC projects with H2S will be identified by a comprehensive Hazard Assessment. The Hazard Assessment must be documented on the Hazard Assessment Form (Appendix A).

4.5 DOCUMENTATION

The following types of documents will be maintained.

RECORD	CUSTODIAN	RETENTION
Employee Training Records	Appropriate COGCC Office	36 months after separation
Hazard Assessments	Appropriate COGCC Office	12 months after revised, superseded, or obsolete

HAZARD ASSESSMENT FORM

APPENDIX A: HAZARD ASSESSMENT FORM

Location: _____ Date:_____

SOURCE	ASSESSMENT OF HAZARD	REQUIRED PPE

I certify by signing this document that a hazard assessment has been performed at the above named jobsite.

_____

Print Name

_____ _____

Signature Date

NOTE: Send a copy of this completed form to your Supervisor.

5.0 HEARING CONSERVATION

The Hearing Conservation Plan (Plan) has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that employees are protected from noise levels in the workplace that may cause hearing loss.

5.1 PURPOSE

The purpose of the Plan is to ensure that COGCC employees, including contractors and their personnel and subcontractors, are informed about high noise levels that may be encountered, and the measures to be implemented to protect their hearing. The plan is written to comply with the Occupational Noise Exposure Standard in Title 29 of the Code of Federal Regulations (CFR) Part 1910.95.

5.2 SCOPE

This Plan sets forth procedures for protecting COGCC employees from occupational hearing loss associated with loud noises. In addition, contractors and their personnel and subcontractors are required to have a compliant Plan.

The COGCC will control employee exposure to excessive noise through the use of appropriate hearing protective equipment.

5.3 RESPONSIBILITIES

COGCC employees shall be responsible for:

- Wearing appropriate hearing protection in areas where protection is required; and
- Complying with the contents of this plan.

COGCC Supervisors shall be responsible for:

- Identifying work areas and tasks that require workers to wear hearing protection;
- Selecting appropriate hearing protection equipment for use by employees;
- Ensuring that hearing protection is used properly;
- Maintaining required documentation; and
- Assuring that employees receive appropriate training in accordance with this Plan.

COGCC Management shall be responsible for:

- Providing the resources necessary to implement the Plan;
- Providing employee exposure notifications and summaries from any noise monitoring conducted; and
- Ensuring that COGCC employees are provided the hearing protection required for each work assignment where the noise level exceeds 85 dbA.

If the levels specified in the OSHA Permissible Noise Exposure Table below are exceeded, the COGCC is required to provide hearing protection to affected employees.

OSHA Table G-16

PERMISSIBLE NOISE EXPOSURES (1)	
Duration per day, hours	**Sound level dBA slow response**
8	90
6	92
4	95
3	97
2	100
1-1/2	102
1	105
1/2	110
1/4 or less	115

(1) When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions: C(1)/T(1) + C(2)/T(2) + C(n)/T(n) exceeds unity, then the mixed exposure should be considered to exceed the limit value.

C(1), C(2), and C(n) indicate the total time of exposure at each specified noise level, and T(1), T(2), and T(n) indicate the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dBA peak sound pressure level.

5.4 TRAINING

Training shall follow the following topics:

- Effects of noise on hearing;
- Types of hearing protection;
- Selection and care of hearing protection; and
- Facility noise surveys.

5.4.1 EFFECTS OF NOISE ON HEARING

COGCC employees should be reminded that hearing loss is painless, and because it does not hurt, many people do not realize when they are damaging their hearing. Hearing loss is also cumulative and irreversible. Each loud noise that impacts an employee's ear can cause a tiny amount of hearing loss. Noises such as loud machinery, air hoses, lawn mowers, radios, etc. can each contribute to hearing loss. Hearing loss is less a "natural part of aging" than it is the result of decades of audible assaults on your eardrums. Hearing loss is also permanent; once you lose

your hearing, it will not come back. Fortunately, most hearing loss is preventable. Always wear your hearing protection when exposed to loud noises.

5.4.2 Types of Hearing Protection

Types of hearing protection include those that fit inside the ear canal (earplugs), and those that cover the ear (earmuffs). In extremely loud areas (such as a firing range), many people will opt to "double up" and wear both earplugs and a pair of earmuffs. Follow the manufacturer's instructions for the proper use and fit of hearing protection. Hearing protection that is not worn properly is not protecting your hearing as well as it should.

5.4.3 Selection and Care of Hearing Protection

Each type of hearing protection is rated by the manufacturer for the situation where it is most effective. Read the manufacturer's instructions to determine if the type of hearing protection is sufficient for the environment in question. If the hearing protection is reusable, keep it clean. Washing earplugs and earmuffs in hot soapy water will ensure that you are not introducing dirt and grease into your ear canals. If the earplugs are disposable, properly dispose of them in the trash. They are not intended to be cleaned and reused.

NOTE: Earplugs can be a choking hazard for young children and pets. Throw your disposable earplugs into the trash at work. Do not put them in your pocket and take them home, especially if you have small children or pets.

5.5 DOCUMENTATION

The appropriate COGCC office shall maintain training records. The records shall contain each employee's name and the dates of training. Documents must be retained for the length of time specified in the following table.

RECORD	CUSTODIAN	RETENTION
Employee Training Records	Appropriate COGCC Office	36 months after separation of employment
Hearing Conservation Plan	Appropriate COGCC Office	12 months after revised, superseded or obsolete

6.0 FIRE PROTECTION

Fire can cause devastating loss of life and property. The key to a truly effective fire protection plan is every employee's commitment to prevention. To reduce the possibility of fire damage, injury, and the associated losses, employees must follow some basic precautions. The following Colorado Oil and Gas Conservation Commission (COGCC) Fire Protection Plan (Plan) is the guide to be used to aid in preventing fires. Supervisors must see that these precautions are followed.

6.1 BASIC PRECAUTIONS

Good housekeeping is essential. COGCC property and equipment shall be maintained in a clean and orderly fashion. Good housekeeping shall be enforced. Smoking near well sites, flammable materials, or fuel-powered equipment is prohibited. Store boxes and equipment in such a fashion that they do not create a fire hazard, or prevent the rapid access of firefighting equipment or personnel. Keep all exits and exit routes free of product, debris, or stored materials. Smoking is allowed only in designated smoking areas. Matches, cigarette lighters, and smoking materials shall only be allowed in the designated smoking areas.

6.2 SCOPE

This Plan provides guidelines for: the maintenance of fire suppression equipment; extinguishing a fire; and fire prevention requirements. All contractors and their personnel and subcontractors working on COGCC projects must have a Plan equal to or more stringent than this Plan.

6.3RESPONSIBILITIES

All COGCC employees are responsible for:

- Being knowledgeable of the provisions of this Plan and participating in training when requested;
- Maintaining competence in the use of portable fire extinguishers through hands-on training classes conducted by qualified personnel;
- Adhering to the procedures outlined in this Plan and understanding that only trained and authorized employees are allowed to attempt to extinguish any fire other than incipient stage fires;
- Immediately vacating if the employee(s) cannot extinguish an incipient stage fire with the use of a portable extinguisher;
- Contacting an outside entity for assistance should the fire be of a magnitude capable of endangering a structure or equipment; and
- Participating in post-work communications with the COGCC Supervisor to determine or note any plan deficiencies or hazards confronted or created from the Plan.

COGCC Supervisors are responsible for:

- Ensuring inspections of fire extinguishers;
- Instructing employees in the proper use and location of fire extinguishers;
- Reporting any defective fire control equipment to COGCC Management, taking it out of service, and replacing with identical or more capable equipment; and
- Forwarding requests to COGCC Management for assistance in selecting proper fire control equipment.

COGCC Management shall be responsible for:

- Providing employee training on this plan and maintaining training documentation;
- Implementing, supporting, and enforcing this Plan, and ensuring that COGCC employees realize that only trained and authorized employees are allowed to attempt to extinguish any fire other than incipient stage fires;
- Providing guidance on approved fire control procedures;
- Conducting periodic review of the Plan and revising it as necessary;
- Providing the necessary resources to effectively implement this Plan;
- Ensuring periodic audits are conducted on procedures and ensuring that any deficiencies are addressed and corrected.

6.4 TRAINING

COGCC employees will be trained in important aspects of fire emergencies such as:

- Classifications, distribution, and use of portable fire extinguishers;
- Understanding basic principles of fire such as the fire triangle, basic stages of fire, and the effects of smoke and heat; and
- Precautions in fighting and escaping fires.

6.5 DOCUMENTATION

The appropriate COGCC office shall maintain employee training records for the following length of time:

RECORD	CUSTODIAN	RETENTION
Employee Training Records	Appropriate COGCC Office	36 Months After Employee Separation

6.6 PROCEDURES

6.6.1 FIRE CONTROL

Portable fire extinguishers will be properly maintained on a planned schedule. Extinguishers should be used properly, according to the instructions on the nameplate and in the training manual. Any fire extinguisher found discharged shall be removed from service and replaced immediately. Fire extinguishers are not to be used for any purpose other than extinguishing fires. Use the appropriate extinguisher for a fire, which is indicated by the class designated on the extinguisher (i.e., a Class A extinguisher on a Class A fire, etc.).

- **Class A Fire** - A fire involving ordinary combustible materials such as paper, wood, cloth, and some rubber and plastic materials.
- **Class B Fire** - A fire involving flammable or combustible liquids, flammable gases, greases and similar materials, and some rubber and plastic materials.
- **Class C Fire** - A fire involving energized electrical equipment where safety to the employee requires the use of electrically nonconductive extinguishing media.
- **Class D Fire** - A fire involving combustible metals such as magnesium, titanium, zirconium, sodium, lithium, and potassium.

Unless otherwise trained and authorized, employees shall not attempt to extinguish any fire other than incipient stage fires. Interior and exterior fires shall be considered incipient stage when the employee:

- Is able to fight the fire in normal work clothing;
- Is not required to crawl or take other evasive action to avoid smoke and heat; and
- Is able to fight the fire effectively with portable fire extinguishers.

Employees shall not take it upon themselves to fight fires other than those in the incipient fire stage. Heroic actions are discouraged. Preventing accidents, injury, death, or illness to the employee involved in fighting the fire is more important than extinguishing the fire.

6.6.2 FIRE FIGHTING EQUIPMENT

It is important that firefighting equipment be maintained in good working order. All field vehicles shall be equipped with a readily accessible Dry Chemical Extinguisher.

Monthly Fire Equipment Inspections are required on all portable extinguishing equipment. Defective extinguishing equipment must be removed from service and immediately replaced. Procedures for monthly fire equipment inspections of extinguishers include:

1. Examine pressure gauge(s). If pressures are not in the operable range, remove extinguisher for refill and replacement.
2. Inspect the car-seal on the locking pin. If the car-seal is broken, remove the extinguisher for refill and replacement.

3. Visually inspect nozzle to ensure it is in place and not obstructed. If obstructed, remove, clean, and replace nozzle.

6.6.3 Fire Prevention and Material Handling

Smoking and open flames are prohibited in all areas that are an obvious fire hazard, e.g., in the presence of oil-soaked materials or combustible or flammable materials open to the atmosphere. Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids. Approved metal safety-cans shall be used for the handling of flammable liquids. Flammable liquids may not be used closer than 50 feet from any open flame or source of ignition.

7.0 FALL PROTECTION

COGCC management does not anticipate staff needing to use fall protection during normal day-to-day job tasks.

The Elevated Work Surfaces/Fall Protection Plan (Plan) has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that adequate protection from the risk of falling is provided to employees. The COGCC will determine fall hazards and establish basic practices and procedures to protect against them. All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Plan.

7.1 PURPOSE

The purpose of this plan is to help COGCC employees recognize the need for and use of fall protection that contractors may need to employ while performing tasks related to COGCC projects.

The plan is written to comply with the following standards in the Code of Federal Regulations (CFR):

- 29 CFR Part 1910.21 - .28 Subpart D – Walking / Working Surfaces;
- 29 CFR Part 1910.66 – Powered Platforms for Building Maintenance, Appendix C - Fall Arrest Systems;
- 29 CFR Part 1910.67 – Vehicle Mounted Elevating and Rotating Platforms;
- 29 CFR Part 1926.451 Subpart L – Scaffolding;
- 29 CFR Part 1926.500 .503 Subpart M – Fall Protection; and
- American National Standards Institute (ANSI) Standard Z359.1-1992 – Safety Belts, Harnesses, Lanyards, Lifelines, and Drop Lines for Construction and Industry

7.2 SCOPE

As stated before COGCC does not anticipate staff needing to use fall protection during normal day-to-day job tasks. However, should the exception arise, this plan applies to COGCC employees who could work on or near elevated or excavated surfaces. This plan is trained at the awareness level. In the case if, COGCC employee's need fall protection. A hands on training will be required before any fall protection is donned on. All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Plan.

7.3 RESPONSIBILITIES

COGCC employees are responsible for:

- Being knowledgeable of the provisions of this plan and participating in training when requested;
- Recognizing fall hazards;

- Discussing any uncertainties about identification of a fall hazard with a Supervisor; and

COGCC Supervisors are responsible for:

- Recognizing fall hazards;
- Ensuring all contractors or subcontractors follow this process.

COGCC Management is responsible for:

- Ensuring that all COGCC personnel understand their responsibilities under this Plan;
- Implementing, supporting, and enforcing this Plan;
- Maintaining, periodically reviewing, and modifying the Plan as required.

7.4 TRAINING

COGCC personnel shall receive Elevated Work Surfaces/Fall Protection training prior to their initial assignment (when they may work on or near elevated or excavated work surfaces). The training plan shall be provided for each employee who might be exposed to fall hazards. The COGCC shall instruct employees how to recognize fall hazards and how to minimize these hazards.

DOCUMENTATION

Training documents should be retained for the following length of time:

RECORD	CUSTODIAN	RETENTION
Employee Training Records	Appropriate COGCC Office	36 months after separation
Fall Protection Equipment and Hardware Checklist	Appropriate COGCC Office	84 months
Elevated Work Surfaces/Fall Protection Plan	Appropriate COGCC Office	12 months after revised, superseded, or obsolete

7.6 PROCEDURES

7.6.1 UNPROTECTED EDGES AND WALL OPENINGS

Personnel working 6 feet or more above a lower level shall be protected from falling by the use of a guardrail system, personal fall arrest system, or safety net system.

Stairways, ramps, runways, or other walkways 4 feet or more above a lower level shall be protected by a guardrail system on all open sides.

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge is 4 feet or more above lower levels and the inside bottom edge is less than 39 inches above the walking/working surface shall be protected from falling by the use of a guardrail system, safety net system, or a personal fall arrest system.

7.6.2 PERSONAL FALL ARREST SYSTEMS

Personal fall arrest systems include, but are not limited to, anchorage points, lifelines, lanyards, rope grab systems, deceleration devices, connecting devices, buckles, and body harnesses. All personal fall arrest systems must meet the requirements outlined in the American National Standards Institute (ANSI) Standard Z359.

Any time a worker is working in an area where there is a potential to fall 6 feet or more (except when scaling ladders less than 20 feet), approved types of fall protection equipment shall be used. These include, but are not limited to, a body harness and a lifeline, lanyard, rope grab, self-retracting lifeline, or deceleration device. Personnel using a personal fall arrest system shall practice the 100% tie-off protocol (i.e., being protected from falls at all times). This can be achieved by use of a double-strap lanyard, a self-retracting lifeline, or other approved means. Only shock-absorbing lanyards should be used (Exception: shock-absorbing lanyards shall not be used with a self-retracting lifeline).

Personal fall arrest systems, (e.g., full body harnesses, lanyards, and connectors) should be inspected by the person using it prior to each use. Any defective components must be immediately removed from service, tagged, and discarded. Replacement components should be ordered through a COGCC Supervisor. These inspections shall be conducted every 6 months or after any event that could affect the safe use of the system, and the inspection shall be documented on the checklist. If defects are found in the equipment, it shall be immediately taken out of service, tagged and discarded, or repaired by the manufacturer. The manufacturer's life expectancy of each piece of equipment shall not be exceeded.

7.6.3 GUARDRAILS, NETS, AND FLOOR OPENINGS AND COVERS

A standard railing shall consist of top rail, mid-rail, and posts, and shall have a vertical height of approximately 42 inches from the upper surface of the top rail to the walking/working surface. The mid-rail shall be positioned approximately halfway between the top rail and the walking/working surface. Guardrails shall be capable of withstanding a load of at least 200 pounds in any direction on any point of the top rail. Toe boards shall also be installed when there is a possibility that falling materials may cause a hazard to personnel or equipment at a lower level. Toe boards shall be a minimum of 4 inches high with a maximum clearance from the floor of 1/4 of an inch. When vertical members are used in place of mid-rails, they cannot be spaced more than 19" apart. Steel banding or plastic banding shall not be used as top rails or mid-rails. In the event that a guardrail has been temporarily removed, chains or ropes (wire, synthetic, or fiber) capable of withstanding a load of at least 200 pounds in any direction shall be extended across the opening to protect workers from a fall hazard. The chain or rope should be taunt and flagged off at not more than 6-foot intervals with high-visibility material. When guardrails are used at a hoisting area or any other area that would require the periodic removal of the guardrail

to allow for work to be completed, a removable guardrail shall be placed across the opening when work is not taking place.

When a permanent floor opening is not in use, it shall be closed with a cover, or a guardrail shall be provided along all unprotected edges. The following requirements must also be met.

- Temporary floor openings shall be guarded with a cover, guardrail, or a continuous attendant;
- When guardrails are erected around floor openings used for the passage of materials, the opening shall be guarded on two sides by permanent guardrails. Two sides may have removable guardrails to allow for the passage of materials;
- When guardrails are used around floor openings which are used as points of access (such as ladder ways), they shall be provided with a gate or be offset in such a way that a person could not walk directly into the opening;
- Floor opening covers should be capable of supporting, without failure, at least twice the weight of the workers, materials, and equipment that may be imposed on the cover at any one time;
- Floor covers shall be conspicuously marked with the words “HOLE” or “COVER”;
- All covers shall be secured when installed so as to prevent accidental displacement by the wind, equipment, or personnel.

7.6.4 FIXED STAIRS

Fixed stairs shall be provided for access from one structure level to another when operations require regular travel between the two levels, or if the carrying of tools or equipment by hand is normally required. The following requirements apply to fixed stairs:

- Riser height and tread width shall be reasonably uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs;
- All treads shall be reasonably slip-resistant and the nosing shall be of a non-slip finish;
- Stairways shall have an angle between 30 and 50 degrees to the horizontal;
- If any component of a stairway (e.g., a step, guardrail, tread, nosing, etc.) is damaged and will prevent safe usage, the top and bottom of the stairway should be blocked off and/or flagged. The stairway should not be used until the problem is fixed.

When ascending or descending a stairway, the following safety precautions should be used:

- Keep one hand on the guardrail/handrail at all times;
- Do not carry anything up or down the stairs that obstructs vision or requires both hands; and
- Do not run up or down the stairway.

7.6.5 LADDERS

The following requirements apply to all ladders used by COGCC employees:

- All single and extension ladders and stepladders shall be made of a non-conductive material such as fiberglass. Wood and metal ladders are prohibited except when approved by a COGCC Supervisor for limited use when not in proximity to electrical equipment.
- Ladders should not be painted nor have additional stickers placed on them that may hide defects.
- Rungs, cleats, and steps shall be clear of splinters, sharp edges, burrs, or projections that may be a hazard.
- When ladders are placed by doors, the door should be locked or blocked off. The area around ladders placed in high traffic areas should be blocked off.
- Ladders with defects, including, but not limited to, broken rungs or steps, cracked or split side-rails, and faulty or defective construction, shall be removed from service and destroyed.
- The manufacturer's load capacity rating for a ladder must never be exceeded. Refer to the manufacturer's instructions and information provided on each ladder.
- Tools or other equipment should never be carried by hand up or down a ladder, but raised or lowered by a rope or carried on a tool belt.
- Always keep both hands on the side rails of the ladder when ascending or descending.
- Keep three points of contact with the ladder at all times, either one foot and two hands or two feet and one hand.
- Ladders should be equipped with non-slip bases, feet, or cleats when there is a hazard for slipping.
- Ladder rungs or steps should be kept clean and free from oil or grease.
- Single ladders longer than 30 feet and extension ladders longer than 60 feet shall not be used.
- When feasible, all single or extension ladders shall be tied-off to prevent movement whenever they are standing upright and shall have secure footing. NOTE: A second person should secure the ladder during the initial climbing and tying-off of the ladder.
- The horizontal distance from the feet of the ladder to the equipment or supporting structure shall be 1/4 the vertical distance from the floor to the ladder's point of contact with the equipment or supporting structure.
- Extension ladders should extend 3 feet above the point of contact with the equipment or supporting structure when personnel are to climb onto the equipment or structure.
- Extension ladders shall have an overlap between its two sections. This overlap length shall be 1 foot of overlap distance for every 12 feet of working ladder length.
- Step ladders shall be no longer than 20 feet and shall have metal spreading devices.

- Never progress past the second rung from the top of a stepladder or the third rung from the top of an extension ladder.
- Always make sure that ladders are steady and placed on a level surface free of all liquids.

COGCC personnel using ladders shall conduct a visual inspection of the ladder before each use. The ladder must be sturdy, free from cracks, and all hardware must be in good condition. Fiberglass ladders should be stored out of the sunlight or covered to protect them from deterioration from ultraviolet light. Report any problems found with ladders to a COGCC Supervisor.

Portable ladders should be inspected at least every 6 months or immediately after any event that could affect their safe use. If defects are found in the ladder, the ladder will be taken out of service and tagged as unusable until the ladder has been repaired. If the ladder is not capable of being repaired, it shall be discarded or destroyed.

Cages shall be provided on all fixed ladders longer than 20 feet unless:

- The ladder is equipped with a ladder climbing device,
- The ladder is equipped with a self-retracting lifeline, or
- Each section of the ladder does not exceed 20 feet and has offset landing platforms with self-closing gates at each ladder transition.

Fall protection is required if working from a ladder over six feet above a lower level.

Inspections of fixed ladders are the same as those listed above for portable ladders.

7.6.6 LIFTING OF PERSONNEL

This section includes the fall protection requirements for aerial lifts (i.e., bucket trucks, extendable boom platforms, articulating boom platforms, scissor lifts, and man-baskets).

- A body harness must be worn with a lanyard attached to the boom, basket, tub, or platform when working from an aerial lift. The lanyard shall be attached in a manner that prevents a free-fall of more than 4 feet. Attachment to adjacent structures, poles, and/or equipment is prohibited. Any fall protection equipment, including body harnesses, lanyards, and lifelines used to arrest an actual employee fall shall be destroyed and replaced immediately following the incident.
- Employees may not sit or climb on the edge of the basket. Employees must always stand firmly on the floor of the basket. Planks, ladders, or other devices may NOT be placed in, or on top of the platform or guardrail to gain greater height.
- Workers shall NOT work from aerial work platforms when:

1. Extreme weather conditions (e.g., thunderstorms, heavy rain, extreme heat or cold) are present unless provisions have been made to ensure protection and safety of the workers, or

2. Winds exceed 25 miles per hour.

- Pole climbing equipment shall NOT be worn while performing work from an aerial device. The risk of falling while climbing in or out of the basket is too great.
- Employees shall not be permitted to transfer from the bucket to any other structure.

8.0 FIRST AID, CPR, AND BLOODBORNE PATHOGENS

The First Aid and Bloodborne Pathogen Plan has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that employees are knowledgeable and trained in first aid procedures and protection from bloodborne pathogens. Information on first aid supplies in the workplace is also provided.

8.1 PURPOSE

Most COGCC employees are not located near a hospital or clinic during field work. Therefore, the employees are encouraged to be adequately trained to render first aid and cardiopulmonary resuscitation (CPR) until the person requiring the first aid or CPR can be transported to a hospital. The employees should know how to protect themselves from bloodborne pathogens while rendering first aid and/or CPR. The Plan is written to comply with the Medical Services and First Aid Standard in 29 Code of Federal Regulations (CFR) Part 1910.151 and the Bloodborne Pathogens Standard in 29 CFR 1910.1030.

8.2 SCOPE

This Plan applies to COGCC employees who regularly work more than 10 minutes from a medical facility. All COGCC employees are encouraged to take CPR/First Aid training. The Plan will ensure that adequate first aid supplies will be readily available.

All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Plan.

8.3 RESPONSIBILITIES

COGCC employees are responsible for:

- Being knowledgeable of the provisions of the First Aid plan and participating in training when requested;
- Following universal precautions when administering first aid or cleaning up and/or disposing of potentially infectious materials; and
- Notifying their supervisor of any potential workplace exposure to blood or other bodily fluids.

COGCC Supervisors are responsible for:

- Ensuring that proper procedures are followed when responding to workplace injuries;
- Notifying employees of other employees who are designated to provide medical assistance during workplace emergencies; and
- Participating in incident investigations, when requested, to determine if employee exposure to possibly infectious materials may have occurred.

COGCC Management is responsible for:

- Implementing and enforcing the procedures contained in the First Aid Plan;
- Ensuring that personnel understand their responsibilities under this plan;
- Maintaining, periodically reviewing, and modifying the Plan as required; and
- Ensuring all contractors or subcontractors has a policy equal to or more stringent than this Plan.

8.4 PROCEDURES

8.4.1 FIRST AID MATERIALS

First aid kits/supplies shall include appropriate PPE for bloodborne pathogens. The kits/supplies shall be routinely inspected to ensure they are adequately stocked. Where the eyes or body of any person may be exposed to injurious materials, the first aid kits must include sterile water for quick drenching or flushing of the eyes and body.

