



Dropped Objects Prevention

Greater Gulf of Mexico

Operational Excellence

One Team, One Goal, Incident-Free Operations (IFO)



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1.0 Purpose

To describe measures to prevent the occurrence of dropped objects, align with industry best practices and meet legislative requirements.

2.0 Scope

This booklet describes the management of objects that could fall and harm people or damage property during operations performed on all facilities under Chevron operational control. Specific reference is made to the Chevron Global Dropped Objects Management Guidelines (Issue 2010) and cross-industry Dropped Objects Prevention Scheme.

3.0 Goal/Objective

The objective of this booklet is simple guidance to eliminate dropped objects through:

- Identification and understanding of potential workplace dropped objects hazards
- Creation of a dropped objects work group
- Understanding the various levels of protection that are available to prevent dropped objects
- Selecting and supplying the right level of mitigation
- Raising the overall awareness of dropped objects

The contents of this booklet apply to all Chevron personnel, contractors and subcontractors working on sites under Chevron operational control.



4.0 Definition

A dropped object is:

"Any object, with the potential to cause death, injury or equipment/ environmental damage, that falls from its previous static position under its own weight."

When referring to dropped objects, consider:

- Hand tools being used at heights
- Hand tools/equipment left behind after working at height
- Operations conducted at height
- Equipment mounted at a height that, following contact, vibration or environmental conditions, could fall, i.e., piping, lights, cameras, rigging gear, etc.
- Temporary equipment at height
- Where personnel are working on a level directly below the work site
- Lifting operations



5.0 Why Focus on Dropped Objects?

Dropped objects are regularly the principal causes of incidents in the oil and gas industry and contribute to the total risk level for offshore and onshore facilities.

The consequences of a falling object include:

- Personal injury/death
- Structural damage
- Damage to equipment
- Release of hydrocarbons/fire



6.0 Strategy

- Create site-specific dropped objects work groups.
- Identify and assess problem areas.
- Develop and implement an action plan.
- Monitor results.
- Continually improve.

7.0 Some Examples of Risk Areas

- Rig derricks/drill floor
- Areas below lifting operations
- Cranes
- Elevated work areas or platforms
- Work spaces where equipment is mounted overhead
- Temporary/portable equipment
- Remotely operated vehicles (ROVs)
- Vessels/barges
- Pipe racks
- Forklift trucks
- Poor stacking of materials
- Ladders
- Scaffolding

8.0 What Creates Dropped Objects?

- Poor housekeeping
- Scrap and debris left aloft
- No inspection
- No equipment maintenance
- Poor designs
- Weather
- No restraints
- No planning
- Load miscalculation
- Lack of risk assessment
- Errors in space requirements
- Instability
- Ineffective control of equipment or tools taken aloft
- No lanyards on tools used at height
- Improperly secured or inappropriate loads
- No regular inspection procedures
- Becoming blind to changes in activity (dynamic risk assessment)
- Carrying equipment while at height

