

# ARE YOU IN THE "LINE OF FIRE?"

Moving Objects Activity Package



SETTING THE STANDARD IN OIL AND GAS SAFETY

ENERGY  
SAFETY  
CANADA



## MOVING OBJECTS – ARE YOU IN THE “LINE OF FIRE?” INJURY REDUCTION CAMPAIGN

You are in the line of fire when you are at risk of coming into contact with a force your body cannot endure.

Moving object awareness is:



### Stored Energy

Contact with stored energy  
Includes pressure releases



### Striking Hazards

Struck by or striking against an object  
Includes dropped objects



### Crushing Hazards

Caught in, on or between an object  
Includes hand injuries



## LINE OF FIRE LIFE SAVING RULE

- This overview includes materials that relate to the Line of Fire Life Saving Rule and some that do not. The Life Saving Rule focuses on body positioning.
- This rule indicates:

### Keep yourself and others out of the line of fire

- I position myself to avoid:

- Moving objects
- Vehicles
- Pressure releases
- Dropped objects

- I establish and obey barriers and exclusion zones
- I take action to secure loose objects and report potential dropped objects





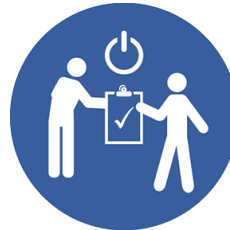
## RELATED LIFE SAVING RULES



**FIT FOR DUTY**



**SAFE  
MECHANICAL  
LIFTING**



**BYPASSING  
SAFETY  
CONTROLS**



**DRIVING**



**ENERGY  
ISOLATION**



## WHAT IS A MOVING OBJECT?

Any object with the potential to cause death, injury, equipment or environmental damage that moves as a result of energy and excludes dropped objects and moving vehicles.

When referring to moving objects, we need to consider:

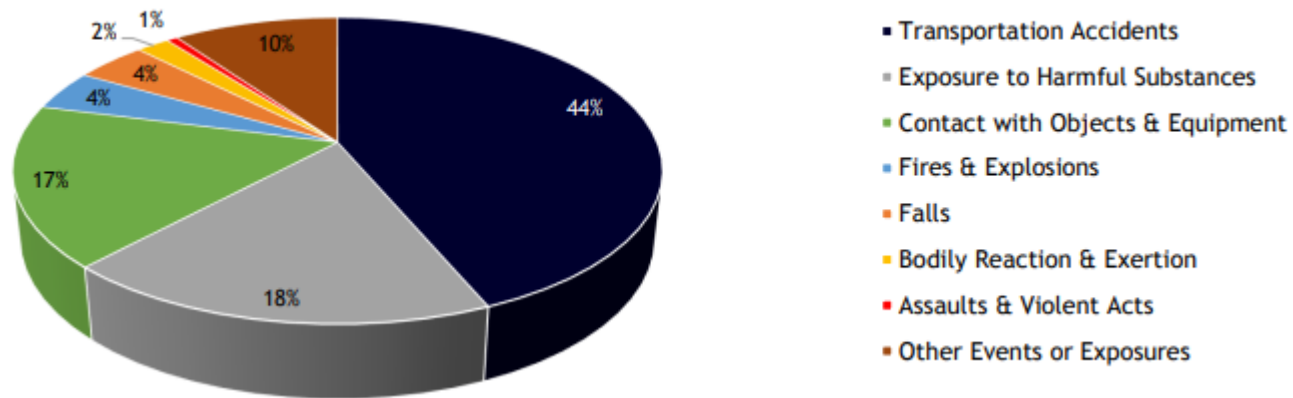
- Hazardous energy source
- Equipment guarding
- Lock-out/tag-out
- Exclusion zones (no-go zones)
- Winching activities
- Loading and unloading activities
- Equipment - pipe, hose, etc.
- Tools



## HOW BAD IS THE PROBLEM?

Contact with objects and equipment is the third leading type of fatality in the oil and gas industry, contributing to 17% of the fatalities. This category is predominately comprised of struck by object as its main secondary category. The objects consist of pipes, hoses, tools and other equipment.