8.4.2 UNIVERSAL PRECAUTIONS

Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. According to the concept of Universal Precautions, all human blood and human bodily fluids are treated as if known to be infectious for HIV, HBV, and other bloodborne pathogens.

COGCC employees who are trained in First Aid and CPR will consider all body fluids to be potentially infectious materials, and practice Universal Precautions if these materials are encountered.

Only those employees trained in the handling of human blood/bodily fluids, will be permitted to clean up any spills of such material. A solution of one (1) part bleach to ten (10) parts water shall be used for the cleaning process. All waste materials will be disposed of in a labeled and sealed bio-hazard container and taken to an appropriate drop site.

8.5 ANIMAL ENCOUNTERS

This section is provided as supplemental information, from the DNR Safety Handbook.

8.5.1 PURPOSE

This safe practice is intended to present guidelines and suggestions for ensuring the personal safety of employees of the Department of Natural Resources, in the case of animal encounters. While each individual is responsible for their personal safety, the Department of Natural Resources provides guidelines and information for its employees to ensure safe work environments.

Department of Natural Resources employees may encounter animals in field activities or when animals enter and/or become trapped in buildings. Animals are normally wary and are not a

threat to human safety. However, when animals are sick, injured, with young, without an escape route or otherwise feel threatened, they may be aggressive. All animals, wild or domestic, are potentially dangerous and should be treated with respect and caution.

8.5.2 PROCEDURES

Procedures vary by situation. However, some general guidelines apply in all situations. General and specific guidelines are presented in the text of this section.

8.5.3 GENERAL GUIDELINES

A. Identify the conflict.

- What type of animal have you encountered?
- Do you have an escape route?
- Does the animal have an escape route?
- Is the animal out of its normal habitat? (Cities are wildlife habitat for many species, including red fox, raccoons, skunks, other small mammals and birds. Likewise, houses and buildings can provide wildlife habitat for some species.)
- Is the animal displaying "normal behavior?" Animals that seem unusually friendly, lethargic or display erratic behaviors, such as walking in circles, convulsing, etc. may be sick or injured.

B. Prevent conflict.

Treat every animal you meet with respect and caution. DO NOT approach any animal for any reason. Even domesticated animals should be treated in this manner.

- If you encounter a domesticated animal, do not approach until the owner has acknowledged you and given you permission to approach.
- If encountering any animals in the wild, give them plenty of room for an escape. Observe their behaviors. If an animal changes its behavior, you are too close. If an animal displays warning behaviors, such as hissing, growling, and other vocalizations, lays its ears back, crouches, coils or takes other defensive postures, you are provoking that animal and need to give it more space immediately.
- If an animal is in an unusual habitat or displaying unusual behaviors, e.g., unusually friendly, lethargic or displaying erratic behaviors, such as walking in circles, convulsing, etc., leave it alone. If the animal is in a location where other people are likely to encounter it, leave one individual to observe the animal at a distance (if there are two or more of you) or mark the scene in some manner to warn others. Call 911 or the non emergency law enforcement dispatch number for a local animal safety authority, e.g., Colorado Division of Wildlife, City or County Animal Control, local law enforcement.

C. Animal Bites.

All animal bites should be treated by a physician, who is required to report such bites. If not treated by a doctor, the bite must still be reported to the local health department/county nursing service or to the local animal control agency. If there are problems with local follow up, or it is an unusual situation, contact the state Department of Public Health & Environment. See the Rabies Prevention and Control policy beginning on page 24 of this section.

8.5.4 SPECIFIC GUIDELINES BY SPECIES/GROUP

1.1.1.1 Domestic Animals

Domestic animals can, in some ways, be as unpredictable as wild animals. These safety guidelines govern encounters or conflicts with domestic animals owned by someone else:

- If you encounter a domesticated animal, do not approach until the owner has acknowledged you and given you permission to approach.
- Direct eye contact with dogs is discouraged as it could be perceived as act of aggression. If a dog is trying to assert dominance, eye contact will provoke the dog's "fight response."
- If bitten by a cat or dog, follow bite reporting guidelines. If possible, identify the animal by tags or keep in your possession until making contact with local authorities.

The Colorado Department of Natural Resources (DNR) wishes to thank the Boulder County Sheriff's Department, Animal Control Unit for their assistance with these guidelines for domestic animals.

1.1.1.2 Sick or Injured Animals

Sick or injured animals commonly found near people include a variety of birds, squirrels, prairie dogs, raccoons, skunks, coyotes and red fox. While human nature often dictates that we "help" injured creatures, we recommend that you DO NOT approach sick or injured animals until you have spoken with a trained professional. Contact a Division of Wildlife Office or a licensed wildlife rehabilitator for assistance.

Sick or injured wild animals are still wild. They may defend themselves by biting, scratching or in a variety of other ways. Even domestic animals may become unpredictable or defensive when sick or injured.

1.1.1.3 Orphaned Animals

Animals that appear to be orphaned may not be orphaned at all. Many animals teach their young survival skills, or protect their young from predators, by leaving them alone. Animals are the best parents for their young. If you find an "orphaned" animal, the Division of Wildlife recommends the following:

- Featherless birds should be placed back in the nest they came out of. Parent birds will accept the young bird, even though it has been handled by humans. If you cannot locate the nest, keep the baby warm and call the Division of Wildlife or a licensed wildlife rehabilitator for assistance.
- Young feathered birds are probably fledglings, learning to fly. It is quite common to find these new "pilots" on the ground. Parent birds are nearby and will feed the fledgling and defend it against predators. However, you may place the bird on a low branch or in a bush if you are concerned about predators.
- Deer fawns and elk calves defend themselves against predators by lying motionless and odorless in the grass. Leave the animal alone. Touching the animal will give it a human scent and will make it easier for predators to find it. Doe deer and cow elk will return to feed and care for their young, but only after people have left the area.
- All other mammals, except rabbits, will also accept their babies, even after humans have touched them. If you find a baby mammal, return it to its nest or den.

1.1.1.4 Bats

Wild bats are very clean animals. They are good parents. They do not get stuck in your hair. None of Colorado's bats will suck your blood. (They eat insects.) While the Colorado Department of Public Health and Environment reported that 14.4% of the bats it tested in 1996 were rabid, only about 1/2% of all wild bats have rabies. However, a bat that is found flopping around on a sidewalk is most likely to be sick. DO NOT handle sick or injured bats.

1.1.1.5 Snakes

Most of Colorado's snakes are non-poisonous. Only the Western rattlesnake and massasauga are poisonous. The massasauga is extremely rare and occurs only in the southeast part of the state. It is poisonous, but is rarely a threat to humans. The massasauga is a small and unaggressive snake. Western rattlesnakes can be found everywhere in the state. They are active mid-April through mid-October. Contrary to myth, large rattlesnakes are more poisonous than small rattlesnakes. (The larger the snake, the more venom it contains. Venom of large snakes and small snakes is equally potent.) While rattlesnakes are dangerous, they are not aggressive. If given a route and an opportunity to escape, rattlesnakes will crawl away. If cornered or harassed, they will defend themselves.

TREATMENT FOR SNAKEBITES: THE DO'S AND DON'TS

DO:

- Get help ASAP (best within 2 hours)
- Remove restrictive clothing and jewelry
- Immobilize the bitten area and keep it lower than the heart
- Wash the bite with soap and water

DON'T:

- Suck the venom out
- Make any incisions (such measures have not been proven effective)
- Use electricity (this method is under study and has yet to be proven effective)
- Use ice or any cooling
- DO NOT USE A TOURNIQUET

These do's and don'ts are from Dr. David Hardy, who studies snakebite epidemiology.

Rattlesnakes will retreat to rock crevices, small mammal burrows, and wood piles or into the shade of a big log during the heat of the day. Individuals should always look before stepping over large rocks or logs on trails or before sticking their hands into rock crevices or wood piles. Likewise, they should avoid sticking hands into small mammal burrows. When walking in grass, brush, cactus, or rocks, stays in cleared spots as much as possible. Remember that rattlesnakes, like most snakes, are protected by their coloration, it takes a sharp eye, not just a glance to discover one in its natural surroundings. When you crawl under a fence, try to do so in and cleared spot if this is not possible, beat the grass or brush with a stick.

Rattlesnakes can strike 1/3 to 1/2 their body length. A 3 foot snake can strike approximately 18 inches. When a rattlesnake sounds off suddenly, don't move until you know where the sound is coming from. You may step on it or into its range instead of away from it. Rattlesnakes do not always rattle. If you step on a rattlesnake, it will probably bite without striking; or if a snake is surprised or violently alarmed it may strike instantly and may or may not rattle! They also have a very noticeable hiss they use as a defense and warning. They are not usually aggressive and will try and escape detection by depending on their coloration, quietness or (quiescence).

Do not handle an injured or dead rattlesnake! Do not touch the head of a decapitated rattlesnake. Dispose of it so no one can accidentally come in contact with it. The head of a rattlesnake has been known to bite an hour or more after it has been completely severed from the body.

1.1.1.6 Mountain Lions

The Colorado Division of Wildlife estimates that 1,500 to 3,000 mountain lions live in Colorado. Mountain lions are the largest "small cat," i.e., they can purr, like a house cat and cannot roar like African lions. Mountain lions are tan to cinnamon in color. Females weigh an average of 90 pounds and may be about seven feet long from nose to tail. Males are larger, about 150 pounds and over eight feet long. Lions are obligate carnivores. They eat a variety of prey animals, including deer, elk, porcupines, raccoons and rabbits.

Conflict Prevention Techniques for Traveling or Working in Mountain Lion Habitat:

- Travel with a friend or group. Keep small children nearby.
- DO NOT let pets run off leash.
- Try to minimize your recreation during dawn and dusk Mountain lions are most active during those hours.
- Carry a deterrent device within quick reach, like in your fanny pack. Deterrent devices may include commercially prepared pepper sprays, rocks, sticks and other objects.
- Respect warning signs or notices of mountain lion activity.
- Know how to behave if you encounter a mountain lion. Teach others in your group how to behave. One person or child who starts running could precipitate an attack.

What to Do if You Encounter a Mountain Lion:

The vast majority of mountain lion encounters never result in human injury. Typically, lions exhibit avoidance, indifference, or curiosity. However, it is natural to be alarmed if you have an encounter. Try to keep your cool and consider the following:

- Recognize threatening mountain lion behavior. There are a few cues that may help you gauge the risk of attack If a mountain lion is more than 50 yards away, changes positions, directs attention toward people, and follows you, it may be only curious. For distances of less than 50 yards, where the animal is staring intensely and hiding, it may be assessing the chances of a successful attack if intense staring and hiding continue, accompanied by crouching and creeping, the risk of attack may be substantial.
- DO NOT approach a mountain lion. Give the animal an escape route and the opportunity to move on. Choose another route or time to travel through the area. Mountain lions are not known to attack humans to defend young or a fresh kill. However, they may want to stay in the area and may act aggressively.
- Stop and back away slowly. DO NOT run from a mountain lion. Running may stimulate a lion's natural predatory response.
- Be vocal. Talk or yell loudly and regularly. DO NOT scream! Try not to panic: shout to others in the area to make them aware of the situation.
- Maintain eye contact. DO NOT turn your back to a mountain lion. Eye contact helps you know where the lion is. Eye contact also shows a lion that you are aware of its presence. However, if the mountain lion is not threatening, maintain visual contact through your peripheral vision and move away.
- Appear larger than you are. Raise your arms above your head and make steady waving motions. Raise your jacket, backpack, mountain bike or other object above your head. DO NOT bend over as this will make you appear smaller and more "prey like."
- If you are with small children, bring them close to you. Maintain eye contact with the mountain lion, and lift the children up without bending over. Band together, if you are with other children or adults.
- Respect any warning signs posted by agencies. If possible, choose another location for your outdoor adventures.
- If you have an encounter with a mountain lion, record your location and the details of the encounter, and notify the nearest park official, land owner, other appropriate agency. The land management agency Federal, state, or county may want to visit the site and, if appropriate, post education or warning signs. Also notify fish and wildlife agencies because they record and track such encounters. Remember, agencies need accurate information regarding your encounter. However, given the frequency of mountain lion sightings, wildlife agencies may not investigate unless the animal

exhibited unusually bold behavior. Remember, just because you see a mountain lion does not mean the animal is a threat to your safety.

What to do if you are attacked by a Mountain Lion:

Your risk of being injured or killed by a mountain lion is small. For every person killed by a mountain lion in the last century, 300 people died because of bee stings, 750 people died in vehicle/deer collisions and lightning killed 1200 people.

- Fight back. Defend yourself. Try to remain standing. DO NOT feign death. Hit the lion with branches or rocks; pull out a knife, use pepper spray or other deterrent device. Remember, everything is a potential weapon, and individuals have fended off mountain lions with blows from rocks, tree limbs, and even cameras.
- Defend your friends or children, but not your pet.
- If a lion attack occurs, it is important to leave the area and not disturb the site. Call for emergency assistance immediately. Immediate action and an undisturbed site are critical for effectively locating dangerous mountain lions.

1.1.1.7 Black Bears

The Colorado Division of Wildlife estimates that 8,000 to 12,000 black bears live in Colorado. No grizzly bears are known to exist in Colorado. However, black bears may be brown, blond, cinnamon, black or even “grizzly" in color. In Colorado, female black bears weigh an average of 175 pounds, while males are larger or about 275 pounds. A bear’s natural diet is largely vegetarian, consisting of grasses, leaves, flowers and berries. They also eat ants, grubs and other insects, carrion and will occasionally take vulnerable prey animals.

Bear attacks on humans are rare. However, food found near humans, including garbage, bird seed and pet foods are great bear food. While bears are normally wary of people, they must consume a tremendous number of calories to survive the winter. When people provide supplemental food, bears may become habituated to the food, accustomed to the people, and lose some of their natural wariness. Habituated bears occasionally cause people minor physical injuries, but are rarely involved in fatal attacks.

For your safety and the continued well being of bears, know how to behave if you encounter a black bear. Teach others in your group how to behave. We also recommend these simple precautions.

What to Do if You Encounter a Black Bear:

- Never approach or attempt to feed ANY bear! Leave the animal an escape route and the opportunity to move on.

- If you see a bear, stop and back away slowly. DO NOT run from a black bear. Running may stimulate a natural instinct to chase.
- Speak softly, but firmly to the bear. Try not to show fear. This makes the bear aware of your presence and may reassure the bear that you mean no harm. Let other people know that there is a bear in the area.
- Respect any warning signs posted by agencies. If possible, choose another location for your outdoor adventures.
- Recognize threatening black bear behavior. Bears use all their senses to identify objects. If a bear stands upright or moves closer, it may be trying to detect smells in the air. This is not a sign of aggression. Bears are very vocal. They use a variety of sounds, but none can be used to predict a specific behavior. Bears may "woof", pop their jaws or moan when they are uncomfortable with a situation. A predatory attack will most likely occur without vocalizations.
- “Bluff charging" is a common bear behavior used to establish dominance. Once a bear identifies you, it may leave the area or try to intimidate you by charging within a few feet before it withdraws. If a black bear charges, stand your ground. Be mentally and physically prepared for an attack. DO NOT retreat!
- Never climb a tree to escape a black bear. Bears are expert climbers. People cannot climb faster than a bear, and climbing may stimulate aggressive bear behavior.

Report all black bear problems! The Colorado Division of Wildlife can only provide the best management alternatives when it receives accurate timely information. If you have a conflict with a black bear, record your location and the details of the encounter. Notify the nearest park official, land owner, or other appropriate agency. The land management agency may want to visit the site and, if appropriate, post education or warning signs. However, given the frequency and nature of black bear sightings, wildlife agencies may not follow up unless the animal exhibited unusually bold behavior. Remember, just because you see a black bear does not mean it is a threat to your safety.

What to Do if You Are Attacked by a Black Bear

- Black bears rarely attack people. In the last century, there have only been 37 fatal attacks by black bears on people on the North American continent.
- Fight back. Defend yourself. Try to remain standing. DO NOT feign death. Hit the bear with branches or rocks; pull out a knife, use pepper spray or other deterrent device. Remember, everything is a potential weapon, and individuals have fended off bears with blows from rocks, tree limbs, and even cameras. A bear’s most dangerous weapon is its bite. Watch its mouth. Try to cause pain to the bear's face. Punch the bear in the nose. Poke it in the eyes. Shove a stick in its mouth.
- Protect your head, neck and face. Defend your friends or children, but not your pet.
- If a bear attack occurs, it is important to leave the area and not disturb the site. Call 911 for emergency assistance immediately. Immediate action and an undisturbed site are critical for effectively locating dangerous black bears.

Additional Information

- Animal bite reporting requirements are found under CRS 25 4 603 which reads: "Report of person bitten by animal to health department or health officer. Every physician after his first professional attendance upon a person bitten by a dog, cat, other pet animal, or other mammal, or any person having knowledge thereof, shall report to the health department or health officer in accordance with the provisions of section CRS 25 1 122 (1)."
- CRS 25 1 122(1) addresses communicable diseases. It reads: "With respect to the investigations of epidemic and communicable diseases, ..., and rabies and mammal bites, the Board (of Health) has the authority to require reporting, without patient consent, of occurrences of those diseases and conditions.... Any required reports shall contain the name, address, age, sex, diagnosis and such other relevant information as the Board determines...." This refers to the final reporting requirements contained in the Rules and Regulations Pertaining to Epidemic and Communicable Disease Control (6 CCR 1009 1). Under this regulation, reportable diseases are listed under List A (require report within 24 hours) or List B (report within 7 days). Under List A is included "Animal bites by dogs, cats, bats, skunks, or other wild carnivores." Under List B is included "Bites by animals not included in List A".

The Colorado Division of Wildlife publishes brochures titled "Living with Wildlife in Mountain Lion Country," and "Living with Wildlife: In Black Bear Country." The brochures are available free of charge at any Division Office and at many local trail heads, park and forest offices.

8.5.5 RABIES PREVENTION AND CONTROL POLICY

MANAGEMENT OF DOMESTIC DOGS, CATS AND FERRETS INVOLVED IN HUMAN BITES

Animal bites, especially dog and cat bites, occur frequently and are a serious public health problem. Bites can result in psychological trauma, transmission of various diseases including rabies, localized infection of the bite wound, permanent physical scarring or disfigurement and death. This document outlines the required management of a dog (Canis familiaris), cat (Felix domesticus) or domestic ferret (Mustela putorius) that has bitten a human. These requirements are based on recommendations outlined in the Compendium of Animal Rabies Control, prepared annually by the National Association of State Public Health Veterinarians and in Rabies Prevention--United States, 1991, published in the Morbidity and Mortality Weekly Report, Centers for Disease Control and Prevention.

Statutory Authority / Reporting Requirements

Authority for the enforcement of this policy is provided under the Colorado Rabies Control Statutes, CRS 25-4-601 et. seq. 1973, as amended. This law includes provisions for the confinement of biting or suspected rabid animals, enactment of local vaccination and running-at-

large ordinances, emergency powers of the department, duty of law enforcement agencies to assist and penalties for violations.

In addition, the Colorado Department of Public Health and Environment (CDPHE) statute, CRS 25-1-122 outlines reporting requirements and allows access to medical records for certain diseases and medical conditions including rabies and mammal bites. The associated Rules and Regulations Pertaining to Epidemic and Communicable Disease Control (6 CCR-1009-1) specifically define the manner and time frame in which such reports are to be made. Specifically, these laws require anyone having knowledge of a person bitten by a dog, cat, or other mammal to report that fact to the local health department or county health officer. The health department or their representative, usually the local animal control agency, can then conduct the necessary investigation. For dogs, cats, bats, skunks and other wild carnivores such report must be made within 24 hours. This report should include the name, age, sex and location of the person bitten and, if known, the location of the biting animal.

Rabies Vaccination

Colorado does not have a statewide mandatory rabies vaccination law. Rather, the law (CRS 25-4-607) provides authority for county or municipal agencies to enact rabies vaccination laws within their jurisdiction. State law requires that rabies vaccinations be performed by a licensed veterinarian. The CDPHE strongly recommends that all counties and municipalities enact such laws and that the owners of dogs, cats and ferrets keep them currently vaccinated for rabies even in the absence of such ordinances.

Post-Bite Quarantine

Domestic dogs, cats or ferrets involved in a human bite must be quarantined for a 10-day observation period to eliminate the risk of rabies virus transmission. This period was determined from studies which demonstrated that rabies virus does not appear in the animal's saliva until symptoms of rabies have started to appear. As rabies is a rapidly progressing disease, an animal that is infectious at the time of a bite will be exhibiting signs and symptoms and die within a few days. Animals that remain alive and healthy 10 days post-bite would not have been shedding rabies virus in their salvia, and therefore not have been infectious, when they bit.

Rabies vaccination status should be verified, either by a valid vaccination certificate or contacting the animal's veterinarian, and this information provided to the bite victim. Due to the theoretical risk of rabies vaccine inhibiting the clinical onset of rabies, rabies vaccination should be deferred until completion of the observation period. The 10-day quarantine is required regardless of the animal's vaccination status.

Depending on the bite circumstances and local animal control policies, a biting animal may be confined at the local animal shelter, a private kennel, veterinary clinic or the owner's home. For home quarantine the animal should remain confined to the owner's property during the observation period. If the animal becomes ill a veterinary examination should be arranged immediately. If a veterinarian believes the animal is suffering from neurological symptoms consistent with rabies or the animal dies for any reason during the observation period rabies

testing should be arranged. The animal's owner is responsible for all costs related to quarantine, examination, and testing.

If a bite has occurred within the previous 10 days, the animal cannot be euthanized and must be maintained for completion of the observation period!

Exceptions to Mandatory Quarantine Period

A situation may arise in which the owner requests the animal be immediately euthanized and tested. The disposition of a biting animal is by law (CRS 25-4-604) a decision of the health department, not the owner or veterinarian. Biting dogs, cats and ferrets can NOT be euthanized and submitted for testing without prior approval from the health department. This conserves limited laboratory resources and does not shift the owner's responsibility for the animal to the taxpayers. If the owner is unwilling to keep the animal at home, it may be boarded at the animal shelter or a private kennel at the owner's expense.

Euthanasia and testing of a biting dog, cat or ferret will be approved if: 1) the animal is exhibiting signs and symptoms of a neurological illness consistent with rabies, 2) the animal is injured or terminally ill and would not survive or it would be inhumane to keep it alive for 10 days, or 3) the animal is feral, unmanageable and cannot be safely confined.

Bites from Other Animal Species

The 10 day observation period applies ONLY to domestic dogs, cats and ferrets that have bitten a human. It does not apply to any animal exposed to rabies such as pets attacked by a wild animal or found chewing on a bat. Pet animals or livestock potentially exposed to known or suspected rabid animals must be immediately reported to this office. Rapid evaluation and follow-up is necessary to prevent human exposure to rabies.

Bites of rodents, lagomorphs (rabbits and hares), birds and reptiles represent no rabies risk and do not require quarantine or rabies testing. Human bites involving other domestic or wild mammals are evaluated on a case-by-case basis with subsequent recommendations based on the species, circumstances of the bite, the incidence of rabies in the area and whether the location of the biting animal is known. A separate CDPHE policy exists for vaccination issues and management of bites involving wolf/dog hybrids.

Consultation

The CDPHE is available for consultation on animal bites, rabies exposures, testing and post-exposure rabies prophylaxis on a 24-hour basis by calling 303-692-2700 (regular business hours) or 303-370-9395 (after-hours, weekend or holiday emergencies).

8.5.6 HANTAVIRUS

This section is provided as supplemental information, from the DNR Safety Handbook.

1.1.1.8 Purpose

The purpose of this safe practice is to establish procedures for the protection of persons who reside, visit or perform maintenance tasks in areas or dwellings known or suspected of having rodents infected with Hantavirus. It provides recommendations for prevention and control of Hantavirus infections associated with rodents. It contains specific recommendations for reducing rodent shelter and food sources, recommendations for eliminating rodents inside buildings and preventing them from entering buildings, precautions for preventing Hantavirus infection while rodent-contaminated areas are being cleaned up, prevention measures for persons who have occupational exposure to wild rodents, and suggestions for protecting campers and other visitors to DNR properties.

1.1.1.9 Scope

This practice applies to all employees on all properties in all divisions of the Department of Natural Resources.

1.1.1.10 Background

An outbreak of unexplained illness occurred in the Southwestern part of the United States in 1993. Laboratory findings from the Centers for Disease Control and Prevention indicate that the illness is caused by a Hantavirus. The newly recognized hantavirus-associated disease, called Hantavirus Pulmonary Syndrome (HPS), begins with one or more symptoms including fever, severe muscle aches, headache, and cough which progress rapidly to severe lung disease. Over half the people who get HPS die from the illness. Almost all cases have had evidence of close contact with rodents.

Rodents are the primary reservoir host of the recognized Hantaviruses. Each Hantavirus appears to have a preferred rodent host, but other small mammals can be infected as well. The deer mouse is the primary carrier of the Hantavirus seen in twenty western states. Evidence of infection has also been found in pinon mice, brush mice and western chipmunks. The deer mouse is highly adaptable and is found in different habitats, including human residences in rural and semirural areas, but generally not in urban centers. Hantaviruses do not cause obvious illness in their rodent hosts. Infected rodents shed virus in saliva, urine, and feces.

Human infection may occur when infective saliva or excreta are inhaled as aerosols produced directly from the animal. Transmission may also occur when fresh or dried materials contaminated by rodent excreta are disturbed, directly introduced into broken skin, introduced into the eyes, or, possibly, ingested in contaminated food or water. Persons have also become infected after being bitten by rodents.

1.1.1.11 Procedure

If conditions exist where Hantavirus might be present, eradicating all rodents is not feasible. The best approach for control and prevention is risk reduction thorough environmental hygiene practices that deter rodents from colonizing. This is especially important for buildings that are open seasonally. Cleaning schedules should be set in relation to the use pattern and the known presence of rodents. If a rodent infestation is discovered, follow the abatement measures

described below. The clean up must be done in a manner that limits the disturbance of dust from contaminated surfaces.

A. Prevent rodents from entering the area. Specific measures should be adapted to local circumstances.

- Use steel wool or cement to seal, screen, or otherwise cover all openings into the building that have a diameter greater than or equal to 1/4 inch. Electrical enclosures are also targets for rodent nests.
- Place metal roof flashing as a rodent barrier around the base of wooden, earthen, or adobe dwellings up to a height of 12 inches and buried in the soil to a depth of 6 inches.
- Place 3 inches of gravel under the base of buildings or under mobile homes to discourage rodent burrowing.
- Use raised cement foundations in new construction of sheds, barns, outbuildings, or woodpiles.
- When possible, place woodpiles 100 feet or more from the building, and elevate wood at least 12 inches off the ground.
- Store grains and animal feed in rodent-proof containers.
- Near buildings, remove food sources that might attract rodents, or store food and water in rodent-proof containers.
- Store hay on pallets, and use traps or rodenticide continuously to keep hay free of rodents.
- Dispose of garbage and trash in rodent-proof containers that are elevated at least 12 inches off the ground.
- Haul away trash and other items that may serve as rodent nesting sites.
- Cut grass, brush, and dense shrubbery within 100 feet of the building.
- Place spring-loaded rodent traps at likely spots for rodent shelter within 100 feet around the building, and use continuously.
- Use an EPA-registered rodenticide approved for outside use in covered bait stations at places likely to shelter rodents within 100 feet of the building.

B. Eliminating rodent infestation

- Before rodent elimination work is begun, ventilate closed buildings or areas inside buildings by opening doors and windows for at least 30 minutes. Use an exhaust fan or cross ventilation if possible. Leave the area until the airing-out period is finished. This airing may help remove any aerosolized virus inside the closed-in structure.
- Seal, screen, or otherwise cover all openings into the building that have a diameter of greater than or equal to 1/4 inch.

- Set rodent traps inside the structure, using peanut butter as bait. Use only spring-loaded traps that kill rodents.
- Treat the interior of the structure with an insecticide labeled for flea control; follow specific label instructions. Insecticide sprays or powders can be used in place of aerosols if they are appropriately labeled for flea control.
- Rodenticides may also be used while the interior is being treated.
- Remove captured rodents from the traps. Wear rubber or plastic gloves while handling rodents. Place the carcasses in a plastic bag containing a sufficient amount of a general-purpose household disinfectant to thoroughly wet the carcasses.
- Seal the bag and then dispose of it by burying in a 2- to 3-foot-deep hole or by burning.
- Rebait and reset all sprung traps. Before removing the gloves, wash gloved hands in a general household disinfectant and then in soap and water. A hypochlorite solution prepared by mixing 3 tablespoons of household bleach in 1 gallon of water may be used in place of a commercial disinfectant. When using the chlorine solution, avoid spilling the mixture on clothing or other items that may be damaged. Thoroughly wash hands with soap and water after removing the gloves. Leave several baited spring-loaded traps inside the house at all times as a further precaution against rodent infestation. Examine the traps regularly. Disinfect traps no longer in use by washing in a general household disinfectant or the hypochlorite solution.
- Disinfect and wash gloves as described above, and wash hands thoroughly with soap and water before beginning other activities.

C. Clean-up of rodent-contaminated areas

- Persons involved in the cleanup should wear rubber or plastic gloves. Spray dead rodents, rodent nests, droppings, or foods or other items that have been tainted by rodents with a general-purpose household disinfectant. Soak the material thoroughly, and place in a plastic bag. When cleanup is complete (or when the bag is full), seal the bag, then place it into a second plastic bag and seal. Dispose of the bagged material by burying in a 2- to 3-foot-deep hole or by burning
- Mop floors with a solution of water, detergent, and disinfectant. Spray dirt floors with a disinfectant solution. A second mopping or spraying of floors with a general-purpose household disinfectant is optional. To avoid generating potentially infectious aerosols, do not vacuum or sweep dry surfaces before mopping. Disinfect countertops, cabinets, drawers, and other durable surfaces by washing them with a solution of detergent, water, and disinfectant, followed by an optional wiping-down with a general-purpose household disinfectant.
- For furniture that is found to have nests, spray if possible. If disinfecting is not possible, furniture should be removed and burned.

D. Guidance for hikers and campers

Rodent-infested areas should, when possible, be closed to visitors until rodent abatement has been carried out. If this is not possible, visitors to the infested area should be cautioned, and the attached guidelines from the Center for Disease Control should be made available.

1.1.1.12 Precautions

A. Workers who develop a fever or respiratory illness within 45 days of the last exposure should seek immediate medical attention.

B. Persons involved in the cleanup should wear coveralls (disposable if possible), rubber boots or disposable shoe covers, rubber or plastic gloves, protective goggles, and an appropriate respiratory protection device, such as a half-mask air-purifying (or negative-pressure) respirator with a high-efficiency particulate air (HEPA) filter or a powered air-purifying respirator (PAPR) with HEPA filters.

C. Personal protective gear should be decontaminated upon removal at the end of the day. If the coveralls are not disposable, they should be laundered on site or immersed in liquid disinfectant until they can be washed. All potentially infective waste material (including respirator filters) from clean-up operations should be burned or deep buried on site, double bagged in appropriate plastic bags.

1.1.1.13 Additional Information

Additional information on Hantavirus and rodent abatement is available from the Center for Disease Control website at www.cdc.gov/ncidod/publications/brochures/hanta.htm. This site also contains a downloadable brochure on Hantavirus Pulmonary Syndrome.

CAUTION: Rodent-infested areas may expose visitors to rodent-carried Hantavirus.

Guidance for hikers and campers

- Avoid coming into contact with rodents and rodent burrows or disturbing dens (such as pack rat nests).
- Do not use cabins or other enclosed shelters that are rodent infested until they have been appropriately cleaned and disinfected.
- Do not pitch tents or place sleeping bags in areas in proximity to rodent feces or burrows or near possible rodent shelters (e.g., garbage dumps or woodpiles).
- If possible, do not sleep on the bare ground. Use a cot with the sleeping surface at least 12 inches above the ground. Use tents with floors.
- Keep food in rodent-proof containers. Promptly bury (or--preferably--burn followed by burying, when in accordance with local requirements) all garbage and trash, or discard in covered trash containers.
- Use only bottled water or water that has been disinfected by filtration, boiling, chlorination, or iodination for drinking, cooking, washing dishes, and brushing teeth.

8.5.7 OTHER BIOLOGICAL EXPOSURES

This section is provided as supplemental information, from the DNR Safety Handbook.

1.1.1.14 Purpose

The purpose of this safety practice is to provide information and set standards for protection of Department of Natural Resources personnel whose duties cause them to be exposed to biological hazards not considered bloodborne pathogens.

1.1.1.15 Scope

This safety practice applies to all employees of the Department of Natural Resources. It shall be required reading for all employees whose duties involve public contact, law enforcement, or outdoor work of any kind.

1.1.1.16 General

This safe practice is divided into two types of exposures: vector-borne diseases, which are transmitted by fleas and ticks, and bacterial/viral diseases, transmitted by contact with infected material.

A. Vector-Borne Diseases

Colorado Tick Fever
Rocky Mountain Spotted Fever
Lyme Disease
Relapsing Fever

Each of these diseases is spread to people by the bites of some ticks. Colorado Tick Fever and Rocky Mountain spotted fever, (actually more common in eastern and southern states), are more serious. Signs of the disease usually begin 3 to 12 days after a tick bite. The most common symptoms are fever, headache, rash, and nausea or vomiting. If the disease is not treated, it can cause death.

Lyme Disease is caused by bacteria, and spread by deer ticks. It usually occurs in deep woods areas with high humidity; thus the disease is relatively uncommon in Colorado. Symptoms include a distinctive rash, with flu-like symptoms such as fever, headache, and joint pain. The disease can be treated by antibiotics; in addition, a vaccine is now available.

Relapsing Fever is a bacterial infection transmitted through the bite of either lice or ticks. Symptoms include fever, headaches, vomiting, diarrhea, enlarged liver or spleen, and a rash. If untreated, the fever can re-occur approximately every other week. There is no vaccine for prevention, but treatment is available.

Preventive measures:

The best prevention for all of these diseases is to avoid tick bites.

- If possible, avoid tick-infested areas, especially in May, June, and July.
- Wear light-colored clothing so that ticks can be spotted more easily.
- Tuck pant legs into socks or boots and shirt into pants. Tape the area where pants and socks meet so that ticks cannot crawl under clothing.
- Spray insect repellent containing DEET on clothes and on exposed skin other than the face, or treat clothes (especially pants, socks, and shoes) with permethrin, which kills ticks on contact.
- Wear a hat and a long-sleeved shirt for added protection.
- Walk in the center of trails to avoid overhanging grass and brush.
- Check yourself and your companions at least twice a day for ticks which may have gotten onto you. If you do find a tick on yourself, remove it immediately with tweezers. Gently grasp the tick as close as possible to your skin and slowly pull it away. If tweezers are not available, fingers covered with tissue paper can be used. Do not attempt to remove the tick with vaseline, hot objects such as matches or cigarettes, or by other methods. After handling ticks, be sure to wash your hands thoroughly with soap and water.

Plague, caused by a bacterium called Yersinia pestis, is transmitted from rodent to rodent by infected fleas. Rock squirrels and their fleas are the most frequent sources of human infection in the southwestern states, although in Colorado we have also experienced plague in populations of prairie dogs. Eighty percent of recent plague cases in the U.S. have occurred in Colorado, New Mexico, and Arizona.

Plague is transmitted from animal to animal and from animal to human by the bites of infective fleas. Less frequently, the organism enters through a break in the skin by direct contact with tissue or body fluids of a plague-infected animal, for instance, in the process of skinning a rabbit or other animal. Plague is also transmitted by inhaling infected droplets expelled by coughing, by a person or animal, especially domestic cats, with pneumonic plague.

The different forms of plague have different symptoms:

- Bubonic plague: enlarged, tender lymph nodes, fever, chills and prostration
- Septicemic plague: fever, chills, prostration, abdominal pain, shock and bleeding into skin and other organs
- Pneumonic plague: fever, chills, cough and difficulty breathing; rapid shock and death if not treated early

Preventive measures:

While plague can be treated and a vaccine is available, the best plague prevention is to avoid exposure by minimizing contact with possibly infected animals and their fleas. Refer to “Prevention and Control of Hantavirus Exposure” in this handbook for measures dealing with rodent infestation. Use gloves and, if warranted, a face mask to minimize contact when handling a live animal. If dealing with a dead animal, especially a rodent, avoid contact by using gloves

and a shovel or other tool to pick up the carcass; seal the carcass in a plastic bag, and DO NOT place the bag inside a vehicle for transportation.

B. Bacterial / Viral Diseases

Shigellosis is an infectious disease caused by a group of bacteria called Shigella. Most people who are infected with Shigella develop diarrhea, fever, and stomach cramps starting a day or two after they are exposed to the bacterium. Shigellosis can usually be treated with antibiotics

The Shigella bacteria pass from one infected person to the next. This happens when basic hygiene and handwashing habits are inadequate. Shigella infections may be acquired from eating contaminated food. Shigella infections can also be acquired by drinking or swimming in contaminated water. Water may become contaminated if sewage runs into it, or if someone with shigellosis swims in it.

- The best preventive measure is frequent and careful hand washing.
- Basic food safety precautions and regular drinking water treatment prevents shigellosis.
- At swimming beaches, having enough bathrooms near the swimming area helps keep the water from becoming contaminated.
- Employees who clean toilet facilities used by the public should, in addition, wear gloves to minimize their exposure.

Giardiasis is caused by Giardia lamblia, a parasite. It causes diarrhea, cramping, and fatigue without fever.

The parasites may be in untreated stream water. They are in the droppings of animals (cats, dogs, beaver, etc.) infected with Giardia. They are in the feces of people who are infected with Giardia. You get it by eating foods or drinking water that has been contaminated with feces from people or animals that are infected with Giardia. You can also get it if your hands are contaminated by feces from infected animals or persons, when you eat with your hands or put your hands in your mouth.

Preventive measures:

- Do not drink untreated water (stream, lake, etc.). Chlorine and iodine are not always adequate to kill Giardia in stream water. Boiling untreated water for at least ten minutes is the most effective way to kill Giardia parasites.
- Wash your hands carefully with soap before preparing or eating food.
- Employees who clean toilet facilities used by the public should, in addition, wear gloves to minimize their exposure.

Campylobacter is caused by Campylobacter jejuni bacteria. Symptoms include diarrhea (sometimes bloody), fever, cramps, tiredness, and sometimes vomiting.

The bacteria are commonly present on poultry, and may be present in unpasteurized milk. They are in the droppings of animals (dogs, cats and cows and sheep) infected with campylobacter. These bacteria may be in untreated stream water. The bacteria are in the stools of people who are infected with Campylobacter. You may get it by eating food or drinking beverages that have been contaminated with feces from people or animals that are infected. You can also get it if you eat with your hands or put your hands in your mouth when your hands are contaminated by feces or raw poultry.

Preventive measures:

- Take care when handling uncooked poultry - do no lick your fingers! Wildlife officers using raw chicken as bait should wear rubber or plastic gloves when handling it.
- Do not drink untreated water (from streams, lakes, etc.).
- Wash your hands carefully with soap before preparing or eating food.
- Employees who clean toilet facilities used by the public should, in addition, wear gloves to minimize their exposure.

Tuberculosis (TB) is a disease caused by bacteria called Mycobacterium tuberculosis. The bacteria can attack any part of your body, but they usually attack the lungs. TB disease was once the leading cause of death in the United States.

TB is spread through the air from one person to another. The bacteria are put into the air when a person with active TB disease of the lungs or throat coughs or sneezes. People nearby may breathe in these bacteria and become infected, and, if not treated with appropriate antibiotics, may progress from TB infection to active TB. Persons who are infected but not active cannot spread the disease.

In DNR, most TB exposures have been to law enforcement personnel while participating in the arrest of a person with active TB. A simple skin test will determine if those exposed have been infected, and the infection can be treated before it progresses.

Preventive measures:

- Avoid prolonged or close contact with members of the public who display symptoms of TB, such as a bad cough accompanied by chest pain.
- If someone you have been in contact with admits to having active TB, see the designated worker's compensation health care provider for a TB test; report this exposure to your supervisor and file a worker's compensation claim.

Hepatitis A is caused by the hepatitis virus. Symptoms may include abdominal discomfort, loss of appetite, nausea, low-grade fever, tiredness, yellow skin and eyes (jaundice), dark urine, and pale stools.

The virus is in the feces of people who have hepatitis A infection. You get it by eating food or drinking beverages that have been contaminated with feces from a person infected with hepatitis A. You can also get it if your own hands become contaminated by feces. The virus may be in

untreated stream water or contaminated public water. Hepatitis A is NOT spread by coughing or sneezing, or by sharing a glass, eating utensil, or a can of pop.

Preventive measures:

- The best preventive measure is frequent and careful hand washing.
- Do not drink untreated water (stream, lake, etc.).
- Employees who clean toilet facilities used by the public should, in addition, wear gloves to minimize their exposure.
- If someone in your household or work unit has hepatitis A, get an injection of IMMUNE GLOBULIN as soon as possible (within 2 weeks of exposure) from your health care provider or your local health department.

9.0 SAFE AND DEFENSIVE DRIVING

According to the National Institute of Occupational Safety and Health (NIOSH), motor vehicle crashes are the leading cause of work-related fatalities. Employees are more likely to be injured from traffic-related motor vehicle crashes than from any other hazard on the job, including workplace violence and machine-related injuries.

The Colorado Oil and Gas Conservation Commission (COGCC) will take practical steps to reduce this risk by promoting safe driving habits in employees who operate motor vehicles.

9.1 PURPOSE

Between 2003 and 2010, 7,939 workers died in transportation incidents. In 2011, transportation incidents accounted for 41 percent (%) of workplace deaths; specifically, roadway incidents accounted for 23% of workplace deaths (Bureau of Labor Statistics, Census of Fatal Occupational Injuries).

The purpose of this Safe Driving/Defensive Driving Plan (Plan) is to promote safe driving in employees operating motor vehicles in order to prevent accidents, property damage, and employee injury or death.

9.2 SCOPE

This Plan applies to COGCC employees who operate a State-owned vehicle used on COGCC business. All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Plan.

9.3 RESPONSIBILITIES

COGCC employees shall be responsible for:

- Being knowledgeable of the provisions of this plan and participating in training when requested;
- Understanding the high incidence of work-related vehicle accidents and fatalities;
- Practicing safe driving and defensive driving techniques at all times;
- Having a valid driver's license if they operate any motor vehicle on COGCC business; and
- Informing their supervisor of any hazards that they feel are not adequately addressed in this plan.

COGCC Supervisors shall be responsible for:

- Ensuring that personnel understand their responsibilities and comply with the requirements of this plan; and
- Ensuring that employee training is provided.

COGCC Management shall be responsible for:

- Checking for valid driver's license of prospective employees;
- Implementing, supporting, and enforcing this plan;
- Maintaining, periodically reviewing, and, when necessary, modifying this plan upon demonstration of need; and
- Maintaining training documentation in accordance with the Recordkeeping section of this plan.

9.4 TRAINING

The best way to become a safe driver is to practice safe driving techniques until they become a habit. To help COGCC employees become safer drivers, driver training will be provided periodically to all employees who drive on COGCC business. Refresher training will be conducted every three (3) years, following a preventable accident, and when investigation of moving traffic violations indicates a need.

Training topics shall include:

- The required use of seat belts;
- Requirements to obey traffic regulations;
- Restrictions on drugs and alcohol;
- Proper following distances;
- Maintaining escape routes;
- Not trusting other drivers to behave as expected;
- Controlling vehicle speed;
- Use of lights and turn signals;
- Avoiding distractions; and
- Driver fatigue.

9.5 SAFE DRIVING PROCEDURES

Unlike other workplaces, the roadway is not a closed environment. Preventing work-related roadway crashes requires strategies that combine traffic safety principles and sound safety management practices. Although the COGCC cannot control roadway conditions, safe driving behavior can be promoted by providing safety information to workers and by establishing and enforcing driver safety policies. Vehicle crashes should not be considered an unavoidable part of doing business.

The following requirements/procedures will be followed by COGCC employees while using a COGCC-owned vehicle or using a private vehicle on COGCC business.

- All drivers must have a valid driver's license.
- All drivers must carry a valid insurance policy on their vehicles.
- The driver and all occupants must wear safety belts at all times.
- Vehicle capacity is limited to the number of safety belts available inside the vehicle.
- Drivers shall abide by all applicable traffic regulations, including speed limits, stop signs, and yield signs, stopping at all red lights, etc.
- Drivers shall not operate the vehicle if they are under the influence of drugs or alcohol (this includes prescription drugs that may impair their driving ability).
- Personnel shall not ride in the bed of any truck.
- Drivers shall inspect the area around the entire vehicle for hazards before entering, starting, and driving the vehicle.
- Drivers shall not leave a vehicle unattended with the motor running. Doing so not only increases the chances of theft, but is also in violation of air quality standards in many areas.
- First Aid Kits shall be carried in COGCC vehicles in accordance with the COGCC First Aid Plan.

In addition, the following safe driving procedures should be followed. Because safe driving and defensive driving are so closely related, some of these techniques are discussed in more detail under Safe Driving Techniques.

COGCC employees should:

Allow enough space ahead. Many accidents involve rear-end collisions, most of which could have been avoided by simply following at a safe distance rather than tailgating. Allow two to three seconds between your vehicle and the car ahead of you. That gap should be lengthened to at least three seconds at highway speeds and four or more seconds in rain or other poor weather conditions.

Look ahead. Scan the road and the surrounding area at least a few hundred yards ahead for potential road hazards. Look around on both sides, and keep your eyes open for approaching vehicles, pedestrians, or animals that might enter your path.

Have an escape route. Check your mirrors every few seconds to see what is beside and behind you. Taking into account the position of the cars around you and the road ahead, decide where you could maneuver safely to avoid an accident. Having an avoidance route is essential. If you do not have an escape route, increase your following distance.

Do not depend on other drivers. Be considerate of others, but look out for yourself. Do not assume that another driver is going to move out of the way or allow you to merge. Plan your movements anticipating the worst-case scenario.

Keep your speed down. Remember that the posted speed limit applies to ideal conditions. You are responsible for decreasing your speed to match the conditions.

Adjust for hazards. By slowing down or speeding up only slightly, or by moving to a different lane position, you may avoid a potentially hazardous situation.

Avoid frequent lane changes. Try to maintain your speed near the speed of the other traffic. Remember your lane discipline and keep right unless passing. Check your blind spot before making any lane changes.

Use lights and signals. Always operate your vehicle with the headlights turned on. This is especially important in dim daylight, rain, or other low-visibility weather conditions. Remember to always use turn signals so that your actions do not take other drivers by surprise.

Keep a proper driving position. Maintain a comfortable upright driving position with both hands on the steering wheel. This will put you in a better position to make sudden avoidance maneuvers.

Cut out distractions. Any time you become preoccupied with distractions, you are letting your defenses down. Do not eat, drink, or use your cell phones. Save them for when you are stopped in a safe place.

Pay attention to fatigue. Workers driving irregular hours or far beyond their normal working hours are at risk for falling asleep at the wheel. All drivers should pay attention to signs of fatigue and stop to rest if necessary.

9.6 DEFENSIVE DRIVING TECHNIQUES

According to National Safety Council data, 77 percent of all accidents are attributed to driver error. Defensive driving is a technique to reduce the risk of driving by anticipating dangerous situations, adverse conditions, or the mistakes of others. If you become a good defensive driver, you can cut your risk of an accident significantly.

9.6.1 BEFORE YOU DRIVE

- Check tire pressure, tread, and general condition regularly. Low tire pressure can cause tires to explode at high speeds.
- Check, and clean if necessary, all windows and mirrors. Clean the inside of the windows as well as the outside.
- Check oil, gas, and water levels before taking long trips.
- Check that mirrors, seat, and steering column are suitably positioned.
- Check gauges after starting the engine. Trust your equipment. If your “oil” light is on, assume that your car needs oil, not that there is a short in the wiring to the oil light.
- Secure all loose objects inside the vehicle or move them into the trunk. Loose debris/items in the car can become airborne during a collision and severely injure occupants.
- Make a visual perimeter check of the vehicle before driving away. In congested areas, try to park where backing is not required.

- Indicate with turn signals and check for traffic before moving away from the road shoulder.
- Be prepared for variable traffic and weather conditions.
- Know if the car has antilock brakes or not, and how you should respond to braking on difficult surfaces.
- Keep all car documents updated and reachable.

9.6.2 See and Be Seen

- Always take the long view and be aware of what is happening far down the road.
- Use headlights at all times, even during the day.
- Keep windows clean, especially when driving at night.
- Keep windows clear and transparent. Avoid dark tinting, stick-on toys, light shades, dangling fuzzy dice, etc.
- Adjust the rear-view mirrors correctly and often.
- Keep your distance when driving behind large vehicles to keep your line of sight clear.
- Do not drive in the blind spot of other vehicles. If another vehicle is traveling in your blind spot, adjust your speed so that they are no longer in your blind spot.
- Always use your turn signals well in advance when making a turn or lane change.
- Activate your hazard warning lights on approach to a crash scene or unexpected on-road obstruction to alert other traffic of the hazard.
- Actively search and anticipate the movements of pedestrians, bicycles, motorcycles, and animals in the area.
- Be aware of all signs that warn you of dangers ahead, objects on the road, and potholes.
- Drive so that you can safely stop in the visible amount of road ahead, using at least the two-second rule and preferably more. Anything can be around the next corner.
- Pay attention to the vehicle two vehicles ahead of you. This will help you predict the movement or braking of the vehicle immediately ahead of you to give you more reaction time.
- Beware of blind intersections. If your view of traffic on cross streets is obstructed by buildings or trees, take your foot off the gas and place it over the brake to reduce your reaction time.

9.6.3 Assume the Worse in Others

- Expect that a vehicle with a turn signal on will not turn.
- Similarly, expect a vehicle with no turn signal to turn suddenly.
- Assume that stop signs will be ignored by others and be prepared.

- Expect that a red traffic light will be "run" (do not take off too quickly on your green light).
- Beware of a stale green light. Expect it to turn yellow as you approach.
- Assume that any and all other drivers have NOT seen your vehicle.
- Assume that any and all other drivers are not capable of preventing an accident.
- At intersections, never assume that you have the right-of-way (even if you legally do).
- Watch for drivers talking on cell phones while driving and be aware that their driving skills are severely diminished, possibly even more so than a drunk driver. They often drive through stop signs and traffic signals, change lanes without warning, and remain totally unaware of their poor driving habits.

9.6.4 MAINTAIN AN EXIT ROUTE

- Keep the space on either side of your car free. Leave yourself an out if something happens unexpectedly.
- Drive in the outer lane on freeways. In case of a problem, you won't have to cross a lane of traffic to get to the breakdown lane.
- Keep wheels straight when waiting to turn across oncoming traffic. If your car is rear-ended, it will not be pushed into the opposite lane.