Fatality Categories



WCB Data (2001-2017, Oil and Gas Funding Codes, Western Provinces)



## COMPANY EXAMPLE

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Insert company examples here



## INDUSTRY TOP CAUSES OF MOVING OBJECT STRIKES

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Safety alerts and incident reports show these recurring causes continue to result in struck by object incidents:

1. **Inadequate risk assessment** - failure to identify the potential for moving objects.
2. **Human factors** - body positioning, fit for duty, operator error, mind not on task.
3. **Inadequate procedures** - bad planning and no management of change.
4. **Training** - training is either missing or inadequate.
5. **Failed fixtures and fittings** - corrosion, vibration, poor design, and selection or improper installation.
6. **Inadequate inspections** - inspections are either inadequate or not being conducted.
7. **Inadequate repairs and maintenance** - ignoring unsafe conditions.





## PREVENTION

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Everyone has a responsibility to prevent moving object strikes through:

- **Observation and intervention** - being aware of the hazard, associated risks, and prepared to stop work if conditions or actions are unsafe.
- **Reporting** - recording all potential and actual incidents in accordance with company policy.
- **Control** - know where hazardous energy is located and how it could result in a moving object. Consider labelling equipment where line of fire is a concern.
- **Design and procurement** - informed design and selection of tools and equipment.
- **Inspection** - regular worksite inspections looking for line of fire hazards.



## HAZARDOUS ENERGY WITH MOVING OBJECTS

The following hazardous energies are often associated with moving objects:



### Mechanical

Rotating equipment, drive belts, conveyors, motors or compressed springs.



### Gravity

Enables objects to fall, roofs to collapse and people to trip and fall.



### Pressure

Piping, vessels, tanks, hoses, compressed cylinders and pneumatic and hydraulic equipment.



### Electrical

Power lines, transformers, generators, wiring, batteries, static charges and lightning.



### Chemical

Flammable vapours and gases, combustibles, pyrophorics, toxic compounds, corrosives, oxygen-deficient atmospheres, welding fumes and dusts.



### Motion

The movement of vehicles, equipment or materials, water, wind or a person's body or part of body such as arm.

Where could these hazardous energies exist in your workplace with respect to moving objects?



## EXCLUSION ZONES – NO-GO ZONES

Establishing and adhering to exclusion zones is critical for managing line of fire in relation to moving objects. Do you know where/when no-go zones are in your operations? Consider how routine, maintenance and upset conditions impact these zones.





## DISCUSS EQUIPMENT

Discuss what hazardous energies are associated with equipment...

- Conducting maintenance on a beam pump (pump jack).
- Securing equipment, tools and materials inside the cab of the vehicle and outside (cargo securement).
- Unloading and loading of equipment.
- Winching and towing activities.
- What other situations can you identify for your work sites?



Photo courtesy of PSAC



## DISCUSS HOSE AND PIPE HANDLING

Discuss what hazardous energies are associated with hose and pipe handling...

- Hose kick
- Making and breaking connections (Camlock fittings, etc.)
- Making connections with pipe (drilling rig V-door, well serving, etc.)
- What other situations can you identify for your work site?





## DISCUSS TOOLS

Discuss what hazardous energies are associated with the use of tools...

- Hammers, such as with hammer-union pipe fittings.
- Pipe wrenches.
- Understand the limitation of tools. Why are the use of snipes and cheater bars generally considered an unsafe act?
- What other situations can you identify for your work sites?





## WHAT CAN EACH OF US DO?

- Moving objects can be associated with various hazardous energy types
- Identify the energy, know when it could be released and stay out of the line of fire.

# REMEMBER

these...



can turn into this. . . .



Let's work together and eliminate line of fire Injuries!