9.6.5 AVOID DANGER

- Be courteous to other drivers.
- Avoid road rage. Do not drive while angry or upset.
- Realize that in many cases, people who are already angry or upset “go for a drive”. If you encounter an enraged driver, do not retaliate and make the situation worse.
- If tailgated, change lanes or pull over. If that is not possible, slow down and/or maintain extra distance from the car in front of you, to allow for both yourself and the tailgater to stop safely.
- Maintain a two to three second following distance behind other vehicles. Increase that to five seconds in fog, rain, or other adverse conditions. It takes most people at least half a second to react to an emergency condition. Following a car closer than one second effectively guarantees an accident if the leading car brakes unexpectedly.
- Avoid visibly damaged or defective cars. A history of accidents indicates that the owner has poor driving skills.
- Avoid cars that weave, do not stay in lane, or brake too late at intersections, as their drivers may be intoxicated or distracted.
- Do not drive next to large vehicles longer than necessary. The driver may not see you, and a turning truck can suddenly cut off all exit routes.

- Never drive over any object on the road that can be safely avoided. A plastic bag can conceal more dangerous items, ropes can wrap around axles, and even mundane objects like sticks can puncture a tire or the fuel tank.
- On roads of three or more lanes, take care not to change lanes as another vehicle in the next lane over moves into that lane. Vehicles in the left lane and the right lane can collide if they try to change to the center lane simultaneously.
- Remember that 95% of fatal collisions on an undivided four lane highway occur in the inside lane and that you can avoid this danger by simply driving in the outside lane.
- Always "Stop, Look and Listen" at railroad crossings with no lighted signal. At crossings that have signals, slow down and make sure your visual distance of the track is adequate in case the signal is not working properly.

9.6.6 MOTOR VEHICLE ACCIDENTS AND BROKEN-DOWN VEHICLES

- Approach a broken-down vehicle or motor vehicle accident (MVA) with caution, but do not be distracted by them. Watch for pedestrians and wandering animals at the scene.
- If your vehicle develops engine trouble and begins to slow, move to the side of the road as far as possible from traffic. If your vehicle breaks down on the road in an exposed position:

1. Activate your hazard warning lights immediately;
2. Have passengers leave the vehicle if and when it is safe to do so, and keep them well clear of traffic; and
3. Carefully place a flare or hazard warning triangle to the side of the road, or side of an affected traffic lane to alert approaching vehicles of potential danger. When walking to place the triangle, hold it in front of you to alert drivers to the hazard. Hold it behind you when you collect it and return to your vehicle.

- Avoid working on the traffic side of your vehicle.
- Carefully watch all approaching traffic for potential loss of vehicular control.

9.7 VEHICLE SAFETY

A key part of safe driving is vehicle safety. COGCC employees shall not operate a vehicle with defective or substandard brake systems, tires, lights, horns, steering, or damaged suspension parts.

COGCC employees shall abide by the following vehicle safety procedures:

- Maintain your vehicle. Repair defective or damaged vehicle parts as soon as possible.
- Be sure that windshield wipers are in good working order. Windshield wipers are inexpensive and should be replaced on a regular basis. Poor wipers can be extremely dangerous during rain and snow storms.

- Clean the inside of your windshield as well as the outside. Many accidents are caused by poor visibility due to a dirty windshield.
- Keep your windshield washer fluid reservoir full. You can use a lot of fluid on days with lots of splash-back.
- Check your tires regularly for tread wear.
- If you tow a trailer, be sure that you have the correct size and type of trailer hitch and use your safety chains.
- Any damage caused while a COGCC vehicle is in motion constitutes a vehicle accident and must be reported to a COGCC supervisor.

9.8 CELL PHONES

Due to research that indicates that cell phone use while driving is dangerous, and may even approach the equivalent danger of driving while drunk, the COGCC prohibits employee use of cellular phones or similar devices while driving.

This prohibition of cell phone or similar device use while driving includes, but is not limited to:

- Receiving or placing calls, including utilizing hands-free communication devices such as Bluetooth or speakerphone;
- Text messaging;
- Surfing the internet;
- Receiving or responding to email; and
- Checking for phone messages.

The COGCC recognizes that other distractions occur during driving; however, curbing the use of cell phones while driving, is one way to minimize the risk of accidents. If you need to use your cell phone or similar device for any reason, you are required to stop your vehicle in a safe location so that you can do so safely.

9.9 MOTOR VEHICLE ACCIDENT REPORTING

Employees involved in an MVA while on COGCC business should adhere to the following accident reporting guidelines:

1. Follow local and/or state laws with respect to reporting accidents to police and cooperate with police officers investigating the accident.
2. MVAs that involve another vehicle or that cause personal injury or third party property damage should be reported by phone to the appropriate supervisor immediately.
3. All other MVAs should be reported to the appropriate supervisor within eight (8) hours.
4. The COGCC driver shall obtain personal and insurance information from the other driver and, if available, obtain names and addresses of witnesses, police reports, and any other related information.

5. The COGCC driver should exchange only the necessary information with the other driver, (i.e., names, driver's license, insurance) and SHOULD NOT make commitments or express responsibility for the accident. State that you will report it to your COGCC; any liability will be determined by the COGCC and their insurance carrier. Don't assume or place any blame or responsibility. Do not express opinions or become involved in arguments.

Employees in jobs that require driving on COGCC business should recognize that their jobs may be at risk due to the following:

- Excessive traffic violations;
- Violations involving alcohol or drugs;
- Having their license suspended, revoked, or canceled; and
- Violations of other COGCC guidelines while driving on COGCC business.

9.10 RECORDKEEPING REQUIREMENTS

The COGCC Corporate Office shall maintain the following types of records for the following lengths of time.

Record	Custodian	Retention
Employee Training Records	Appropriate COGCC Office	36 months after separation
Vehicle Safety Plan	Appropriate COGCC Office	12 months after revised or superseded

9.11 ADDITIONAL DNR VEHICLE SAFETY GUIDANCE

This practice is written to establish a standard of safe condition and safe operation of motor vehicles on the job. This practice applies to all operators of all motor vehicles belonging to the Department of Natural Resources or its divisions, or to State Fleet Management (Central Services Motor Pool). It applies to all wheeled or tracked motor vehicles operated by DNR employees, and authorized volunteers, including but not limited to cars, trucks, vans, tractors, ATVs, motorcycles, heavy equipment, and self-propelled forklifts.

1.1.1.17 PROCEDURES

A. Pre-shift inspection

Prior to the first use of a vehicle during a shift, check the following items. If a hazardous condition is detected, **DO NOT USE THE VEHICLE UNTIL IT IS REPAIRED**. Report the unsafe condition to the individual responsible for maintaining the vehicle, and attach a tag (red preferred) to the keys to the vehicle, listing the unsafe condition. For State Fleet Management vehicles, refer to the binder provided with the vehicle for additional instructions for reporting the unsafe condition.

1. Tires. Look for loose lugs and cracked rims. Check the tread and sidewall condition and the tire pressure.

2. Walk-around. Check the fluid levels in the engine compartment. Look for oil leaks. Check the condition of the fan belts and windshield wipers, when present. (This step may be skipped if the vehicle is being checked out from Fleet Management.)

3. Operator compartment. Check that the windows are clean and there are no loose objects in the compartment. Ensure that the parking brake is ON. Check for the presence of a seat belt, a fire extinguisher, and a first aid kit.

4. Gauges and warning lights. Before starting the engine, all gauges should read zero. After starting the engine, ensure that all gauges read in the normal operating range and that no warning lights are showing.

5. Engine operation. After starting the engine, verify that the engine idles smoothly, with no unusual smoke or exhaust fumes, and no unusual noises. Verify the operation of headlights, taillights, turn signals, brake lights, and any other exterior lights (example: light bars, body lights).

6. Brakes. Check the parking brake, with the vehicle in gear, by increasing power to the engine briefly. Verify that the parking brake holds the vehicle in place. With parking brake OFF, check the brake pedal action, and again increase engine power briefly to verify that the service brakes hold the vehicle in place.

7. Steering. Check the steering for looseness, slow response, jerking, or unusual noises.

B. Safe Operation

1. The use of seat belts is required in all vehicles intended for operation on public roads. Report damaged or missing seat belts to the individual responsible for maintaining the vehicle.

2. Observe traffic safety regulations on all public roads. This includes, but is not limited to, observing the safest speed for the conditions, never to exceed the posted speed limit, keeping to the right, using turn signals, yielding right-of-way when appropriate, and treating other drivers with courtesy. Remember that you represent the department and the State when driving a publicly owned vehicle and your behavior reflects on all public employees.

3. Only state employees or other personnel, when identified by the using agency as being directly involved in the mission of travel, may be carried as passengers. Family members and personal pets are not allowed. Note: specialized canines such as search and rescue dogs, cadaver dogs, etc. are considered “other personnel” for purposes of this directive.

4. Never park a loaded vehicle on a slope, or on a loose surface such as gravel, with the motor idling.

5. Never park equipment with the blade, bucket, or forks elevated. Always keep the blade, bucket, or forks low while moving.

6. Never back a vehicle without checking behind the vehicle first, or waiting for a signal from a designated spotter.

7. Designated spotters shall signal the operator by hand signals wherever possible, and shall stand in a position safely clear of the equipment, easily visible to the operator.

8. Never carry another person on any part of a vehicle not designed to carry passengers. Never ride on the bumper, fender, running board, or any other part of the exterior of any moving vehicle. In special situations, workers may be carried in the bed of a pickup truck, provided they are seated in the bed, and not on top of the load.

C. Vehicle Maintenance

COGCC employee only perform routine upkeep, such as wiper blades, check fluids and air pressure.

Vehicle service must be performed by a qualified mechanic approved by State Fleet Management:

1. Whenever routine maintenance is performed, the maintaining employee should also check for loose bolts, tie rod ends, spring shackles, wheel lugs, broken parts, or anything else which could cause the vehicle to fail at a critical moment.

2. Whenever an operator identifies an unsafe condition of a vehicle, proper repairs shall be made before the vehicle is returned to service, no matter how urgent the need for the vehicle.

3. Extreme caution shall be used when it is necessary to work on a motor while it is running. Running a motor in a garage or shed shall be avoided if the work can be performed outdoors. When necessary to work inside, doors shall be opened wide to ventilate the building, and vent pipes hooked to the vehicle exhaust.

4. At no time shall anything but approved cleaning fluids be used for cleaning parts. Use of gasoline for this purpose is forbidden.

5. Avoid climbing on equipment when servicing or repairing it; use ladders or stepladders when necessary.

6. Proper tools shall be used for repairing and servicing equipment; tools shall be used only for their designed purposes.

7. When installing parts or equipment manufactured by other than the vehicle manufacturer, the parts/equipment manufacturer’s instructions and safety precautions shall be followed at all times.

D. Accidents

If you are involved in a work-related car accident, follow the steps outlined below.

1. Report the accident to your supervisor immediately.

2. While still on scene, report the accident to the proper authority. This will vary depend on where the accident takes place and could consist of the local police, DNR Colorado Parks and Wildlife Law Enforcement, or the Colorado State Patrol.

3. If you are injured, seek medical attention from a designated worker's compensation provider or the nearest emergent care facility. IMPORTANT NOTE: When injuries are severe, always seek immediate medical attention from the nearest emergent care facility. Complete an Employee Statement of Injury form (attached) and submit it to Barbara Ring via email at barbara.ring@state.co.us or fax 303-866-2417.

4. Complete a State of Colorado Vehicle Accident Report (attached) and submit it to your supervisor.

5. Participate in and cooperate with the ensuing investigation.

Please contact DNR Risk Manager barbara.ring@state.co.us at 303 866-2667 x8646 if you have questions or need assistance.

APPENDIX A: EMPLOYEE STATEMENT OF INJURY/EXPOSURE

DEPARTMENT OF NATURAL RESOURCES

Employee Name:		SSN:			
Home Address:		Home Phone:			
		Scheduled work week:			
Job class:		Wage rate			
Division:		Date of Birth:			
Work Address		Date of Hire:			
		Supervisor Name:			
		Work Phone:			
Date of Injury/Exposure:	Time of day:	Time work started:			
Date Employer Notified:		Who did you notify?			
Body part injured and description of injury:		Did/will injury cause you to miss work?			
		Yes		No	
Names of witnesses:					
Place of accident/exposure:					
City (or nearest town)	Zip	County			
How did the injury/exposure occur? Describe fully what happened and how it happened.					
Did you seek medical attention?		Yes		No	
If Yes, name, address, and phone number of Physician, Clinic or Hospital:					

I hereby declare that the above information is true and accurate and that the injuries claimed resulted from an accident or exposure while performing my assigned duties as an employee of the Department of Natural Resources.

Employee signature _____ Date _____

APPENDIX B: MOTOR VEHICLE ACCIDENT REPORT

Colorado
Department of Personnel & Administration

VEHICLE ACCIDENT REPORT

To be completed by the state driver within 24 hours

Today's Date

(replaces DR# 01 Form)

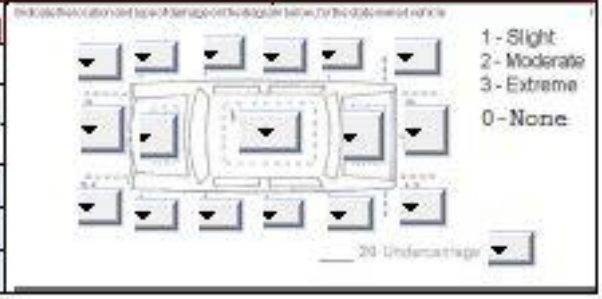
Type of Incident		Fatality		Injury		Private party injury or property damaged		Other

Driver Information

Driver Name		Job Title		Driver License Number/ State	
Date of Hire	Permanent ☐ Temporary ☐	Address		Home Phone	
Has the driver had Defensive Driving training within the past 4 years?	☐ YES ☐ NO	City	State / Zip	Work Phone	

State Vehicle Information

Vehicle #, if applicable	Year	Make	Model	Vehicle Identification Number (VIN)
License Plate Number		Mileage		
Accident during business use? ☐ Yes ☐ No		State Fleet Vehicle? ☐ Yes ☐ No		
Location of Vehicle/ Tow Company				
Describe Damage to vehicle (Attach Photos)				



Accident Information

Date of Accident	Time	Location of Accident (Street, Highway or intersection)		Mile Post
City		State	CDOT Use Only	
Transported to Hospital By Ambulance ☐ Yes ☐ No	Doctor	Hospital/Clinic	City	Phone

Other Vehicle Information (use additional sheet if necessary)

Year	Make	Model	License Plate Number	Drivers License Number
Owner Name	Phone	Address	City / State / Zip	
Driver Name (If other than owner)	DOB / Phone	Address	City / State / Zip	
Insurance Carrier	Policy Number	Agent Name / Phone Number		
Area of Damage to Vehicle		Vehicle Location		

Conditions and Accident Description (use additional sheet if necessary)

Weather Conditions (Circle those that apply) ☐ Rainy ☐ Clear ☐ Fog ☐ Snow/Ice ☐ Wind	Road Conditions (Circle those that apply) ☐ Paved ☐ Dirt/Gravel ☐ Dry ☐ Wet ☐ Slippery	Air Bag Deployed? ☐ Yes ☐ No
Traffic Controls (Signs, Signals, Lights) / Posted Speed Limit	How fast were you traveling?	Seat Belts Worn ☐ Yes ☐ No

Witnesses (If none, write N/A)

Name	Address / City / State / Zip	Phone
Name	Address / City / State / Zip	Phone

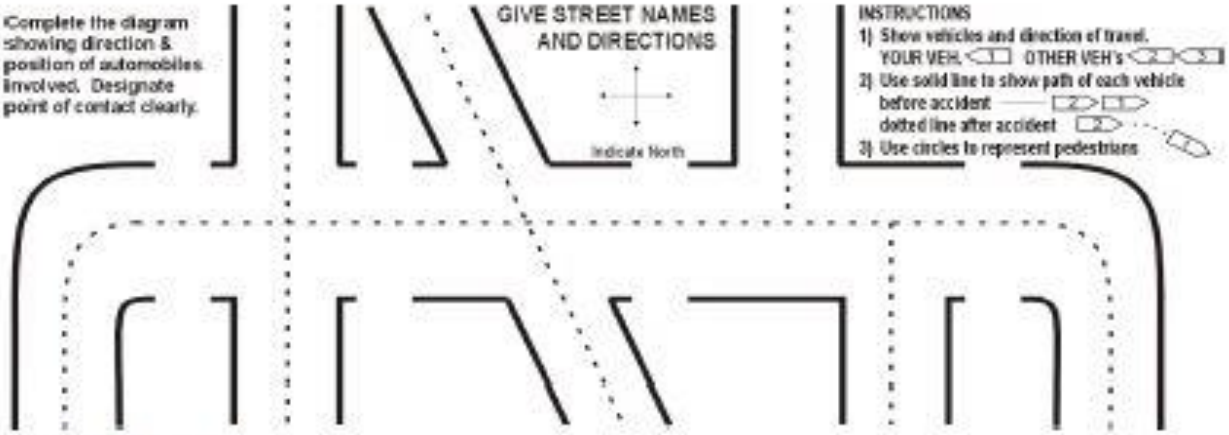
Passengers (If none, write N/A)

Name	Address / City / State / Zip	Phone	State veh. ☐ Other veh. ☐
Name	Address / City / State / Zip	Phone	State veh. ☐ Other veh. ☐

8/2013

OVER

Complete the diagram showing direction & position of automobiles involved. Designate point of contact clearly.



Description of the Accident

	Draw picture only if accident was in parking lot or other off-road area.

Injuries to state employee and/or other party (use additional sheet if necessary)

Name ☐ State employee?		Address	City	State	Zip
Phone	Estimated extent of injuries				
Name ☐ State employee?		Address	City	State	Zip
Phone	Estimated extent of injuries				

Police Information

Were Police Called? ☐ Yes ☐ No	Police Department Name	Badge Number	Phone Number
Police Report Number	Citation / Ticket Issued / Reason	Who was cited (State driver, Other party)?	

State Driver Signature	Phone	Date

Supervisor Signature	Title	Phone	Cost Center	Date

Instructions:

- Check to make sure no one is injured. If so, request medical assistance immediately.
- If your vehicle is drivable, state law requires you to move it off of the traveled portion of the roadway as soon as practical. If not drivable, turn on hazard lights, and if available, set up flares or reflector triangles to warn traffic. Stay in your vehicle.
- Call the police immediately, even if it appears minor. If police will not respond, due to an "accident alert" situation or do not come, fill out an accident report at the city courthouse/ police station in the city in which the accident occurred.
- Ask the police officer, if completed, where and when you can get a copy of their report.
- **Do not argue with the others involved, admit fault or discuss the accident with anyone except the police.**
- Give the other driver your vehicle insurance policy number (should be kept with vehicle registration information.)
- Gather as much information about the accident as possible. Photograph the scene and vehicle damage if possible.

10.0 INCIDENT INVESTIGATION

This plan provides general procedures and guidelines for the Colorado Oil and Gas Conservation Commission (COGCC) Incident Investigation Plan (Plan).

10.1 PURPOSE

This Plan is intended to provide consistent and formal accident, incident, and near-miss reporting and investigation procedures. These procedures are intended to help prevent loss of life, injuries, property and environmental damage, and other losses as well as provide a safer workplace for employees and contractors. Additional requirements may apply to other jurisdictional agencies such as OSHA, the Department of Transportation (DOT), or the Environmental Protection Agency (EPA).

10.2 SCOPE

This plan establishes the procedures for Incident Investigation and Reporting in order to best determine incident causes and implement changes so incidents are reduced. This plan also ensures the cooperation and support of employees in an effort to minimize incidents, injuries, or illnesses. All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Plan.

10.3 RESPONSIBILITIES

HEALTH, AND SAFETY Plan (HASP)

The COGCC shall develop and revise this policy as needed, and be responsible for proposing changes and advising when revisions to the policy are necessary by tracking applicable regulations. Supervisors shall assist with or lead all investigations, and will track incident investigation recommendations and their resolution.

DIRECTORS, MANAGERS, AND SUPERVISORS

Directors, Managers, and Supervisors shall be responsible for verifying that this Plan is implemented at all locations within their oversight, and for reviewing and approving Incident Reports.

EMPLOYEES

Employees shall report all incidents, accidents, and near misses to their supervisor, participate as requested on investigation teams, and provide information related to an incident being investigated as applicable.

10.4 TRAINING

Incident Investigation Training shall be provided to all COGCC employees who may be required to perform incident investigations. Employees shall be trained prior to performing an investigation.

10.5 PROCEDURES

In case of an emergency, call 911 or go to the closest urgent care facility or emergency room. In the event of an injury:

1. Notify your supervisor of the injury;

2. Complete the employee statement of injury form (attached) and return to: Lisa Anselmo via email at lisa.anselmo@state.co.us or fax 303-866-2417;

3. For non-emergent care, seek medical treatment from a DNR authorized treating physician; and

4. Provide your supervisor and DNR Workers Compensation Contact with medical updates.

A reportable injury is considered to be any injury requiring first aid or medical treatment. Injuries need to be reported to HR, and our preference would be that all injuries be reported, no matter how minor they may seem initially. We have seen many cases where an employee doesn't report a seemingly minor injury right away, and over time realizes the injury was more significant than he/she initially thought it was.

Feel free to contact Lisa Anselmo with any questions that you have regarding your workers' compensation claim. The Colorado Division of Workers' Compensation has a number of resources, including an employee handbook. You may review their information at https://www.colorado.gov/pacific/cdle/node/20506.

10.5.1 INCIDENT REPORTING

The COGCC realizes that incident investigations are a critical part of an effective process safety management plan, and a thorough investigation of incidents can identify the chain of events and causes so that corrective measures can be developed and implemented. By law, employees must report all injuries, illness, accidents, and incidents in writing within four working days, using the DNR Employee Statement of Injury/Exposure form (attached). Should you need to seek medical care for your injury, you will need to seek medical attention from a DNR designated provider.

Additionally, unsafe working conditions, environmentally harmful conditions, and near-miss events should be reported to the Supervisor. By reporting all such events, attention can be focused so that future incidents can be avoided, causes and conditions eliminated, and reoccurrence prevented.

Incidents to be investigated include:

- Fatalities involving employees and/or contractors;
- Lost time or restricted duty injuries;
- Hospitalization of one (or more) employees, contractors, or visitors;
- Damage to COGCC equipment, property or vehicles;
- Near-miss event that could have resulted in any of the above under slightly different circumstances; and
- Other incidents which management may deem appropriate.

There may be incidents which will not be formally investigated because of resources and/or the potential for low consequence. This will be determined by a Supervisor and the reasoning documented. A practical approach is to analyze each incident reported in order to evaluate its significance (loss potential), then investigate the more significant (higher loss potential) incidents and to identify and resolve the root causes. It should be remembered that incidents of less significance might have root causes similar to other incidents with higher loss potential.

An employee involved in a motor vehicle accident that is job-related and results in death, injury, or property damage must immediately notify their supervisor of the accident. Whenever a DNR vehicle is damaged or causes damage to property, or injuries are incurred, a State of Colorado Vehicle Accident Report must be completed and an incident investigation conducted.

10.5.2 INVESTIGATION PROCEDURES

Incident investigations should focus on identifying the root cause or causes of the incident and making recommendations for corrective action to be taken.

Tasks to complete when conducting an incident investigation include, but are not limited to:

- Identifying persons to interview;
- Site observations/inspection;
- Collecting and saving physical evidence, pertinent data, and samples, if necessary;
- Reviewing operation, maintenance, and safety procedures;
- Identifying technical experts, when needed;
- Reviewing similar incidents; and
- Determining if the employee's actions were a causal factor to the incident or accident involving an OSHA-recordable injury and/or if a motor vehicle accident was outside of the employee's ability to control or respond to defensively.

The site of a serious incident should be secured prior to and during the investigation to preserve evidence. Interviews should usually include personnel involved in the incident and witnesses or other personnel who were present when the incident occurred (including contractors, managers, and supervisors). It is generally preferable to conduct interviews with people involved in an

incident at the location of the incident. Witnesses may be requested to demonstrate, without actually doing, exactly what happened prior to, during, and after the incident.

When conducting interviews, sometimes one person's recollection of what happened may be more imaginative than that of others. The recollections of two or more people of the same situations should be given more credibility than one person's account. It is important to identify only the cause or causes that can be based on substantiated facts.

Any written operating procedures and training records applicable to the process involved in the accident should be reviewed and compared to the practices followed preceding, during, and after the incident. The primary objective of this review is to determine whether any discrepancy was a root cause or contributing factor of the incident. The purpose of the investigation is to look for potential areas of improvement, such as, but not limited to:

- Written operating procedures (better/clearer), use of checklists;
- Equipment design and/or maintenance procedures;
- Training; and
- Management commitment, leadership, and/or involvement.

Any perceived deficiency should be identified in the investigation report along with suggestions on how to resolve the perceived deficiencies.

10.5.3 Incident Investigation Report and Documentation

The primary purpose for conducting an investigation is to identify the causes that led up to an incident. An Incident Investigation Report is used to identify those causes, make recommendations to prevent reoccurrence, and to communicate the lessons learned to others. Reports should be written so that readers can understand what occurred without having to be intimately familiar with the facility, personnel, or equipment involved in the incident. A typical report should normally contain the following:

- Date and time of incident;
- Duration of the incident;
- Date and time of investigation;
- Detailed description of what occurred;
- Names of employees and others interviewed during the investigation;
- Photographs, drawings, and maps reviewed during the investigation;
- Listing of root causes, or actual causes;
- Factors that contributed to the incident;
- Recommendations resulting from the investigation to prevent a reoccurrence; and
- Identification of remedial actions that should be taken.

The investigation report and the resolution of findings and recommendations shall be reviewed with all affected employees. The incident investigation report shall be retained for five (5) years.

10.5.4 RECCOMMENDATION

Recommendations should be designed to prevent recurrence of the incident by:

1) Correcting “root causes” of the specific incident;

2) Providing interim temporary actions when final corrective actions cannot be implemented immediately.

Recommendations should be specific (who, what, when, why); verifiable (can you determine if the recommendation will work when implemented?); acceptable and accountable (do you have agreement from the COGCC); reasonable (is it practical?); and timely (if not, is there an interim fix?).

The investigation report findings and recommendations shall be promptly addressed and resolved and the resolutions and corrective actions shall be documented. Outstanding incident investigation recommendations should be updated by periodic incident follow-up reports that include action plans to achieve resolution. It is imperative to follow up on incident investigation recommendations to implement the identified improvements.

APPENDIX A

EMPLOYEE STATEMENT OF INJURY/EXPOSURE

APPENDIX A: EMPLOYEE STATEMENT OF INJURY/EXPOSURE

DEPARTMENT OF NATURAL RESOURCES

<table>
<tr><td colspan="3">Employee Name:</td><td colspan="4">SSN:</td></tr>
<tr><td colspan="3" rowspan="2">Home Address:</td><td colspan="4">Home Phone:</td></tr>
<tr><td colspan="4">Scheduled work week:</td></tr>
<tr><td colspan="3">Job class:</td><td colspan="4">Wage rate</td></tr>
<tr><td colspan="3">Division:</td><td colspan="4">Date of Birth:</td></tr>
<tr><td colspan="3" rowspan="3">Work Address</td><td colspan="4">Date of Hire:</td></tr>
<tr><td colspan="4">Supervisor Name:</td></tr>
<tr><td colspan="4">Work Phone:</td></tr>
<tr><td colspan="2">Date of Injury/Exposure:</td><td>Time of day:</td><td colspan="4">Time work started:</td></tr>
<tr><td colspan="3">Date Employer Notified:</td><td colspan="4">Who did you notify?</td></tr>
<tr><td colspan="3" rowspan="2">Body part injured and description of injury:</td><td colspan="4">Did/will injury cause you to miss work?</td></tr>
<tr><td>Yes</td><td></td><td>No</td><td></td></tr>
<tr><td colspan="7">Names of witnesses:</td></tr>
<tr><td colspan="7">Place of accident/exposure:</td></tr>
<tr><td colspan="2">City (or nearest town)</td><td>Zip</td><td colspan="4">County</td></tr>
<tr><td colspan="7">How did the injury/exposure occur? Describe fully what happened and how it happened.</td></tr>
<tr><td colspan="7"></td></tr>
<tr><td colspan="7"></td></tr>
<tr><td colspan="3">Did you seek medical attention?</td><td>Yes</td><td></td><td>No</td><td></td></tr>
<tr><td colspan="7">If Yes, name, address, and phone number of Physician, Clinic or Hospital:</td></tr>
<tr><td colspan="7"></td></tr>
</table>

I hereby declare that the above information is true and accurate and that the injuries claimed resulted from an accident or exposure while performing my assigned duties as an employee of the Department of Natural Resources.

Employee signature Date

11.0 RESPIRATORY PROTECTION

The Respiratory Protection Program (Program) has been prepared for use the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that employees are knowledgeable and trained in the requirements, selection, and proper use of respiratory protection.

11.1 Purpose

The use of respiratory protection is not authorized for COGCC employees, without considering the following. The purpose of this section is to assist COGCC Staff in identifying respiratory hazards in the workplace. It also provides for the selection and use of respiratory protection in work areas where it is not feasible to control exposures to airborne contaminants or oxygen-deficient atmospheres to acceptable levels through the use of engineering controls and work practices.

If at any time a hazardous work area, or potential hazardous work area, is identified by COGCC Staff shall immediately evacuate the work area and require contract workers to do the same until the area can be deemed safe by acceptable methods.

At no time shall COGCC Staff implement this, or any other, respiratory protection program without prior consent from COGCC management and proper training in all aspects of the program.

The program is written to comply with the Respiratory Protection Standard in Title 29 of the Code of Federal Regulations (CFR) Part 1910.134.

This program applies to all COGCC employees whose work duties may require the use of respiratory protection. In addition, at any COGCC project that requires respiratory protection, all contractors and their personnel and subcontractors are required to have and adhere to a compliant Program and/or the COGCC's program, whichever is more stringent.

11.2 Scope

This program applies to all COGCC employees whose work duties may require the use of respiratory protection. In addition, at any COGCC project that requires respiratory protection, all contractors and their personnel and subcontractors are required to have and adhere to a compliant Program and/or the COGCC's program, whichever is more stringent.

11.3 RESPONSIBILITIES

All affected COGCC employees are responsible for:

- Being knowledgeable of the provisions of the Program and participating in training when requested;
- Wearing respirators as instructed;

- Cleaning, caring for, and maintaining respirators as instructed, and storing them in a clean and sanitary location;
- Informing their supervisor if the respirator no longer fits well or if any problems are detected with the condition of the respirator;
- Removing defective respirators from service immediately upon discovery of any defect; and
- Informing their supervisor of any respiratory hazards that they feel are not adequately addressed, and of any concerns they have regarding the Program or respirator use.

COGCC Supervisors and Health & Safety personnel are responsible for:

- Identifying work areas, processes, and tasks that require workers to wear respirators;
- Evaluating the associated hazards using the Hazard Assessment form (See Appendix A);
- Selecting appropriate respiratory equipment for use by personnel;
- Ensuring respirators are used in accordance with their certifications;
- Ensuring proper storage and maintenance of respiratory protection equipment;
- Assuring that fit tests are conducted utilizing one of the quantitative or qualitative protocols approved for use;
- Reviewing various elements of the program with employees who wear respirators and communicating needed changes or improvements to COGCC Management;
- Conferring with COGCC Management regarding the overall administration of all program elements;
- Coordinating with COGCC Management to ensure that employees receive appropriate training, fit testing, and medical evaluations in accordance with this Program;
- Ensuring availability and proper use of appropriate respiratory equipment;
- Being aware of tasks requiring respiratory protection, and ensuring that respirators are worn properly and that standby personnel are utilized when needed;
- Ensuring that respirators are cleaned, maintained, and stored in accordance with this program;
- Ensuring that respirators fit well and do not cause discomfort;
- Monitoring work areas and operations to identify respiratory hazards; and
- Communicating with COGCC Management regarding respiratory hazards or other concerns about the program.

COGCC Management is responsible for:

- Ensuring that appropriate personnel are trained in respiratory protection;
- Implementing and enforcing the procedures contained in the Program;
- Ensuring that all COGCC personnel understand their responsibilities under this program;

- Maintaining, periodically reviewing, and, when necessary, modifying the Program as required;
- Administering the medical surveillance program for employees that wear respirators;
- Maintaining required records; By appointed personal
- Assisting the Supervisor with the fulfillment of his/her responsibilities under this Program, including identification of work areas, processes, and tasks that require employees to wear respirators, and evaluating the associated hazards;
- Assisting in the selection of respirator options;
- Assisting the Supervisor with ensuring that respirators are used in accordance with their certifications;
- Providing assistance regarding fit testing issues or concerns; and
- Arranging for employee training.

11.4 TRAINING

Training shall be provided to all COGCC employees who may be required to use respiratory protection. Employees must receive training prior to performing a job that requires the use of a respirator.

Training topics will include how to don and doff a respirator, position it properly, set the strap tension, achieve an acceptable fit, perform a positive and negative pressure seal check, and the types of respirators available.

Retraining will be provided when:

- Changes in the workplace or the type of respirator utilized render previous training obsolete;
- Inadequacies in the employee's knowledge or use of the respirator indicate that the employee does not understand the respirator care and use information adequately; and/or
- Any other situation that arises in which retraining appears necessary to ensure safe respirator use.

Training in Respiratory Protection shall be provided by a certified trainer. COGCC personnel shall receive Respiratory Protection training prior to an initial assignment (when the job duty requires) and refresher training every two (2) years. Personnel should receive and maintain a card or certificate documenting when they have been successfully trained in respiratory protection.

11.5 DOCUMENTATION

The COGCC will maintain a current list of employees who are required to wear respirators. The following types of documents will be kept at the COGCC Corporate Office.

RECORD	CUSTODIAN	RETENTION
List of Employees Qualified to Wear Respirators	Appropriate COGCC Office	36 months after separation
Employee Medical Records	Appropriate COGCC Office	360 months after separation
Employee Fit Test Records	Appropriate COGCC Office	36 months after separation
Employee Training Records	Appropriate COGCC Office	36 months after separation
Hazard Assessments	Appropriate COGCC Office	12 months after revised, superseded, or obsolete
Respirator Inspection and Maintenance Reports	Appropriate COGCC Office	12 months after revised, superseded, or obsolete
Program Audits/Reviews	Appropriate COGCC Office	12 months
Breathing Air Quality Certifications	Appropriate COGCC Office	36 months

11.6 RESPIRATORY PROTECTION EQUIPMENT

The COGCC will assess respiratory hazards with COGCC daily work tasks and projects and provide engineering controls, safe workplace practices, and, as necessary, determine the appropriate respiratory protection to protect personnel from airborne contaminants and oxygen deficient atmospheres.

11.6.1 EXPOSURE HAZARD ASSESSMENTS

Jobsites with airborne contaminants or oxygen deficient atmospheres will be identified by a comprehensive Hazard Assessment. The Hazard Assessment must be documented on the Hazard Assessment form (Appendix A).

11.6.2 RESPIRATOR SELECTION CRITERIA

A COGCC Manager or Supervisor will determine the appropriate respiratory protection utilizing the general guidelines for selection of respirators provided in the American National Standards Institute (ANSI) Z88.2-1992, Practices for Respiratory Protection, with consideration of the factors listed below:

- Adverse health effects of the hazard – respiratory, ocular, and dermal;
- Relevant hazardous exposure levels;
- Potential exposure levels;
- Measured exposure levels;
- Chemical state and physical form of the substance;
- Toxicity of the substance;
- Warning properties (e.g. odor);
- Mechanical and functional characteristics of the respirator;
- Specific conditions and activities involved in the respirator use;
- Operational processes;
- Period of time the respirator will be worn; and
- Employee work activities.

Appropriate respirators will be selected by a COGCC Manager or Supervisor from those approved and certified by the National Institute for Occupational Safety and Health (NIOSH). All filters, cartridges, and canisters used in the workplace shall be labeled and color-coded with the NIOSH approval label; the label shall remain in place and legible at all times.

When air-purifying respirators are selected for gases and vapors, a warning system such as an end-of-service-life indicator (ESLI) or a cartridge change schedule (based upon reliable data) shall be used to ensure cartridges are replaced prior to the end of their service life.

11.6.3 MEDICAL EVALUATIONS

Employees shall not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically capable of performing them. Employees required to use respirators will receive a medical evaluation prior to being fit tested, and some individuals will receive the medical evaluation periodically thereafter as long as they remain in the Program.

Medical evaluations will be conducted by a physician or other licensed health care professional (LHCP).

The requirements for medical evaluation may vary depending on the nature and extent of anticipated respirator use.

Employees newly assigned to respirator use (new or transfer) who are required to have a medical evaluation, may use an existing medical evaluation or written recommendation from a LHCP, provided the medical examination or written recommendation was completed within one year prior to the date of beginning respirator use and contains the required information.

Additional medical evaluations will be provided:

- If the employee reports medical signs or symptoms that are related to the ability to wear a respirator;
- If the LHCP, Supervisor, or COGCC management determine that an employee needs re-evaluation;
- If information from the respiratory protection program (e.g., observations from fit-testing or program evaluations) indicates a need for employee re-evaluation; or
- If a change occurs in workplace conditions that may result in a substantial increase in the physiological burden placed on the employee.

Employees will be given an opportunity to discuss the evaluation procedures and examination results with the LHCP.

A written recommendation will be provided to COGCC management by the LHCP that addresses the employee's ability to wear a respirator. The recommendation will contain:

- The limitations on respirator use;
- The need for follow-up medical evaluations (if needed); and
- A statement that the LHCP has provided the employee with a copy of the LHCP's recommendation.

In requesting the written medical recommendation following a medical examination, the following information must be provided to the LHCP:

- Type and weight of respiratory protection to be used;

- Substance(s) the employee will be exposed to;
- Description of the work effort required;
- Duration and frequency of use;
- Type of work performed, including any special responsibilities that affect the safety of others such as fire-fighting or rescue work;
- Special environmental conditions (e.g., temperature, humidity, confined spaces, etc.);
- Additional requirements for protective clothing and equipment; and
- A copy of the Program and a copy of the Medical Evaluation of the United States Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard.

11.6.4 FIT TESTING

Initial – Each employee required to wear a respirator with a tight-fitting face piece must be fit tested with the same make, model, style, and size of respirator(s) the employee will be expected to use prior to initial use of the respirator.

Periodic – Fit tests will be required annually, unless a substance-specific requirement requires more frequent testing. Additional fit testing will be required if the employee changes to a new style or brand of respirator or if there is reason to believe that the respirator fit has changed due to physiological, workplace, or other factors.

Retesting - If the COGCC, LHCP, Supervisor, or COGCC Management observe changes in an employee's physical condition that could affect respirator fit, the employee must have a new fit test. If the employee finds the respirator fit to be unacceptable, the employee will be given the opportunity to choose another face piece and be retested.

A qualitative fit test may be used for air-purifying respirators that must achieve a fit factor of 100 or less. A quantitative fit test shall be performed for full face piece positive and negative pressure respirators.

Positive pressure respirators shall be fit tested in a negative pressure mode.

Facial hair, facial characteristics, or corrective lenses which interfere with the face piece seal will disqualify an employee from wearing a respirator, unless the condition is corrected. Contact lenses are permissible for wearing with positive pressure respirators.

Fit tests will be documented and retained as specified in the Documentation Section.

11.6.5 RESPIRATOR USE

No employee may be assigned work requiring the use of a respirator until that employee has:

- An approved and current medical evaluation;
- Passed an appropriate fit test with the size and type of respirator to be used; and

- Been given adequate training on the proper use and maintenance of the respirator, including information on the hazards and effects of the contaminant(s) the respirator is to protect against.

The respirator wearer must ensure a proper seal and verify proper respirator valve function each time a respirator is donned.

Immediately Dangerous to Life or Health (IDLH) atmospheres include oxygen-deficient atmospheres and those with dangerous concentrations of one or more contaminants, for which air-purifying respirators cannot provide adequate protection. Where IDLH atmospheres exist or potentially exist, worksite-specific procedures will include the items listed below.

- The use of positive pressure (pressure demand) self-contained breathing apparatus (SCBA), with a minimum service life of 30 minutes, or combination full face piece pressure demand supplied-air respirator with an auxiliary self-contained air supply (airline respirator with escape bottle);
- In IDLH or potentially IDLH atmospheres where the employee could be overcome if the respiratory protection fails, one additional person (or more as needed) shall be located outside the hazardous atmosphere in communication and able to provide effective emergency assistance to the respirator wearer. Oxygen-deficient atmospheres (less than 19.5%) will be considered IDLH;
- Provisions to ensure that positive pressure SCBAs are immediately available to emergency assistance personnel;
- Provisions for: (1) training and equipping employees to rescue other employees who have entered IDLH atmospheres, and (2) training employees to notify supervision when entering an IDLH area for rescue; and
- Maintaining voice, visual, or signal line communication between employees in the IDLH environment and those located outside the area.

Employees are required to leave the air-purifying respirator use area:

- If, at any time, they deem the area to be unsafe and/or are not comfortable being in the area;
- If they detect breakthrough of vapor or gas through the cartridge or canister, or heating of the air;
- If a change in breathing resistance or leak in the face seal occurs;
- If they feel effects or experience symptoms of chemical exposure;
- To replace the filter, cartridge, or canister elements;
- To wash their face or respirator face piece as necessary to prevent irritation;
- To take a rest break if experiencing heat stress or discomfort; and/or
- When instructed to do so by standby personnel or their supervisor.

Employees shall not return to the respirator use area until the respirator defect has been repaired or replaced, or the level of respiratory protection has been upgraded as necessary.

11.6.6 VOLUNTARY USE

Where respirator use is not required, due to chemical or physical agents in concentrations less than the established exposure limits, an employee who chooses to wear a respirator will be provided with the information contained in Appendix D of OSHA's Respiratory Protection Standard, a medical fitness evaluation, an appropriate respirator, and training necessary for proper use and maintenance.

EXCEPTION: The use of a dust mask that is not rated a N95 "dust mask" where the entire respirator is a filter is not covered by this section.

11.6.7 SUPPLIED AIR QUALITY

Formulated oxygen/nitrogen gas mixtures shall not be used for breathing air. Compressed air, compressed oxygen, liquid air, or liquid oxygen used for respiration shall be of high purity and compliant with the following.

- Compressed and liquid oxygen must meet the requirements of the United States Pharmacopoeia for medical or breathing oxygen. (Compressed oxygen is not used in atmosphere-supplying respirators or in open circuit SCBAs that have previously used compressed air).
- Compressed breathing air shall meet the specifications for Type 1-Grade D breathing air as described in the Compressed Gas Association Commodity Specification G-7.1-2011, in conformance with the parameters listed below:
    1. Oxygen content of 19.5% to 23.5% by volume (atmosphere air);
    2. Hydrocarbon content of 5 milligrams per cubic meter (mg/m^3) of air or less;
    3. Carbon monoxide content of 10 parts per million (ppm) or less;
    4. Carbon dioxide content of 1,000 ppm or less;
    5. Moisture content of cylinder does not exceed a dew point of -50 $^{\circ}$ Fahrenheit (F) at one atmosphere; and
    6. Lack of noticeable odor.

Certifications - When breathing air cylinders are filled/refilled by vendors, a certification of air quality shall be obtained for each cylinder or batch of cylinders. These certifications shall be maintained in accordance with the records retention requirements and be available at each field or facility office. Where breathing air cylinders are refilled using COGCC breathing air compressors, records of maintenance and air quality testing results shall be maintained.

Fittings - Couplings and fittings used for breathing air lines shall be incompatible with all other fittings used at COGCC field and plant facilities. Hansen fittings shall be provided on all breathing air hose lines and breathing air equipment (bottles, respirators, etc.).

Cylinders - Cylinders shall be tested and maintained in accordance with the Shipping Container Specification Regulations of the US Department of Transportation (49 CFR Parts 173 and 178).

Compressors – When used, compressors shall be constructed and located to avoid the entry of contaminated air into the fresh air supply intake and shall be equipped with suitable in-line sorbent beds and filters to assure that breathing air quality is met, and that the dew point at line pressure is 10º Celsius (18º F) below the ambient temperature.

I. Sorbent beds shall be tagged indicating the change date and the person authorized to perform the change.

II. A carbon monoxide alarm shall be used to monitor carbon monoxide levels in air from compressors used to refill cylinders and/or to provide breathing air for personnel.

11.6.8 CLEANING, INSPECTION, AND STORAGE

11.6.8.1 CLEANING AND DISINFECTION

Respirators shall be cleaned and disinfected in accordance with the manufacturer-approved methods. The mandatory cleaning schedules for respirators are as follows:

- **Exclusive Use** - Respirators issued for the exclusive use of an employee shall be cleaned and disinfected as often as necessary to be maintained in a sanitary condition;
- **Common Use** - Respirators used by more than one employee shall be cleaned and disinfected after each use. If an employee is using a respirator for an extended period of time, it may be treated as an exclusive use respirator until the task(s) is completed;
- **Emergency Respirators** - Respirators maintained for emergency use shall be cleaned and disinfected after each use and additionally as needed to maintain them in a sanitary condition; and
- **Fit Testing and Training** - Respirators used in fit testing and training shall be cleaned and disinfected after each use.

11.6.8.2 INSPECTION

All respirators shall be inspected according to the following:

- Routine use respirators shall be inspected before each use and during cleaning;
- If the respirator is also used as an emergency use respirator it shall be inspected accordingly;
- Emergency use respirators shall be inspected at least monthly and checked for proper function before and after each use; and

- Emergency escape-only respirators shall be inspected before being carried into the workplace for use, or if stored in the work areas, shall be inspected as emergency use respirators.

Respirator inspections shall include the following:

- A check of respirator function, tightness of connections, and condition of the various parts (e.g., seals, face piece, head strap, valves, cartridges, etc.);
- A check of elastomeric parts for pliability and signs of deterioration;
- Verification that air cylinders are maintained full and shall be refilled when below 90% of the manufacturer's recommended pressure level; and
- Verification that all filters, cartridges, and canisters (where provided) are properly labeled and color-coded with the NIOSH-approved label and that it is legible.

Emergency use respirator inspections shall be documented with the following information:

- The date the inspection was performed;
- The name of the inspector;
- The findings and remedial action, if any;
- The serial number or other identifying means; and
- This information shall be attached to the respirator or shall be maintained in a paper or in an electronic file.

Respirators that cannot be repaired shall be taken out of service and discarded.

11.6.8.3 STORAGE

Respirators shall be stored to protect them from physical and chemical damage, contamination, dust, sunlight, excessive temperatures, and excessive moisture. Face pieces shall be stored to prevent deformation of the seal or exhalation valves.

Emergency respirators shall be:

- Accessible from the work area;
- Stored in clearly marked compartments readily available to personnel; and
- Stored in accordance with any specific manufacturer's instructions.

APPENDIX A

HAZARD ASSESSMENT FORM

HAZARD ASSESSMENT FORM

Workplace Location: _____ Date:_____

SOURCE	ASSESSMENT OF HAZARD	REQUIRED PPE

I certify by signing this document that a hazard assessment has been performed at the above named workplace.

_____

Print Name

_____ _____

Signature Date

NOTE: Send a copy of this completed form to your Supervisor.

APPENDIX B

DEFINITIONS

Air-line Respirator - An atmosphere-supplying respirator for which the atmosphere is supplied to the respirator through a hose from a source not carried by the wearer. An emergency egress bottle with a minimum 5-minute emergency air supply must be integral with the respirator. Air-lines for respirators shall not exceed 100 feet in length unless approved by NIOSH in accordance with the manufacturer's certification for the respirator.

Air-Purifying Respirator - A respirator with a cartridge or a canister that removes specific air contaminants by passing ambient air through an air-purifying element.

Atmosphere-Supplying Respirator - A respirator that supplies the user with breathing air from a source independent of the ambient atmosphere.

Common-Use Respirator - A respirator available for use by more than one employee.

Emergency - An unintentional incident that results in the disruption of normal activities and may include an actual or potential uncontrolled release of an airborne contaminant, fire, explosion, injuries and/or property damage.

Emergency-Use Respirator - A respirator placed in or near the work area for use in an emergency.

Employee Exposure - The level of exposure to an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-Service-Life Indicator - A system that warns the respirator user of the approach of the end of adequate respiratory protection.

Engineering Controls - Control measures utilized to prevent or reduce atmospheric contamination at the source by confinement, enclosure, local ventilation, dilution ventilation and substitution of less toxic materials (or other acceptable methods).

Escape-Only Respirator - A respirator which is acceptable for use only for emergency escape from a developing hazardous atmosphere.

Exclusive-Use Respirator - A respirator assigned to and used by only one employee.

Fit Test - The use of an approved protocol to evaluate the effectiveness of the seal of a respirator to the face of an individual.

Immediately Dangerous to Life and Health (IDLH) - An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere (e.g., a concentration of oxygen of less than 19.5%).

LCHP – Licensed Health Care Professional.

Negative-Pressure Respirator - A respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen-Deficient Atmosphere – An atmosphere with less than 19.5% oxygen by volume.

Positive Pressure Respirator - A respirator in which the pressure inside the respiratory inlet overing exceeds the ambient air pressure outside the respirator.

Program Administrator - A designated individual who is responsible for the day-to-day administration and evaluation of this Program. These persons are qualified to recognize, evaluate, and control hazards in the workplace.

Qualitative Fit Test (QLFT) - A pass/fail test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

Quantitative Fit Test (QNFT) - An assessment of the adequacy of the respirator fit by numerically measuring the amount of leakage into the respirator.

Respirator Use Area - A designated work area where respiratory protection is required to protect employees from a hazardous atmosphere.

Self-Contained Breathing Apparatus (SCBA) - An atmosphere-supplying respirator for which the source of breathing air is designed to be carried by the wearer.

Service Life - The period of time a respirator, filter or sorbent or other respiratory protective device provides adequate respiratory protection.

Standby Personnel - A person(s) outside of the respirator use area who has been trained and is responsible for monitoring the activity of personnel inside the respirator use area and the status of the air supply for air-line respirators.

Supplied-Air Respirator (SAR) - A self-contained breathing apparatus (SCBA) or air-line respirator.

User Seal Check - An action conducted by the respirator user to determine if the respirator is properly seated to the face and to verify proper valve operation

12.0 CONFINED SPACES

COGCC management does not anticipate staff needing to enter confined spaces during normal day-to-day job tasks.

The Confined Space Program (Program) has been prepared for the use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that employees are protected from any hazards posed by confined spaces in the workplace. It is important that all COGCC employees who may enter any sort of a confined space are adequately trained regarding the possible hazards and appropriate safety procedures.

Over 60 percent (%) of confined space fatalities are would-be rescuers who enter the confined space to help another person. It is important that all employees understand the hazards of confined spaces, even if they never plan to enter one.

12.1 Purpose

The purpose of the Program is to help COGGC staff identify permit-required confined spaces and need for confined space entry permits that contractors may need to employ while performing tasks related to COGCC projects.. The program establishes an entry permit system that ensures hazards are evaluated and proper precautions are taken to ensure employee safety prior to and during confined space entry operations. The Program has been developed to comply with the requirements established by 29 CFR Part 1910.146 and the United States Occupational Safety & Health Administration (OSHA) rule 1926.1200., *Confined Spaces in the Construction Industry*.

12.2 Scope

As stated before COGCC does not anticipate staff needing to enter confined space during normal day-to-day job tasks. However, should the exception arise, this plan applies to COGCC employees who could work in confined spaces. This plan is trained at the awareness level. In the case if, COGCC employee's need Confined Space entry training. A hands on training will be required before any confined space is entered. All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Plan.

OSHA defines a Confined Space as a space that:

Is large enough and so configured that an employee can bodily enter and perform assigned work; and

Has limited or restricted means for entry or exit (e.g., tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and

Is not designed for continuous employee occupancy.

The COGCC will identify permit-required confined spaces and personnel shall follow the safe work practices and procedures outlined in this program. A Confined Space Permit must be used

to evaluate and document hazards associated with entering a confined space. If the hazards cannot be eliminated, control measures will be implemented to ensure the safety of personnel entering the confined spaces.

The provisions of this program apply to both permit-required confined spaces and non-permit-required confined spaces. COGCC employees will assume that all confined spaces are permit-required confined spaces until it is proven otherwise.

All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Program.

12.3 RESPONSIBILITIES

The following responsibilities are assigned to COGCC Supervisors, Entry Supervisors, Authorized Entrants, Attendants, Testers, and Rescue Services. These terms are defined in 29 CFR Part 1910.146. And the 2015 *Confined Space in the Construction Industry Standard* 1926.1200.

There are five key differences from the construction rule, and several areas where OSHA has clarified existing requirements. The five new requirements include

1. More detailed provisions requiring coordinated activities when there are multiple employers at the worksite (This will ensure hazards are not introduced into a confined space by workers performing tasks outside the space. An example would be a generator running near the entrance of a confined space causing a buildup of carbon monoxide within the space.)

2. Requiring a competent person to evaluate the work site and identify confined spaces, including permit-required spaces.

3. Requiring continuous atmospheric monitoring whenever possible.

4. Requiring continuous monitoring of engulfment hazards. For example, when workers are performing work in a storm sewer, a storm upstream from the workers could cause flash flooding. An electronic sensor or observer posted upstream from the work site could alert workers in the space at the first sign of the hazard, giving the workers time to evacuate the space safely.

5. Allowing for the suspension of a permit, instead of cancellation, in the event of changes from the entry conditions listed on the permit or an unexpected event requiring evacuation of the space. The space must be returned to the entry conditions listed on the permit before re-entry.

12.3.1 RESPONSIBILITIES FOR ALL EMPLOYEES

All COGCC employees are responsible for:

- Being knowledgeable of the provisions of this Program and participating in training when requested;
- Understanding that over 60 percent of confined space fatalities are would-be rescuers;
- Performing assigned duties based on their role in confined space entry operations;
- Adhering to the procedures outlined in this program;
- Participating in post-entry communications with the COGCC Entry Supervisor to determine or note any program deficiencies or hazards confronted or created during the entry.

12.3.2 Responsibilities for Management and Supervisors

COGCC Managers and Supervisors are responsible for:

- Implementing, supporting and enforcing the Confined Space Entry Program;
- Ensuring all employees and applicable contractors are trained and adhere to Permit-Required Confined Space Entry Procedures;
- Assigning the duties and responsibilities for confined space entry procedures;
- Identifying all permit-required and non-permit-required confined spaces at each facility;
- Providing guidance on approved alternate entry procedures and supporting documentation required for utilizing alternate entry procedures;
- Effectively communicating the existence of confined spaces to all exposed employees including contract employees. Note: Signs and labels are the preferred method for marking permit-required confined spaces. The wording should be as follows: DANGER. CONFINED SPACE. ENTER BY PERMIT ONLY.
- Ensuring employees receive adequate training for the job duties they perform;
- Ensuring that necessary steps are taken to comply with the established requirements for entering and performing work within confined spaces;
- Ensuring that employees have the proper equipment for entering confined spaces;
- Conducting periodic audits of Confined Space Entry procedures, Safe Work Permits and Alternate Entry Procedures certifications, and correcting any deficiencies that are noted; and
- Maintaining inspection records by appointed person

12.3.3 RESPONSIBILITIES for Entry Supervisors

COGCC Confined Space Entry Supervisors (CSEVs) are responsible for:

- Knowing the hazards that could be encountered during the entry, including hazard exposure pathways (e.g., skin contact, inhalation, etc.), exposure symptoms or signs, and the consequences of an exposure;
- Communicating tasks, entry procedures, and hazards of the confined space to all employees and contractors involved in the job in a pre-entry meeting;
- Signing the completed Safe Work and Confined Space Entry Permits (Appendix A) at the time of assuming the CSEV responsibilities;
- Verifying that the appropriate entries have been made on the Safe Work and Confined Space Entry Permits, that all tests specified on the permit have been conducted, and that all

precautions, procedures, and equipment specified on the permit are in place before signing the permit and allowing entry to begin;
- Coordinating all entry operations;
- Terminating the entry, documenting any occurrence of a non-authorized condition on the Safe Work and Confined Space Entry Permits, and ensuring the permits are cancelled properly;
- Removing unauthorized individuals who enter or who attempt to enter the permit space during entry operations;
- Ensuring proper precautions and procedures have been implemented for the protection of employees working in or near the permit-required confined space;
- Conducting post-entry communications with COGCC employees and contract employees involved in the permit-required confined space entry to determine if there were any program deficiencies or hazards confronted or created during the entry and documenting such hazards or deficiencies on the Entry Permit;
- Completing and approving the "Alternate Entry Procedures Certification Form" (Appendix B) and ensuring that all conditions are met before personnel enter any permit-required confined space using alternate entry procedures;
- Determining if non-entry rescue is feasible or if a rescue service will be used (See Rescue section);
- If non-entry rescue is feasible, ensure entrants are properly equipped with rescue equipment and adequate retrieval systems are in place;
- If a rescue service is used, confirm that the rescue service is onsite and that the means for summoning them are operable (e.g., does the cell phone work at that location?).

12.3.4 Responsibilities for All Authorized Entrants

Authorized Entrants are responsible for:

- Knowing the hazards that could be encountered during the entry, including hazard exposure pathways (e.g., skin contact, inhalation, etc.), exposure symptoms or signs, and the consequences of an exposure;
- Knowing how to properly use all equipment necessary to perform the entry and complete the task safely (e.g., rescue/retrieval equipment, lighting, monitoring equipment, communications equipment, etc.);
- Refusing to enter a permit-required confined space if they do not feel sufficiently trained or that the appropriate resources are not available;
- Communicating with the attendant so the attendant can monitor the entrants' status and the attendant can alert the entrants of the need to evacuate the permit space if necessary;
- Alerting the attendant when warning signs or symptoms of exposure to a dangerous situation are recognized or whenever a prohibited condition is detected; and
- Immediately exiting from the permit space when instructed to do so by either the attendant or the entry supervisor, when any warning sign or symptom of exposure to a dangerous situation has been recognized, upon detection of a prohibited condition, or upon the activation of an evacuation alarm.

12.3.5 RESPONSIBILITIES FOR ATTENDANTS

Attendants are responsible for:

- Knowing the hazards that could be encountered during the entry, including hazard exposure pathways (e.g., skin contact, inhalation, etc.), exposure symptoms or signs, and the consequences of an exposure;
- Being aware of possible behavioral effects of hazard exposure to authorized entrants;
- Communicating with the authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space if necessary;
- Continuously maintaining an accurate count of authorized entrants in the permit space;
- Remaining immediately outside of the permit space during entry operations until relieved by another attendant;
- Observing activities inside and outside of the permit space to determine if it is safe for entrants to remain in the space;
- Ordering authorized entrants to evacuate the permit space immediately if a prohibited condition, behavioral effects indicating hazard exposure to the authorized entrants, or a situation outside the confined space that could endanger the authorized entrants are detected and the attendant cannot effectively and safely perform all of the required and delegated duties.
- Performing non-entry rescues utilizing retrieval lines, whenever possible;
- Summoning rescue and emergency services as soon as it is determined that entrants may need assistance evacuating the space;
- Warning unauthorized persons approaching a permit-required space to stay away while entry is underway and to advising them to leave immediately if they have attempted to enter;
- Informing the authorized entrants and the supervisors if unauthorized persons enter the permit space; and
- Performing no other duties that might interfere with monitoring and protecting the authorized entrants.

12.3.6 RESPONSIBILITIES FOR PERMIT ISSUERS

Permit Issuers shall be responsible for:

- Knowing the hazards that could be encountered during the entry, including hazard exposure pathways (e.g., skin contact, inhalation, etc.), exposure symptoms or signs, and the consequences of an exposure;
- Issuing the Confined Space Entry Permit that authorizes entry into a permit-required confined space and ensuring the accuracy of all information contained on the permit;
- Terminating the entry if an emergency arises or when hazardous conditions exist;
- Canceling the permit as indicated under “Entry Permit Cancellation”;
- Verifying that non-entry rescue is feasible or if a rescue service is used, confirm that the rescue service is readily available and the means for summoning them are operable;
- If the Permit Issuer is also the Entry Supervisor, then all responsibilities under Entry Supervisor shall also be performed.

12.3.7 RESPONSIBILITIES FOR ATMOSPHERIC TESTERS

Atmospheric Testers shall be responsible for:

- Being competent (by virtue of training and/or experience) in the field calibration and use of the instrumentation to be utilized;
- Performing required atmospheric monitoring for every permit-required confined space entry;
- Knowing the hazards that could be encountered during the entry, including hazard exposure pathways (e.g., skin contact, inhalation, etc.), exposure symptoms or signs, and the consequences of an exposure;
- Advising entry personnel of monitoring results;
- Ensuring that monitoring results are accurately documented on the Confined Space Entry Permit.

12.3.8 RESPONSIBILITIES FOR RESCUE SERVICES

Rescue Services shall be responsible for:

- Knowing the hazards that could be encountered during the entry, including hazard exposure pathways (e.g., skin contact, inhalation, etc.), exposure symptoms or signs, and the consequences of an exposure;
- Evaluating permit spaces and developing appropriate rescue plans for rescuing entrants from inside the space;
- Performing rescue operations, which may require entry into the permit space;
- Properly using the PPE and rescue equipment necessary to rescue personnel from confined spaces;
- Maintaining proficiency in the rescue of personnel by practicing simulated rescues at least once every twelve (12) months;
- Maintaining proficiency in the rescue of personnel from spaces with configurations similar to the subject confined space;
- Receiving basic first-aid and cardiopulmonary resuscitation (CPR) training and ensuring that at least one member of each rescue team holds current certification in first-aid and CPR.

12.4 TRAINING

Sufficient training will be provided for each person affected by this program. Training must be thorough enough to ensure that employees can safely perform their assigned duties or responsibilities in accordance with all requirements of this program.

Training will be provided before an employee is assigned confined space entry duties, when there is a change in assigned duties or a change in confined space operations that present a hazard for which training has not been previously conducted, and whenever deficiencies are noted in any permit space entry operation. Periodic refresher training shall be provided for all personnel who are assigned confined space entry responsibilities.

12.4.1 General Training for all Confined Space Employees

All COGCC employees responsible for supervising, planning, entering, or participating in confined space entry and/or rescue shall be trained in the following areas:

- General hazards associated with confined spaces;
- Specific confined space hazards associated with each facility or location;
- Terminology and definitions;
- Program requirements for standard entry procedures and alternate entry procedures;
- The reason for, proper use, and limitations of PPE and other safety equipment required for entry into confined spaces;
- Criteria and requirements for non-entry and entry rescue;
- Methods to prepare a confined space for entry, including necessary equipment, proper isolation, and methods for eliminating or controlling hazards;
- The Confined Space Entry Permit system and other procedural requirements for conducting a confined space entry;
- Duties and responsibilities as a member of the confined space entry team;
- How to recognize probable air contaminant overexposure symptoms in themselves and co-workers;
- Methods for alerting attendants;
- Responding to emergencies; and
- Physical barriers to protect entrants and to keep unauthorized personnel from inadvertently entering the confined space.

12.4.2 Training for Entry Supervisors and/or Permit Issuers

Training for Entry Supervisors and/or Permit Issuers shall include the following (in addition to the training requirements under General Training):

- A thorough discussion of the Responsibilities for Entry Supervisors/Permit Issuers section of the Program;
- A detailed explanation of the permit system and other procedural requirements for conducting a confined space entry;
- Identification of confined space hazards;
- Pre-entry considerations;
- An explanation of atmospheric monitoring procedures and results;
- Selection of proper PPE; and
- Post entry evaluations to ensure that any deficiencies in the Program are noted and addressed.

12.4.3 Training for Attendants

Training for Attendants shall include the following (in addition to the training requirements under General Training):

- A thorough discussion of the Responsibilities for Attendants section of the Program;
- Means to maintain an accurate count of entrants within the confined space;

- Dealing with unauthorized personnel;
- Proper use of equipment used for communicating with entry and/or emergency/rescue personnel;
- Hazard recognition;
- Conditions for ordering immediate evacuation of entrants;
- Performing non-entry rescue operations;
- Summoning rescue or other emergency services;
- Requirements to never enter a confined space to rescue an entrant without the appropriate PPE and someone replacing him/her as the Attendant.

12.4.4 TRAINING FOR ATMOSPHERIC TESTERS

Training for Atmospheric Testers shall include the following (in addition to the training requirements under General Training):

- A thorough discussion of the Responsibilities for Testers section of the Program;
- The proper use of atmospheric monitoring instruments, including field calibration;
- A thorough knowledge of the work being performed;
- Recognition of hazardous contaminants anticipated in the confined space;
- Any process which could significantly alter the original conditions inside or outside the confined space;
- Duties and responsibilities of an Atmospheric Monitoring Person (Tester).

12.4.5 TRAINING FOR EMERGENCY RESPONSE PERSONNEL

Training for Emergency Response Personnel shall include the following (in addition to the training requirements under General Training):

- A thorough discussion of the Responsibilities for Emergency Response Personnel section of the Program;
- The rescue plan and procedures developed for each type of confined space they are anticipated to encounter;
- Use of emergency rescue equipment;
- Basic first aid and CPR techniques;
- Use of appropriate PPE;
- Participation in mock confined space rescues.

12.5 DOCUMENTATION

Employee training records, copies of the Confined Space Program, Confined Space Entry Permits, Annual Inspection Reports, and Alternate Entry Procedure Certifications must be retained for the length of time specified in the following table.

Permits for all confined space entries must be retained for 360 months since they contain atmospheric monitoring results and are considered industrial hygiene monitoring records.

DOCUMENT	CUSTODIAN	RETENTION
Safe Work Permit (Confined Space Entry & Attachments)	Appropriate COGCC Office	360 months
Alternate Entry Procedure Certification	Appropriate COGCC Office	360 months
Employee Training Records	Appropriate COGCC Office	36 months after separation
Annual Inspection Reports/Information	Appropriate COGCC Office	84 months
Confined Space Entry Program	Appropriate COGCC Office	12 months after revised, superseded, or obsolete

12.6 PROCEDURES

12.6.1 CONFINED SPACE PREPARATION AND ENTRY PROCEDURES

12.6.1.1 UNAUTHORIZED ENTRIES

Measures will be taken to prevent unauthorized entries into permit-required confined spaces. This will be accomplished, at a minimum, through one or more of the following:

- Posting of danger signs, labels, and/or physical barriers;
- Restricting access so the only means of entry requires tools or keys; and
- Training and orientation programs (General Awareness).

12.6.1.2 PRE-ENTRY MEETING

A pre-entry meeting must be conducted with all persons involved in the proposed confined space work. The meeting shall cover the basic steps for the confined space entry, a review of the specific conditions and precautions to be listed on the entry permit, a review of expected and potential hazards, and Safety Data Sheets (SDSs) for any products to which the entrants may be exposed. The information should be recorded on the Safe Work Permit.

NOTE: The Safe Work Permit and the Confined Space Entry Permit are not interchangeable documents. BOTH forms must be completed for Permit-Required Confined Space entries. The Safe Work Permit is a separate document that may be used for purposes other than Confined Space entries. The Confined Space Entry Permit is attached as Appendix A.

12.6.1.3 ISOLATION AND LOCKOUT/TAGOUT

Before entry is allowed into a permit-required confined space, the space must be properly isolated to eliminate or control hazards. All pipes and tubing leading into or out of the space must be skillet blinded, have a double block and bleed, or be physically disconnected as close to the confined space as possible or have sections removed. When lines are disconnected, they must be blind flanged, capped, or plugged.

An alternative to this procedure is to shut-in the facility, bleed all pressurized lines or vessels to atmospheric pressure, and have a valve closed (locked and tagged) on each line connected to the space, as near to the space as possible. Continuous atmospheric monitoring may be necessary during this procedure. Isolation procedures will include work practices requiring the physical verification that the bleed or vent valve is functioning properly and not plugged.

ALL ENERGY ISOLATIONS (lockout/tagout) must be performed in accordance with established COGCC procedures (see Section 10 of this HASP, Lockout/Tagout Program).

12.6.1.4 CLEANING

Depending upon the nature of the contents, the confined space should be emptied and made as clean and free as possible of residue. This should be done by hot- or cold-water washing, steaming, chemical neutralization, or by purging with air or nitrogen, with vapors being safety vented away from the confined space.

After the material in the confined space has been evacuated, the remaining sludge should be removed to the greatest extent possible, working from the outside of the confined space.

Materials removed from the confined space should not be allowed to flow onto, contaminate, or pollute nearby areas. Disposal of the materials should be in accordance with the state and local regulations.

12.6.1.5 VENTILATION

The confined space must be ventilated to remove toxic and/or explosive vapors. The space will be continuously ventilated if the work in progress tends to create fumes (e.g., welding, cutting, coating, removal of sludge) or if necessary to maintain an acceptable atmosphere. Ventilation may also be required to control temperature conditions within the space.

Oxygen or inert gases shall not be used to ventilate a confined space. When mechanical ventilation is necessary, the equipment should be suitable for use in hazardous locations and shall be bonded, when applicable, to avoid a static charge buildup. Precautions are to be taken to ensure that only fresh uncontaminated air is being forced into the space. In some instances, it may be necessary to use a flexible duct to carry expelled gases away from the work area.

12.6.1.6 ATMOSPHERIC MONITORING (TESTING)

A person competent in the use of monitoring instruments will be designated to test for hazards within the confined space prior to entry. The tests should be performed in the following sequence using a calibrated detection instrument and documented on the COGCC Safe Work Permit form and Confined Space Entry Permit (Appendix A):

- Oxygen (O2) concentration;
- Flammable concentration;
- Toxic substance concentration (e.g., hydrogen sulfide [H2S], sulfur dioxide [SO2], benzene, etc.);
- Naturally Occurring Radioactive Material (NORM); and
- Any other hazards condition which might be suspected.

1.1.1.7 Acceptable Entry Conditions

Oxygen (O2) Concentration

- Less than 16% - Entry shall NOT be made into an atmosphere containing less than 16% oxygen by volume except under emergency circumstances to perform rescue operations utilizing specialized equipment (e.g., supplied air respirators) as necessary to ensure the safety of personnel.
- 16% - 19.4% - Entrants must wear supplied air respirators.
- 19.5% - 23.5% - Confined space entry without a supplied air respirator is acceptable, provided that all other exposure limits are met (i.e., Lower Explosive Limit [LEL], toxicity, etc.).
- Greater than 23.5% - Entry shall NOT be made into an oxygen-enriched atmosphere except under emergency circumstances to perform rescue operations utilizing specialized equipment (e.g., supplied air respirators) as necessary to ensure the safety of personnel.

1.1.1.8 Flammable Concentration

The Lower Explosive Limit (LEL) is the lowest concentration at which a gas or vapor is flammable or explosive at ambient conditions.

- 0% - 10% LEL – Entry without supplied air respirator is acceptable provided that all other occupational exposure limits are not exceeded (i.e., oxygen, toxicity, etc.). Hot work is NOT permitted above 0% LEL.
- Greater than 10% LEL – Entry shall NOT be made into an atmosphere in excess of 10% of the LEL except under emergency circumstances to perform rescue operations utilizing specialized equipment as necessary to ensure the safety of personnel.

1.1.1.9 Toxic Substance Concentration

Toxic substances may include hydrogen sulfide (H_2S), sulfur dioxide (SO_2), benzene, etc. Entry without a supplied air respirator is acceptable, provided that all toxic contaminant concentrations are within the established occupational exposure limits and there is no oxygen deficiency. For contaminant concentrations in excess of established limits, entry is authorized when appropriate respiratory protection equipment is worn. See the COGCC Respiratory Protection Program for detailed requirements and appropriate equipment selection.

1.1.1.10 Naturally Occurring Radioactive Material (NORM)

Exposure to Naturally Occurring Radioactive Material (NORM) is possible throughout several regions, including the state of Colorado. Appropriate measures must be taken to restrict or limit employee exposure. Entry into a confined space will not be allowed without the use of appropriate PPE if the dose rate inside the vessel/confined space exceeds 50 micro Roentgens per hour (μR/hr) or until steps have been taken to reduce the NORM level to below the allowable limit. See the COGCC NORM Program for additional information on evaluation and control of personnel exposures to NORM.

1.1.1.11 Other Considerations

Other conditions that may require additional precautions to ensure safe confined space entry include:

- Temperature extremes;
- Vapors or fumes generated by job tasks;
- Chemical irritants;
- Noise levels;
- Poor lighting;
- Falling objects;
- Slipping and tripping hazards;
- Moving parts;
- Poisonous snakes; scorpions, insects, and spiders.

12.7 Equipment Required For Confined Space Entry

12.7.1 Personal Protective Equipment

PPE appropriate to the hazards must be worn when working in a confined space. Appropriate PPE may include head protection, steel-toed footwear, approved eye and face protection, protective clothing, respiratory equipment, hearing protection, personal monitors, and a safety harness (chest or full body) attached to a lifeline.

NOTE: Refer to other COGCC Programs (e.g., Respiratory Protection, Personal Protective Equipment, Hydrogen Sulfide, etc.) for more information detailed specific requirements, necessary training, and limitations for use of PPE.

12.7.2 COMMUNICATIONS EQUIPMENT

Communications equipment must be provided in those instances where direct visual contact or other effective means of communication cannot be maintained at all times between the attendant and all entrants. The communications equipment used shall meet minimum electrical classification standards for the area. Cell phones should be tested to confirm that there is adequate reception in the area of the confined space. Communications information shall be documented on the COGCC Safe Work Permit form.

12.7.3 LIGHTING

Adequate lighting must be provided where necessary to enable entrants to safely enter and complete the assigned task. The lighting equipment used shall meet minimum electrical classification standards for the area.

NOTE: All portable electrical lighting and equipment shall be protected with ground fault circuit interrupter (GFCI) protection. Where portable generators are used for lighting power supply, low voltage lighting (24 volts or less) shall be used.

12.7.4 BARRIERS

Sufficient barriers will be provided around the permit-required confined space opening to:

- Prevent unauthorized and accidental entry (falls) into the confined space; and
- Protect the entrants inside the confined space from objects and persons outside of the confined space.

12.7.5 OTHER EQUIPMENT

Equipment necessary to ensure safe entrance to and exit from the permitted space shall be provided (e.g., ladders, mechanical lifting devices, scaffolding, powered platforms, etc.).

Powered tools and equipment used in the permit space must meet minimum electrical classification standards and plugged into a circuit protected by a GFCI to protect personnel from electrical shock.

Battery-powered electrical devices shall be approved for use in accordance with the area classification.

12.8 Rescue

12.8.1 NON-ENTRY RESCUE

Non-entry rescue is the preferred method for use at the COGCC. Non-entry rescue is performed from outside the confined space utilizing an acceptable retrieval system when an entrant self-

evacuate. Determining the appropriate means for rescuing entrants safely shall be part of the planning process for every permit-required space entry. All rescue plans and operations must be documented on a COGCC Safe Work Permit.

Factors that may make non-entry rescue impractical include:

- An entrant may become trapped or entangled because of the internal configuration of the space;
- The use of non-entry rescue equipment (e.g., body harness or wristlets and lifeline) is impractical;
- The entrance into the space is elevated or positioned so that non-entry rescue would be inhibited;
- The permit space is entered vertically and a mechanical retrieval device cannot be utilized or may be ineffective;
- Personnel attending the entrants' lifelines are not physically capable of removing entrants from the confined space.

When non-entry rescue is not practical, a trained and qualified rescue service must be provided onsite while the entry is taking place.

12.8.2 RETRIEVAL SYSTEMS

The use of a retrieval system enables the rescue of the entrants from outside the space in the event self-removal is not possible. Whenever an authorized entrant enters a permit-required space, a retrieval system or methods will be used, unless the retrieval equipment increases the overall risk of entry or would not contribute to the rescue. Retrieval systems must be documented on a COGCC Safe Work Permit.

Retrieval systems should meet the following requirements:

- Each authorized entrant will use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level or above the entrant's head. Wristlets may be used if it is impractical to use a chest or full body harness.
- The other end of the retrieval line will be attached to a mechanical device or fixed point outside of the permit-required space in such a manner that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.
- A mechanical device shall be available to retrieve personnel from vertical permit-required spaces more than 5 feet deep (such as a storage tank or vessel with no side entrance). Mechanical retrieval devices must be approved for rescue use.

12.8.3 RESCUE SERVICES

When the use of a retrieval system is not possible or would not be effective, and other non-entry rescue methods are not available or are ineffective, then a qualified rescue service (two or more persons properly trained & equipped) will be present and able to enter the space immediately. Rescue services must be documented on a COGCC Safe Work Permit.

The attendant is responsible for summoning the rescue service. The rescue service is responsible for entering the permit space in order to retrieve the entrants. The rescue service may or may not be COGCC personnel.

During the rescue, at least one person must be designated to remain outside the confined space and at least one person participating in the rescue will have a valid (current) first aid/CPR certification. The attendant can perform entry rescue ONLY when trained as a rescuer and relieved by another attendant.

SDSs must be made available to the medical facility providing treatment to entrants injured and/or exposed to a substance for which the COGCC is required to maintain an SDS. If the chemical is owned by another COGCC, an SDS must be obtained from them and sent to the hospital with the injured worker.

If non-COGCC employees provide rescue services, they will be informed of the hazards present where rescue may be required, and they will be afforded access to all permit-required spaces from which rescue may be necessary for the purpose of training and pre-planning rescue procedures.

12.9 Entry Permit

12.9.1 PERMIT ISSUANCE

Whenever a permit required confined space is to be entered, a Confined Space Entry Permit (Appendix A) AND a Safe Work Permit must be completed and signed by the Entry Supervisor and Permit Issuer prior to entry. In some cases, the same individual may serve both roles.

The Safe Work Permit is both an authorization for and a record of the confined space entry. The permit must be posted at the confined space entry point until the job is completed. All cancelled confined space entry Safe Work Permits shall be maintained at the COGCC Corporate Office.

When Hot Work is to be performed inside a permit-required confined space, the Hot Work must be addressed on the Safe Work Permit.

12.9.2 PERMIT CONTENT

Information for a Safe Work Permit

Each section of the Safe Work Permit used for a confined space entry shall be properly completed with ALL required information and necessary approvals prior to starting the job. The Safe Work Permit contains the following sections:

- Work Request;
- Hazard Identification;
- Work Preparation;
- Required PPE;
- Emergency Preparedness;
- Atmospheric Monitoring;
- Excavations;
- Additional Permit Conditions;
- Isolation Verification;
- Worker Briefing;
- Confined Space Entry;
- Permit Authorization/Validation; and
- Permit Cancellation/Post Entry Review

Information for a Confined Space Entry Permit

Minimum information requirements for a Confined Space Entry Permit (Appendix A):

- The identity and location of the space;
- The purpose of the entry;
- The date and authorized duration;
- Names of authorized entrants;
- Names of attendants utilized;
- Signature of the permit issuer and signatures of any subsequent entry supervisors;
- Hazards of the confined space;
- Measures used to isolate and to eliminate or control the hazards before entry;
- Acceptable entry conditions;
- Results of all required monitoring, the initials of the testers, and the times the tests were performed;
- The information necessary for summoning rescue and emergency services (i.e., name, telephone number, etc.);
- The means of communication to be used between entrants and attendants;
- List of required equipment for the entry;
- All other relevant information; and
- Any additional permits issued relative to the entry.

Each section of BOTH permits must be fully completed, although it is permissible to refer to the other document for any duplicate information.

12.9.3 PERMIT CANCELLATION

The Confined Space Entry Permit will be cancelled under the following conditions:

- Upon completion of the job;
- At the expiration of the authorized time period; or
- Upon the occurrence of any condition that may present a hazard or unsafe condition not specifically addressed by the permit.

Confined Space Entry Permits are only valid for one work shift. The Confined Space Entry Permit must be cancelled at shift change and a new Confined Space Entry Permit must be issued.

It shall be the responsibility of the Permit Issuer to cancel the entry permit. Upon cancellation of a permit, the permit-required confined space will not be re-entered until it has been re-tested and a new permit is issued. Any occurrence of a non-authorized condition (unsafe condition or hazard) shall be noted on the permit at the time of cancellation. This information shall be used to facilitate review of entry procedures established under this program.

Post entry communications between the employees involved in the confined space entry task and the persons responsible for the planning of the confined space entry will be conducted to ensure that any deficiencies or hazards confronted during the entry are noted and addressed.

Communications, hazards, recommendations, etc. should be documented on the permit form.

12.10 program review

A review of the Confined Space Entry Program and entry operations will be performed as follows:

- By a qualified person when there is reason to believe that the measures taken under this program may not protect employees and the procedures must be revised to correct deficiencies found before subsequent entries are authorized;
- On an annual basis, or more frequently if necessary, by EH&S personnel using cancelled permits, alternate entry procedure certifications, and other associated documentation to ensure that entrants are protected from permit space hazards; and
- Periodically, by affected Supervisors, to evaluate confined space entry procedures and review cancelled entry permits and associated documentation to ensure that correct entry procedures are being followed and personnel are protected from permit-required space hazards.

Periodic supervisory reviews and annual EH&S reviews shall be documented in the audit section of the Safe Work Permit used for a permit-required confined space entry or Alternate Entry Procedure Certification.

Inadequacies in confined space entry procedures shall be brought to the attention of the appropriate Supervisor and corrective actions shall be taken immediately to correct program deficiencies and ensure the safety of personnel entering confined spaces.

12.11 Alternate Entry Procedures

12.11.1 APPLICATION

In rare instances, there may be permit-required confined spaces where the ONLY hazard is an actual or potential hazardous atmosphere. In these instances, “Alternate Entry Procedures” may be appropriate and can be utilized in lieu of the standard permit-required confined space entry procedures previously discussed.

NOTE: Alternate procedures may ONLY be used in rare cases where ALL the requirements discussed below are met. Consult with a Supervisor prior to using Alternate Entry Procedures.

12.11.2 REQUIREMENTS

Alternate Entry Procedures may be utilized entering a permit-required confined space where:

- The ONLY hazard posed by the confined space is an actual or potential hazardous atmosphere;
- The work to be performed will not create any hazards to entrants inside or outside the space while the entry is in progress; and
- By the use of continuous forced air ventilation, the hazardous atmosphere can be eliminated and maintained at levels safe for entry without the use of respiratory protection.

NOTE: Initial atmospheric monitoring of the space must be conducted with the ventilation supply turned off.

12.11.3 ALTERNATE ENTRY PROCEDURES

The following requirements will be observed when entry into a permit-required confined space is undertaken using "alternate entry procedures."

All hazardous energy sources must be properly isolated and lockout/tagout procedures applied in accordance with the COGCC Lockout/Tagout Program.

Conditions making it unsafe to remove an entrance cover must be eliminated prior to the cover being removed. When entrance covers are removed, the openings must be promptly guarded to prevent accidental falls, the entry of unauthorized personnel, and/or foreign objects through the opening.

The internal atmosphere must be tested with a calibrated direct reading instrument for the following conditions and in the order listed:

- Oxygen content
- Combustible gases and vapors
- Toxic air contaminants

NOTE: If it is necessary to enter the space to take measurements or evaluate hazards, procedures established for permit-required confined space entry will be adhered to. There must NEVER be a hazardous atmosphere or a hazardous condition (which can cause death or physical harm) within the space whenever any person is to enter the confined space under alternate procedures.

12.11.4 VENTILATION

Continuous forced air ventilation shall be used as follows:

Employees may not enter the space until the forced air ventilation has eliminated any hazardous atmospheric conditions;

- The forced air ventilation will be directed to ventilate the immediate areas where the employees are, or will be, present within the space and will continue until all employees have left the space; and

  The air supply will be from a clean source and may not increase the hazards in the space.

12.11.5 ATMOSPHERIC MONITORING

Prior to entry, forced air ventilation shall be suspended for a minimum of 15 minutes prior to conducting atmospheric monitoring of the space. Acceptable entry conditions must be observed or entry under alternate procedures will not be permitted.

Prior to entry, verification that the space is safe for entry and that all the measures required above have been taken will be certified through a written and approved Alternate Entry Procedure Certification Form that contains:

- The date and time;
- Location of the space;
- The name of the space to be entered;
- A description of the work to be performed;
- Verification that the space meets ALL required conditions for entry;
- Documentation that atmospheric testing has been performed and that continuous forced air ventilation alone is sufficient to maintain an acceptable atmosphere;
- Documentation that no other hazards exist within the space; and
- Signature of the Entry Supervisor making the certification.

The certification will be made before entry and will be available to each person entering the space.

The atmosphere within the space will be periodically or continuously monitored to ensure that continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere.

Conditions inside and around the space will be continually evaluated for any hazardous condition.

If a hazardous atmosphere or hazardous condition is detected during entry:

- Each employee will leave the space immediately;
- The space will be evaluated to determine how the hazardous atmosphere or hazardous condition developed; and
- Measures will be taken to protect the entrants from the hazards and to prevent recurrence, before any subsequent entry takes place.

APPENDIX A

CONFINED SPACE ENTRY PERMIT
NOTE: This is a 4-page permit.

Permit must have all items completed. Permit is valid for 8 hours only.

Permit must remain at job site until job is completed.

Date/Time Issued:_____ Date/Time Expires:_____

Job site/Space I.D.:_____

Job Supervisor:_____

Equipment to be worked on:_____

_____

Work to be performed:_____

_____

Stand-by personnel:_____

_____

Atmospheric Checks Before Ventilation:

Time _____

Oxygen _____%

Explosive _____% L.F.L.

Toxic _____PPM

Tester's signature:_____

(Continued)

Source Isolation Procedures:

REQUIREMENTS COMPLETED	DATE	TIME
Lock Out/De-energize/Try-out		
Line(s) Broken-Capped-Blanked		
Purge-Flush and Vent		
Ventilation		
Secure Area (Post and Flag)		
Breathing Apparatus		
Resuscitator – Inhalator		
Standby Safety Personnel		
Full Body Harness with "D" ring		
Emergency Escape Retrieval Equipment		
Lifelines		
Fire Extinguishers		
Lighting (Explosive Proof)		
Protective Clothing		
Respirator(s)		
Burning and Welding Permit		
Note: For items that do not apply enter N/A in the blank.		

Ventilation Modification (Check one):

Mechanical: N/A ( ) Yes ( ) No ( )

Natural Ventilation only: N/A ( ) Yes ( ) No ( )

**RECORD CONTINUOUS MONITORING RESULTS EVERY 2 HOURS

Oxygen Percentage: 19.5% to 23.5%

Carbon Monoxide: +35 PPM

Aromatic Hydrocarbon: + 1 PPM * 5PPM

Lower Flammable Limit: Under 10%

Hydrogen Sulfide: +10 PPM *15PPM

Sulfur Dioxide: + 2 PPM * 5PPM

Ammonia: *35PPM

* Short-term exposure limit: Employee can work in the area up to 15 minutes.

+ 8-hr. Time Weighted Avg.: Employee can work in area 8 hrs (longer with appropriate respiratory protection).

Remarks:

Gas Tester Name:_____

Check #:_____

Instruments Used:_____

Model &/or Type:_____

Serial # or Unit #:_____

Communication procedures:_____

Rescue procedures:_____

A Standby Person (Attendant) is required for all Confined Space work.

Entry, standby, and back up persons? Yes No

Successfully completed required training? Yes No

Is training current? Yes No

Safety Standby Person _____

Confined Space Entrants _____

Equipment Being Used (check one):

Direct reading gas monitor – tested: N/A ( ) Yes ( ) No ( )

Safety harnesses, lifelines for entry and standby persons: N/A ( ) Yes ( ) No ( )

Hoisting equipment: N/A ( ) Yes ( ) No ( )

Powered communications: N/A ( ) Yes ( ) No ( )

SCBAs for entry and standby persons: N/A ( ) Yes ( ) No ( )

Protective Clothing: N/A ( ) Yes ( ) No ( )

All electric equipment listed

Class I, Division I, Group D, and Non-sparking tools: N/A ( ) Yes ( ) No ( )

We have reviewed the work authorized by this permit and the information contained within. Written instructions and safety procedures have been received and are understood. Entry cannot be approved if any squares are marked in the "No" column. This permit is not valid unless all appropriate items are completed.

Permit Prepared By: (Field Supervisor) _____(printed name)

Approved By: (Unit Supervisor) _____(printed name)

Reviewed By: _____(printed name)

(signature)

Permit must be kept at job site until work is complete.

Return job site copy to your Supervisor following job completion. Be sure that it is signed and dated.

APPENDIX B

Pre-Entry Hazard Assessment

The purpose of this form is to identify the hazards associated with a confined space and to determine the procedures and safety precautions required for entry into the space. This form is to be used by a trained Confined Space Entry Supervisor (CSES).

Date:		**Location:**		**Type of space:**	
Description of work to be done:					
Name of CSES performing hazard assessment (print):					
CSES signature:					

SECTION I – Hazards Evaluation Checklist

Check those items that are a significant hazard, either because of the potential risk if the hazard is not controlled and the need to ensure that controls are present, or because the hazard is present to an extreme degree.

Hazards		Does the hazard exist or have to potential to develop due to work to be conducted in the space?	Can the hazard be eliminated or controlled? (If Y, briefly describe method of control, e.g., lockout/tagout, ventilation, lighting.)
Process Hazard			
Personal Confinement (Entrapment/Entanglement)			
Stored Energy – Electrical			
Stored Energy – Hydraulic/ Pneumatic			
Stored Energy – Gravity/ Mechanical			
Safety Hazards - Engulfment/Immersion			
Safety Hazards - Electrical Shock			
Safety Hazards - Fire/Explosion			
Safety Hazards – High/ Low Pressure Atmosphere.			
Safety Hazards - Hot/Cold Surface			
Safety Hazards – Slip, Trip, or Fall			
Safety Hazards - Structural Hazard			
Safety Hazards - Visibility/Light Level			
Physical Agents - Heat/Cold			
Physical Agents - Noise/Vibration			
Physical Agents - Biological Hazard			
Physical Agents - Chemical Hazard (Contact w/ Skin, Eyes, etc.)			
Physical Agents – Radiation (Lasers, UV, Microwaves, Radio)			
Physical Agents – Ionizing Radiation			
Other (list)			
Other (list)			

SECTION II – Atmospheric Hazards Checklist

Indicate whether the following atmospheric hazards exist in the space or will be introduced into the space due to the work to be done in the space.

Section 2.5 of the CSP document for more information about atmosphere testing.

Hazards		Does the hazard exist or have the potential to develop due to the work to be done in the space?	Level measured	Equipment used for test. Instrument name and serial number.	Calibration verification. (Date and Time of calibration.)	Can the hazard be eliminated or controlled by ventilation?
Oxygen Deficiency (<19.5%)						
Oxygen Enrichment (>23.5%)						
Fire/Explosion (>10% LEL)						
Carbon monoxide (> 35 ppm)						
Hydrogen sulfide (>10 ppm)						
Other (list)						
Other (list)						
Other (list)						

SECTION III – Decision Tree

1. Are there any serious safety or health hazards identified in Sections I or II?

Yes (Go to Question 2.)

No (If the space is designated as a permit space, it can be reclassified to a non-permit space. Complete Section IV below.)

2. Does the space pose an actual or potential atmospheric hazard?
   Yes (Go to Question 3.)
   No (Go to Question 4.)

3. Is the only hazard in the space an atmospheric hazard that can be controlled by adequate ventilation?

   Yes (You may use the alternate entry procedures)
   No (Permit entry is required.)

4. Can all hazards be eliminated without entry into the space?
   Yes (Space can be reclassified as a non-permit entry. Complete Section IV below.)
   No (Permit entry is required.)

SECTION IV – Reclassification To Non-Permit Space

I certify that the space does not contain or have potential to contain an atmospheric hazard for the duration of this job, and that all other hazards identified have been eliminated by use of controls noted above. The space is reclassified as a non-permit space for the duration of this job as long as all controls initialed above are in place.

Signature of CSES: **Date:**

Proceed with entry taking appropriate safety precautions, as noted on the hazard assessment.

13.0 Excavation and Trenching

The practices and procedures in this section are intended to ensure the safety of all the Colorado Oil and Gas Conservation Commission (COGCC) employees conducting or supervising excavation and trenching operations. An excavation is "any mechanically made cavity or depression in the earth," and a trench is "a depression in the earth with a greater depth than width, and less than 15 feet wide." Definitions are presented as Appendix A. The COGCC requires that COGCC employees and contractors follow the strict OSHA health and safety guidelines associated with working in or being near an excavation or trench. COGCC personnel must be aware of possible physical hazards near and in an excavation or trench, such as heavy equipment, the presence of power and gas lines, cave-ins, confined spaces, and explosions. The chemical hazards include accumulation of hazardous or explosive vapors, oxygen deficiency, and dermal contact with contaminants.

13.1 Purpose

The purpose of the Trenching and Excavation Program (Program) is to establish procedures and guidelines for the protection of COGCC employees who are working in and around excavations and trenches. This program requires compliance with OSHA Standards (CFR 1926.650) for the construction industry.

13.2 Scope

The Program is to be used in conjunction with COGCC Confined Space Entry, Hazard Communication, Lockout/Tagout, Respiratory Protection, and other safety programs or procedures as necessary to ensure employee protection. All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Program.

13.3.0 RESPONSIBILITIES

13.3.1 EMPLOYEE RESPONSIBILITIES:

- In excavations 4 feet deep or more, any personnel entering the excavation must be protected with a system of shoring, sloping, benching or an equivalent method.
- Excavated material shall be placed at least 2 feet away from the edge of the excavation or trench.
- No excavation shall be made beneath the level of the base of any adjacent foundation or structure without shoring.
- Barriers shall be provided at all times to prevent persons from falling into the excavation.
- A safe means of access for every 25 linear feet of work area in an excavation or trench shall be provided.

COGCC personnel shall:

- Stay out of the excavation or trench at all times unless entry is specifically approved by the Competent Person;
- Be no closer than 20 feet away from excavating equipment while being operated;
- Monitor the air with appropriate instruments;
- Use appropriate PPE.
- Visually inspect all excavations before backfilling to ensure that it is safe to backfill.

NOTE: Excavations and trenches can be considered permit-required confined spaces. It is important that the procedures for confined space entry are followed.

13.3.2 COMPETENT PERSON RESPONSIBILITIES

OSHA Standards require that the Competent Person must be capable of identifying existing and predictable hazards in the surrounds, or working conditions which are unsanitary, hazardous, or dangerous to employees, and have authorization to take prompt corrective measures to eliminate these hazards and, if necessary, to stop the work.

A Competent Person is required to:

- Have a complete understanding of the applicable safety standards and requirements;
- Ensure the proper locations of underground installations or utilities, and that the proper utility companies have been contacted;
- Approve design of structural ramps, if used;
- Conduct daily and periodic inspections of excavations and trenches;
- Conduct all air monitoring for potential hazardous atmospheres;
- Determine adequate protective systems (e.g., sloping, shoring, or shielding systems) for employee protection; and
- Conduct soil classification tests and reclassify soil after any condition changes.

13.4 Hazards

The following potential hazards may be encountered by COGCC employees working near or within a trench or excavation:

- Electrocution;
- Gas accumulation to explosive levels;
- Entrapment;
- Equipment; and
- Suffocation.

13.4.1 HAZARD CONTROLS

Before work is performed and before any COGCC employee may enter an excavation, the following items must be checked and confirmed:

- Prior to excavation, the locations and types of underground utilities and obstructions must be determined. This may be accomplished by either contacting the local utility companies or the local "one-call" center for the area. All underground utility locations must be documented on the proper forms. All overhead hazards (surface encumbrances) that create a hazard to employees must be removed or isolated to eliminate the hazard.
- If the excavation is to be over 20 feet deep, it must be designed by a Professional Engineer who is registered in the state where the work will be performed.
- The worksite must be analyzed in order to design adequate protection systems and prevent cave-ins.
- Adequate protective systems will be utilized to protect employees through sloping, shoring, or shielding.
- Workers must be supplied with and wear PPE to ensure protection.
- If work is conducted in or around traffic, employees must be supplied with and wear orange reflective vests. Signs and barricades must be utilized to ensure the safety of employees, vehicular traffic, and pedestrians.
- Excavations and trenches 4 feet or deeper that have the potential for toxic substances or hazardous atmospheres will be tested at least daily. If the atmosphere is unsafe, protective systems will be utilized.
- A Competent Person will inspect all excavations and trenches daily, prior to employee exposure or entry, and after any rainfall, soil change, or any other time necessary during the shift. The Competent Person must take prompt measures to eliminate any and all hazards.
- No employee will work in an excavation where water is accumulating unless adequate measures are used for protection.
- If a trench or excavation is 4 feet or deeper, stairways, ramps, or ladders will be used as a safe means of ingress and egress. For trenches, the employee must not have to travel any more than 25 feet laterally to reach the stairway, ramp, or ladder.
- All spoil piles must be stored a minimum of four (4) feet from the sides of the excavation. The spoil pile must not block the safe means of egress. Trucks must also be parked a minimum of 4 feet from each trench edge.

13.5 PROCEDURES

13.5.1 EXCAVATION SAFETY PLAN

An Excavation Safety Plan is required in written form. This plan is to be developed to ensure complete compliance with the OSHA Excavation Safety Standard and state and local safety standards.

The Excavation Safety Plan, at a minimum, will require or address the following:

- Utilization of the local one-call system;
- Determination of locations of all underground utilities and obstructions;
- Consideration of the potential for confined space conditions;
- Proper soil description and classification;
- Determination of the proximity to surface and depth to groundwater;
- Planned excavation or trench dimensions and length of time it will remain open;
- Proper adherence to all OSHA Standards, this Program, and any other relevant safety programs.

13.5.2 SOIL CLASSIFICATION AND IDENTIFICATION

The OSHA Standards utilize the Simplified Soil Classification System, which consists of four categories:

1. Stable rock;
2. Type A;
3. Type B; and
4. Type C.

Stability is greatest in stable rock and decreases through Type A and Type B to Type C.

Stable rock is defined as:

- Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

Type A soil is defined as:

- Cohesive soils with an unconfined compressive strength of 1.5 tons per square foot (TSF) or greater; and
- Cemented soils like caliche and hardpan are considered Type A.

Soil is NOT Type A if:

- It is fissured;
- The soil is subject to vibration from heavy traffic, pile driving, or similar effects;
- The soil has been previously disturbed;
- The material is subject to other factors that would require it to be classified as a less stable material.

Type B soil is defined as:

- Cohesive soil with an unconfined compressive strength greater than 0.5 TSF, but less than 1.5 TSF;
- Granular cohesion-less soil including angular gravel, silt, silt loam, and sandy loam;
- Soil that meets the unconfined compressive strength requirements of Type A soil, but is fissured or subject to vibration;
- Dry rock that is unstable.

Type C soil is defined as:

- Cohesive soil with an unconfined compressive strength of 0.5 TSF or less;
- Granular soils including gravel, sand, and loamy sand;
- Submerged soil or soil from which water is freely seeping;
- Submerged rock that is not stable.

13.5.3 SOIL TEST AND IDENTIFICATION

The Competent Person will classify the soil type on the basis of at least one visual and one manual analysis. Soil tests should be run on freshly-excavated samples from the excavation and designed to determine stability based the following criteria:

- Cohesiveness;
- Presence of fissures;
- Presence and amount of water;
- Unconfined compressive strength;
- Duration of exposure;
- Undermining;
- Presence of layering;
- Presence of prior excavation; and
- Presence of vibration.

The cohesion tests are based on methods to determine the presence of clay. Clay, silt, and sand are size classifications, with clay being the smallest-sized particles, silt intermediate, and sand the largest. Clay minerals exhibit good cohesion and plasticity (can be molded). Sand exhibits no elasticity and virtually no cohesion unless surface wetting is present. The degree of cohesiveness and plasticity of a soil sample depend on the relative proportions of clay, silt, sand, and water.

When evaluating the soil stability, three questions must be asked:

1) Is the sample granular or cohesive?
2) Is the sample fissured or non-fissured?
3) What is the unconfined compressive strength measured in TSF?

13.5.3.1 METHODS OF TESTING SOILS

- VISUAL TEST – If the excavated soil is in clumps, it is cohesive. If it breaks up easily and does not form clumps, it is granular
- WET MANUAL TEST – Wet your fingers and work the soil between them. Clay is a slick paste when wet, meaning it is cohesive. If the clump falls apart in grains, it is granular.
- DRY STRENGTH TEST – Try to crumble the sample in your hands with your fingers. If it crumbles into grains, it is granular. Clay will not crumble into grains, only into smaller chunks.
- POCKET PENETROMETER TEST – This instrument is most accurate when soil is nearly saturated. This instrument will give unconfined compressive strength in tons per square foot. The spring-operated device uses a piston that is pushed into a coil up to a calibration groove. An indicator sleeve marks and retains the reading until it is read. The reading is calibrated in TSF or kilograms per cubic centimeter.
- THUMB PENETRATION TEST – The Competent Person attempts to penetrate a fresh sample with thumb pressure. If the sample can be dented, but penetrated only with great effort, it is Type A. If it can be penetrated several inches and molded by light pressure, it is Type C. Type B can be penetrated with effort and molded.
- SHEAR VANE – Measures the approximate shear strength of saturated cohesive soils. The blades of the vane are pressed into a flat section of undisturbed soil, and the knob is turned slowly until soil failure. The dial is read directly when using the standard vane. The results will be in TSF or kilograms per cubic centimeter.

The Competent Person will perform several tests of the excavation along its depth and length to obtain consistent supporting data. The soil type may be subject to change several times within an excavation and the moisture content will vary with weather and job conditions. The Competent Person must also determine the level of protection based on conditions existing at the time of the test and allow for changing conditions.

13.5.4 EXCAVATION PROTECTION SYSTEMS

The three basic protection systems for excavations and trenches are sloping and benching systems, shoring, and shields.

The protection systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied to or transmitted to the system. Every employee in an excavation shall be protected from cave-ins by an adequate protection system, except when the excavations are made entirely in stable rock, or are less than 5 feet deep and have been declared safe by a Competent Person.

13.5.4.1 SLOPING AND BENCHING SYSTEMS

There are four options for sloping:

1. Slope to the angle required by the OSHA Standard for Type C soil, which is the most unstable;
2. Tabulated data prepared by a Registered Professional Engineer can be utilized;
3. A Registered Professional Engineer can design a sloping plan for a specific job; and
4. Information provided in Appendix B of the OSHA Standard (subpart P) may be used to determine the maximum allowable angle (after determining the type of soil).

Sloping and benching systems for excavations five (5) to twenty (20) feet in depth must be constructed under the supervision of a designated Competent Person. Sloping and benching systems for excavations greater than twenty (20) feet must be designed and stamped by a Registered Professional Engineer.

13.5.4.2 SHORING SYSTEMS

Shoring is another protection system or support system. Shoring utilizes a framework of vertical members (uprights), horizontal members (whales), and cross braces to support the sides of an excavation to prevent a cave-in. Metal, hydraulic, mechanical, or timber shoring are common examples. Examples of shoring can be found in the OSHA Standard in Appendices C, D, and E.

13.5.4.3 SHIELD SYSTEMS OR TRENCH BOXES

Shielding is the third method of providing a safe workplace. Unlike sloping and shoring, shielding does not prevent a cave-in. Shields are designed to withstand the soil forces caused by a cave-in and protect the employees inside the structure. Most shields consist of two flat, parallel metal walls that are held apart by metal cross braces.

Shielding design and construction are not covered in the OSHA Standards. Shield designs must be certified by a Registered Professional Engineer and must have either a registration plate on the shield, or registration papers form the manufacturer on file at the jobsite office. No modifications or repairs can be made to a shield without prior approval by the manufacturer.

SAFETY PRECAUTIONS FOR SHIELD SYSTEMS

- Shields must not move laterally after installation.
- Shields can be 2 feet above the bottom of an excavation if they are designed to resist loads at the full depth and if there are no indications of caving under or behind the shield.
- The shield must extend at least 18 inches above the point where proper sloping begins (the height of the shield must be greater than the depth of the excavation).
- The open end of the shield must be protected from the exposed excavation wall. The wall must be sloped, shored, or shielded. Engineer-designed end plates can be mounted on the ends of the shield to prevent cave-ins.

- Employees will be protected from cave-ins when entering and exiting the shield.
- Employees are not allowed in the shield during installation, removal, or during any vertical movement.

13.5.4.4 INSPECTIONS

Daily inspection of excavations, the adjacent areas, and protection systems shall be made by the Competent Person for evidence of a situation that could result in a cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.

13.5.4.5 TRAINING

The Competent Person must be trained in accordance with the OSHA Excavation Standard and all other programs that may apply, and demonstrate a thorough understanding of the programs and the associated hazards. All other employees working in and around the excavation must be trained in the recognition of hazards associated with trenching and excavation.

APPENDIX A

DEFINITIONS

Benching - A method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near vertical surfaces between levels.

Cave-In - the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by failing or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

Competent Person - One who, through OSHA training, is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Duration of Exposure - The length of time during which an excavation is open. The longer an excavation is open, the longer the other factors have to work to cause it to collapse.

Excavation - Any man-made cut, trench, or depression in the earth's surface, formed by earth removal.

Hazardous Atmosphere - An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

Protective System - A method of protecting employees from cave-ins, from material that could fall or roll from an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide necessary protection.

Shield - A structure that is capable of withstanding the forces imposed on it by a cave-in and thereby protects employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. All shields must be constructed in accordance with 29 CFR 1926.652c3 or c4.

Sloping - A method of protecting workers from cave-ins by inclining the walls of an excavation to prevent cave-ins. The angle of incline required to prevent a cave-in varies with soil type, length of exposure, and application of surcharge loads.

Surcharge Loads - Generated by the weight of anything in proximity to the excavation. Common surcharge loads include:

Weight of spoil pile(s);

Weight of nearby buildings, poles, pavement, or other structural objects; and

Weight of soil material and excavating equipment.

Trench - A narrow excavation below the surface of the ground, less than 15 feet wide, with a depth no greater than the width.

Undermining - can be caused by such things as leaking, leaching, caving, or over-digging.

Vibration - A force that is present on construction sites that may be caused by backhoes, dump trucks, compactors, and traffic

14 LOCKOUT/TAGOUT

This Lockout/Tagout Program (Program) has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that employees know how to protect themselves from hazardous energy in the work place.

14.1 Purpose

All COGCC employees must be adequately trained to recognize when equipment has been locked out or tagged out. Employees who work with energized equipment must be adequately trained in Program procedures. The program is written to comply with the Lockout/Tagout Standard in 29 CFR 1910.147.

14.2 Scope

The Program establishes procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected energization, start up, or release of stored energy that could injure employees. These are minimum requirements whenever maintenance or service is performed on machines or equipment. Program procedures shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources, and locked out before employees perform any servicing or maintenance.

NOTE: Tagout procedures may ONLY be used if it is physically impossible to lockout a particular piece of equipment.

All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this Program.

14.3 RESPONSIBILITIES

All COGCC employees are responsible for:

- Being knowledgeable of the provisions of the Program and participating in training when requested;
- Obtaining approved and appropriate energy control devices before beginning work on any equipment.

COGCC Supervisors are responsible for:

- Ensuring employees receive adequate training for the job duties they perform;
- Ensuring that proper procedures are followed when employees work with hazardous energy; and

Ensuring that employees have the proper equipment for locking out and/or tagging out equipment.

COGCC Management is responsible for:

Ensuring that appropriate personnel are trained in Program procedures;

Ensuring that employees have the proper equipment for locking out and/or tagging out equipment;

Implementing and enforcing the procedures contained in the Program;

Ensuring that all COGCC personnel understand their responsibilities under this Program;

Maintaining, periodically reviewing, and modifying the Program as required.

14.4 TRAINING AND DOCUMENTATION

COGCC personnel shall receive lockout/tagout training prior to their initial assignment (when job duty requires) and refresher training every two (2) years.

Training documents should be retained for the following lengths of time.

RECORD	CUSTODIAN	RETENTION
Employee Training Records	Appropriate COGCC Office	36 months after separation of employment
LO/TO Program	Appropriate COGCC Office	12 months after revised, superseded or obsolete

14.5 PROCEDURES

14.5.1 ENERGY TYPES

Before maintenance or repair work is started, the authorized employee must ensure all potential energy sources are identified. Energy sources in oil and gas operations may be found in many different forms. The principal types of energy may include, but are not limited to, any or several of the following:

Mechanical motion (**kinetic energy**):

inertia – swinging pendulum (common on a pumping unit);

linear – cylinder stroke;

rotation – compressor flywheel or pumping unit counterweights;

translation – drilling rig rotary table; and

pinch points – hinged elements.

Potential Energy (**residual and/or stored energy**):

pressure – compressed air or gas systems;

springs/torsion bars – springs under pressure; and

gravity – counterweights stored in the upright position.

Electrical Energy:

generated power – voltage supplied to a piece of equipment;

static electricity – buildup from transfer of liquids or gases; and

static created by synthetic clothing.

Energy sources that can be disconnected require that:

1) The employee verifies all potential sources of energy are identified;

2) The energy source be disconnected and under the authorized employee's control prior to beginning any work; and

3) Through use of locks and/or tags, the energy source cannot be reconnected (intentionally or accidentally) by other employees while the work is being performed.

The employee must verify the steps above have been completed if it is necessary to leave the area or interrupt the specific job for any length of time.

Once the energy sources and types have been identified, the authorized employee can continue with isolating them, using the Lockout/Tagout Checklist in Appendix A in combination with the COGCC Safe Work Permit form.

14.5.2 LOCKOUT PROCEDURES

GENERAL LOCKOUT INFORMATION

1) When more than one authorized employee performs servicing and/or maintenance work in the same controlled area, one of two lockout tools shall be used: a hasp or a lockbox.

2) After the lockout device is applied, confirmation of energy isolation is to be done by testing the equipment on/off switches, valves, and reading pressure gauges. Only then should you remove equipment safety guard devices and begin work following manufacturer or COGCC procedures.

3) When one authorized employee transfers servicing duties to another authorized employee (relieving in the presence of each other on the job during a shift change), the second employee shall install his/her lockout/tagout device as soon as the first employee removes his/her device.

4) When an energy circuit is to be isolated for a period of time longer than 24 hours, the person who applies the lock (or his/her supervisor, if the applicator is not available) must be the only one to remove the lock.

5) Tags must be applied that identify the equipment or process locked out, the reason for the lockout, who installed the lock, and the date and time it was installed.

6) Lockout/tagout shall not apply to cord- and plug-connected electrical equipment if the equipment is unplugged and the plug is in the exclusive control of the authorized employee who is performing the servicing or maintenance of that equipment.

7) If the cord and plug are not within the authorized employee's sight or physical control, a lockout/tagout device (e.g., a clamshell device) shall be attached to the cord and plug in such a way that it shall not permit the plug to be inserted into the outlet.

8) Common keyed-type locks shall not be used. Locks shall be keyed with only one key. All locks shall be under the control of management.

9) Exchanging keys over several shifts or days is strictly forbidden.

10) Where equipment is removed or abandoned, breakers and fuses in the Master Control circuit and all other energy source controllers (e.g., automatic valves) shall be removed and the controller tagged.

11) The tag shall state the reason, who applied the tag, and when it was applied.

12) Where the master circuit cannot be isolated, or the circuit must be re-energized for any reason, the immediate supervisor must be contacted before energy is reapplied.

THE FOLLOWING SEQUENCE SHALL BE USED FOR LOCKOUT PROCEDURES:

1) Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

2) The authorized employee shall refer to the COGCC procedure to identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.

3) If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).

4) De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).

5) Lock out the energy isolating device(s) with assigned individual lock(s).

6) Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

7) Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

8) Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

9) The machine or equipment is now locked out.

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

1) Check the machine or equipment and the immediate area around the machine to ensure that non-essential items have been removed and that the machine or equipment components are operationally intact (did you replace the machine guards?).

2) Check the work area to ensure that all employees have been safely positioned or removed from the area.

3) Verify that the controls are in neutral.

4) Remove the lockout devices and re-energize the machine or equipment.

   Note: The removal of some forms of blocking may require re-energization of the machine before safe removal.

5) Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

14.5.3 TAGOUT PROCEDURES

Tagout alone may ONLY be used in situations where a lockout device cannot be affixed to the hazardous energy/substance isolating device. The tagout sign must be located as close as safely possible to the energized device.

Tagout devices shall be affixed in such a manner to clearly indicate that the operation or movement of hazardous energy/substance isolating devices from the "safe" or "off" position is prohibited.

The tag attachment mechanism shall be:

non-reusable;

attachable by hand;

self-lockable;

non-releasable; and

have a minimum unfastening strength of no less than 50 pounds.

Tags shall only be removed from the energy/substance-isolating device by the authorized employee responsible for it and is never to be bypassed, ignored, or otherwise defeated.

When tagout is used, employees shall be trained in the limitations of tags and in the above tagout procedures.

14.5.4 PIPING

Pipe blinding may be considered to be equivalent to locks for the purposes of de-energizing equipment or machines only if they are installed and used properly. The blind must be tagged with the name of the person applying the blind and the date.

Piping shall be assumed to be under pressure regardless of precautions taken. As far as feasible, piping should be physically traced to determine the sources of pressure that need to be blanked off. A check valve shall not be depended upon to prevent backflow in a pipe.

Valves shall be locked and tagged out both upstream and downstream of the work area.

14.5.5 EXCEPTIONS TO LOCKOUT/TAGOUT PROCEDURES

Servicing of fire protection systems is excluded from lockout/tagout procedures if workers are protected from hazards related to unexpected releases of hazardous energy by alternative measures.

14.5.6 PERIODIC INSPECTION

Energy control procedures shall be evaluated at least annually to verify their effectiveness and implementation. The inspection shall be performed by an authorized employee other than the one(s) using the energy control procedure that is being evaluated. The inspection should be documented, signed, and dated. Copies of the inspection records should be sent to the COGCC Corporate Office.

The inspector(s) shall:

Review the guidelines specifying the levels of understanding and responsibilities of affected and authorized employees; and

Require a representative number of authorized employees to physically demonstrate their responsibilities under the procedure.

The inspection shall:

Be designed to correct any deviations or inadequacies of both affected and authorized employees;

Serve as a record of deviations and inadequacies; and

Provide for status reviews of revisions and corrections until all are complete.

APPENDIX A

LOCKOUT/TAGOUT CHECKLIST

Field Name: _____ Location: _____

Authorized Worker: _____ Date: _____

Equipment/process locked/tagged out: _____

Is checklist support documentation to Safe Work Permit? ☐ Yes ☐ No

If Yes, attach to permit documentation.

ITEM	Yes	No
1. Identify all energy sources and control points.		
2. Obtain approved energy control devices.		
3. Identify and obtain all needed personal protective equipment.		
4. If more than one authorized employee is involved, keep everyone informed of the process.		
5. Shut down the equipment using the equipment specific procedures.		
6. Isolate the various hazardous energies.		
7. Apply locks and tags, being sure to state the particulars, the date and sign the tags.		
8. Control and/ or relieve stored energy (Turn the equipment on to test it, then turn it back off).		
9. Verify that **all** controls are in the "OFF" or "NEUTRAL" position.		
10. Is the equipment properly isolated?		

ITEM	Yes	No
11. Can the energy re-accumulate? If so, prepare a plan for monitoring the energy source hazard.		
12. Perform the work.		
13. Does LO/TO device need to be temporarily removed to test the unit?		
14. If so, clear the machine of tools and parts, clear employees from the area and notify other authorized employees as necessary.		
15. Remove the LO/TO devices.		
16. Energize and test the unit.		
17. Replace all safeguards and finish work on the equipment.		
18. Clear all employees from the area and notify other authorized employees.		
19. Verify controls are in the “OFF” or “NEUTRAL” position.		
20. Remove the LO/TO devices.		
21. Re-energize and start up using equipment specific procedures.		
22. Notify affected employees that it is “OK” to return to work.		
23. Return LO/TO equipment to appropriate area for reuse.		

APPENDIX B

DEFINITIONS

Affected employee - An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee - A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of being locked out - An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized - Connected to an energy source or containing residual or stored energy.

Energy isolating device - A mechanical device that physically prevents the transmission or release of energy, including, but not limited to, the following: A manually-operated electrical circuit breaker; a disconnect switch; a manually-operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches, and other control circuit type devices are not energy isolating devices.

Energy source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot tap - A procedure used in repair, maintenance, and service activities which involves welding on a piece of equipment under pressure (e.g., pipelines, vessels, or tanks) in order to install connections or appurtenances. It is commonly employed to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout - The placement of a lockout device on an energy isolating device in accordance with an established procedure ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device - A device that utilizes a positive means such as a lock, either keyed or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal production operations - The utilization of a machine or equipment to perform its intended production function.

Servicing and/or maintenance - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment, and making adjustments or tool changes, where the employee may be exposed to the **unexpected** energization or startup of the equipment or release of hazardous energy.

Setting up - Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout - The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device - A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

15.0 ELECTRICAL SAFETY

These practices and procedures are intended to ensure the safety of all Colorado Oil and Gas Conservation Commission (COGCC) employees with regard to electrical hazards in the workplace.

15.1 Purpose

The purpose of the Electrical Safety Program is to ensure all COGCC personnel are informed about electrical hazards at COGCC sites and facilities and to inform any employee who may be exposed to an electrical hazard of relevant safe work practices.

15.2 Scope

COGCC management does not anticipate staff needing to work on any active electric circuits during normal day-to-day job tasks. active electric circuits. This also applies to permanent and temporary electrical installations, their utilization, modification, repair, or replacement, regardless of design or installation date. An active circuit includes an energized conductor or circuit operating at 50 volts or more that is not placed in an electrically safe work condition. The specific work practices are further defined by the National Fire Protection Agency (NFPA) Standard 70E.

All contractors or subcontractors working on COGCC projects must have a policy equal to or more stringent than this policy.

15.3 Responsibilities

All COGCC employees shall be responsible for:

- Being aware of any electrical equipment in the vicinity of their workspace;
- Understanding and following the procedures outlined in the Lock Out and Tag Out Program located in Section 10.0 of the COGCC HASP;
- Informing their supervisor if an unsafe condition exists; and
- Complying with the contents of this program.

COGCC Supervisors shall be responsible for:

- Identifying electrical equipment operating at 50 volts or more on all COGCC sites and facilities;
- Ensuring that electrical equipment and switchgear is labeled to identify the equipment it controls;
- Ensuring that the procedures outlined in the Lock Out and Tag Out Program located in Section 10.0 of the COGCC HASP are being followed;

- Ensuring that only qualified personnel work on energized conductors or circuits operating at 50 volts or more that are not placed in an electrically safe work condition;

15.4 Training

The training required by this section shall be in the classroom, on-the-job, or both. The degree of training provided shall be determined by the risk to the employee. There are two basic levels of training required: Qualified Person and Unqualified Person.

A Qualified Person shall be trained and knowledgeable of the construction and operation of equipment or a specific work method and be trained to recognize and avoid the electrical hazards that might be present with respect to that equipment or work method. Such persons shall also be familiar with the proper use of the special precautionary techniques, personal protective equipment (PPE), including arc-flash, insulating, and shielding materials, and insulated tools and test equipment. A person can be considered qualified with respect to certain equipment and methods but unqualified for others. Such persons permitted to work within the Limited Approach Boundary of exposed energized conductors or circuits operating at 50 volts or more shall, at a minimum, be additionally trained in all of the following:

- The skills and techniques necessary to distinguish exposed energized conductors or circuits from other parts of electrical equipment;
- The skills and techniques necessary to determine the nominal voltage of exposed energized conductors or circuits;
- The approach distances specified in NFPA Standard 70E and the corresponding voltages to which the qualified person will be exposed; and
- The decision-making process necessary to determine the degree and extent of the hazard and the PPE and job planning necessary to perform the task safely.

Unqualified Persons shall be trained in and be familiar with electrical equipment operating at 50 volts or more on all COGCC sites and projects on which they work. Additionally, they shall be trained in the procedures outlined in the Lock Out and Tag Out Program located in Section 10.0.

15.5 Procedures

Employees must ensure that all electrical equipment is specified, used, and maintained in accordance with the provisions of this Section. The following items shall be performed by a qualified person:

- Electrical modifications, repairs, and installations involving exposure to live parts or unguarded or insinuated energized lines (trainees may perform this work under the direct supervision of a Qualified Person);
- Adjusting, inspecting, operating, or maintenance of electrical equipment.

Where exposed live parts are not guarded, the building, room, or enclosure shall be locked or under the observation of a Qualified Person at all times.

Electric lines and equipment shall be treated as energized until all provisions of the hazardous energy control (lockout/tagout) procedures are met. Live parts to which an employee may be exposed shall be de-energized before the employee works on or near them, unless it can be demonstrated that de-energizing introduces additional or increased hazards or is not feasible due to equipment design or operational limitations.

15.5.1 LABELING

- A label must be permanently affixed to each electrical device stating its purpose, unless its purpose is obvious, (e.g., light switches, 110 AC outlets, etc.);
- All labels or markings shall withstand the environments involved;
- Labels and markings provided by the manufacturer shall remain on the equipment and be maintained in a legible condition;
- Intrinsically safe tools and equipment must have a permanently affixed label stating their Hazardous Class and Division;
- Enclosures containing exposed live parts shall be affixed with a warning label warning of the live parts within and restricting entry to Qualified Persons only;
- Where units (fin fans, pumps, etc.) have a remote start/stop switch, the switch must be labeled or numbered to correspond with the unit.

15.5.2 ELECTRICAL PROTECTIVE EQUIPMENT

Rubber insulating hose, blankets, cover sleeves, and gloves shall receive voltage tests as to their class designation in table I-2 at test intervals described in table I-6. Test records identifying each piece of equipment and its certification date shall be maintained.

Insulating equipment shall be inspected for damage prior to each day's use. Insulating equipment found defective shall be removed from service and sent to a testing facility for repair or disposal. Insulating equipment with any of the following or any other obvious defects shall not be used:

- A hole, tear, puncture, or cut;
- Ozone cutting or ozone cracking;
- An embedded foreign object; and
- Any of the following texture changes: swelling, softening, hardening, or becoming sticky or inelastic.

Insulating gloves shall be air tested before each day's use. Protector gloves shall be worn with rubber gloves unless risk of damage to the gloves is small and the gloves are one class higher than the voltage protection required.

APPENDIX A

ELECTRICAL TABLES

TABLE I–2. A–C PROOF–TEST REQUIREMENTS

(29 CFR §1910.137)

Class of equipment	Proof-test voltage r m s V	Maximum proof-test current, mA (gloves only)			
		267-mm (10.5-in.) glove	356-mm (14-in) glove	406-mm (16-in) glove	457-mm (18-in) glove
0	5,000	8	12	14	16
1	10,000		14	16	18
2	20,000		16	18	20
3	30,000		18	20	22
4	40,000			22	24

TABLE I–6. RUBBER INSULATING EQUIPMENT TEST INTERVALS

(29 CFR §1910.137

Type of equipment	When to test
Rubber insulating line hose.	Upon indication that insulating value is suspect.
Rubber insulating covers.	Upon indication that insulating value is suspect.
Rubber insulating blankets.	Before first issue and every 12 months

	thereafter[1].
Rubber insulating gloves.	Before first issue and every 6 months thereafter[1].
Rubber insulating sleeves.	Before first issue and every 12 months thereafter[1].

[1]If the insulating equipment has been electrically tested but not issued for service, it may not be placed into service unless it has been electrically tested within the previous 12 months.

APPENDIX B

DEFINITIONS

Exposed Live Parts – Non-protected energized electrical components that exceed 50 volts.

Hazardous Location – Locations are classified based on the properties of the flammable vapors, liquids or gases, and the possibility that a flammable or combustible concentration or quantity is present.

Qualified Person – A Qualified Person shall be one familiar with OSHA's Safety-Related Work Practices; have the ability to distinguish exposed live parts and their voltages; and comprehend the related hazards; and who has the authority to implement their control or isolation.

Unqualified Person – A non-electrical is the general meaning of this term. An individual may be considered "Qualified" with regard to certain equipment in the workplace, but "Unqualified" for other equipment.

16.0 Contractor Safety

The Contractor Safety Program (Program) has been prepared for use by the Colorado Oil and Gas Conservation Commission (COGCC) to ensure that Contractors, their personnel, and subcontractors are informed about the expectations for performing work at COGCC projects.

All contractors or subcontractors working on COGCC projects must have a HASP plan equal to or more stringent than the COGCC's.

16.1 Purpose

The purpose of the Program is to ensure that all Contractors and their personnel and subcontractors are trained in accordance with local, state, and federal regulations and meet all minimum requirements to safely perform work for the COGCC and at COGCC projects.

16.2 Scope

The procedures set forth in this Program affect contractors who perform work or provide services or equipment on COGCC projects, regardless of whether those contractors are used for a short duration or for a single job.

No contractor should be allowed to perform work at a COGCC projects without a legally binding contract that protects the COGCC's interests, including EH&S provisions, nor without substantiating adequate insurance coverage.

16.3 RESPONSIBILITIES

All Contractors, their personnel, and subcontractors shall be responsible for:

- Adhering to the requirements of this Program;
- Participating in appropriate training when requested by COGCC Management.

COGCC Supervisors and Management shall be responsible for:

- Ensuring that all Contractors are trained to the minimum requirements as set forth by all local, state, and federal regulations;
- Ensuring that employees understand the requirements set forth in this Program;
- Implementing, supporting, and enforcing the Contractor Program and periodically reviewing and evaluating its overall effectiveness.

16.4 Training and Documentation

Appropriate training documents shall be provided to COGCC staff upon request and subcontractor personnel working on COGCC projects. Initial training shall be expected before employees are assigned to tasks. Additional training will be expected when job conditions change, or when deficiencies are noted in the training program. All Contract companies must provide proof and documentation of up-to-date training and medical clearance for jobs requiring such.

16.5 Policy

COGCC Management will provide information about hazards, controls, safety and health rules, and emergency procedures to contract workers at the workplace for information purposes only. Contract employees will comply with all federal, state, and local environmental, health, and safety regulations while working on COGCC property and projects. Contractors and their personnel and sub-contractors will be provided information regarding COGCC HASP for informational purposes only and as a condition of their admittance to the work site will comply with all federal, state, and local environmental, health, and safety regulations while working on COGCC projects. Additionally, Contractors, their personnel, and their subcontractors will not cause, permit, or tolerate a hazardous, unsafe, unhealthy, or environmentally unsound condition or activity over which they have control. Each contractor is hired as an expert in their respective field and, as such, is expected to be an expert in the environmental, health, and safety aspects of their job requirements. The COGCC expects its contractors to follow and enforce their own HASP, or similar, as it pertains to their line(s) of work.