9.0 What Are the Effects of a Dropped Object?

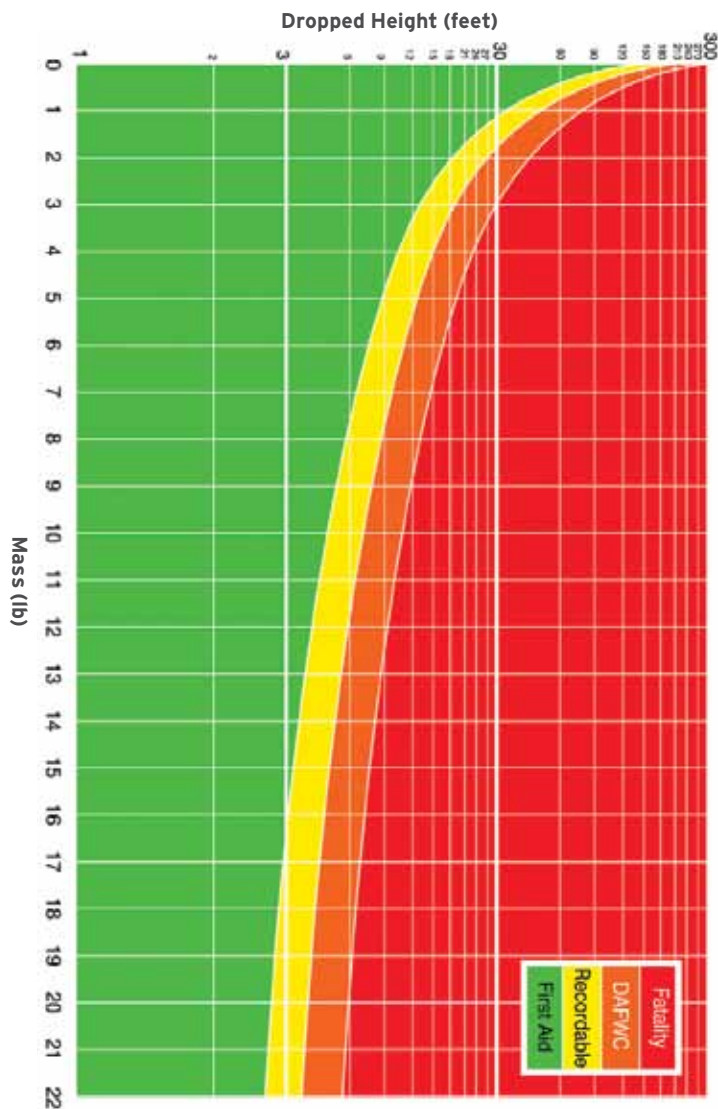
Even a small object falling from a height can cause serious or fatal injuries.

The potential harm to the individual has been determined using the Dropped Objects Calculator.

The Dropped Objects Calculator was developed with a mathematical model based upon the mass of the object and the height from which it falls.



10.0 Risk Calculator



11.0 Recommended Actions

1. Create a dropped objects work group specific to the site.
2. Complete a derrick or work site dropped objects inventory with the Chevron **HAZARD ID** tool.
3. Use the inventory to develop an inspection program.
4. Introduce working at height procedures.
5. Introduce specific toolkits for working at height. Implement processes to account for tools.
6. Raise overall dropped objects identification and mitigation among the workforce.
7. Train relevant personnel to identify and mitigate dropped objects processes.
8. Secure tools from dropping to lower levels.
9. Following Job Safety Environment Assessment (JSA) guidelines, erect signage and physical barriers to restrict access before work is conducted overhead.
10. All rigging risk assessments require consideration of the risks involved in moving equipment at height.
11. Review and revise JSAs for dropped objects potential.
12. Introduce regular dropped objects campaigns.
13. Schedule regular Hazard Hunts.
14. Review handling and securing procedures for tubular components.
15. Introduce area ownership, and hold personnel accountable.
16. Add secondary retention, and consider safety systems, such as safety nets.
17. Inspect personal protective equipment (PPE), for example, safety harness, lanyard and chin straps.
18. Inspect all overhead equipment and locations for loose items that may present a hazard during maintenance activities.

12.0 Secondary Retention

Secondary Securing Devices

Secondary securing devices (SSDs) secure a component at height, if the primary securing method fails. This could be a secondary safety wire (SSW), a safety net or some other engineered method designed for this function. SSD selection should consider the shock loading that may occur if the primary securing method fails. The integrity of the SSD will deteriorate over time and exposure to the elements and needs to be inspected.

Secondary Safety Systems

Secondary safety systems are fail-safe systems incorporated into equipment to ensure integrity of that equipment if the primary safety system fails. For example, a racking arm runs along a beam and is hoisted and lowered with a wire. If the wire fails, an inertia brake prevents the arm from freefalling to the ground.



13.0 How Can I Personally Prevent Dropped Objects?

- Actively support the dropped objects work group.
- Take responsibility for my actions.
- Look after my colleagues.
- Maintain good housekeeping.
- Stop unsafe activities by using my SWA.
- Make observations and report incidents.
- Review and follow procedures.
- Recognize known hazards, and follow the controls in place.
- Consider dropped objects in all Toolbox Talks.
- Consider dropped objects in all JSAs.
- Check areas after all work is completed, even if it is permit-controlled.
- Participate in Hazard Hunts.
- Investigate all incidents, including near misses.
- Secure all tools and equipment when working at height.

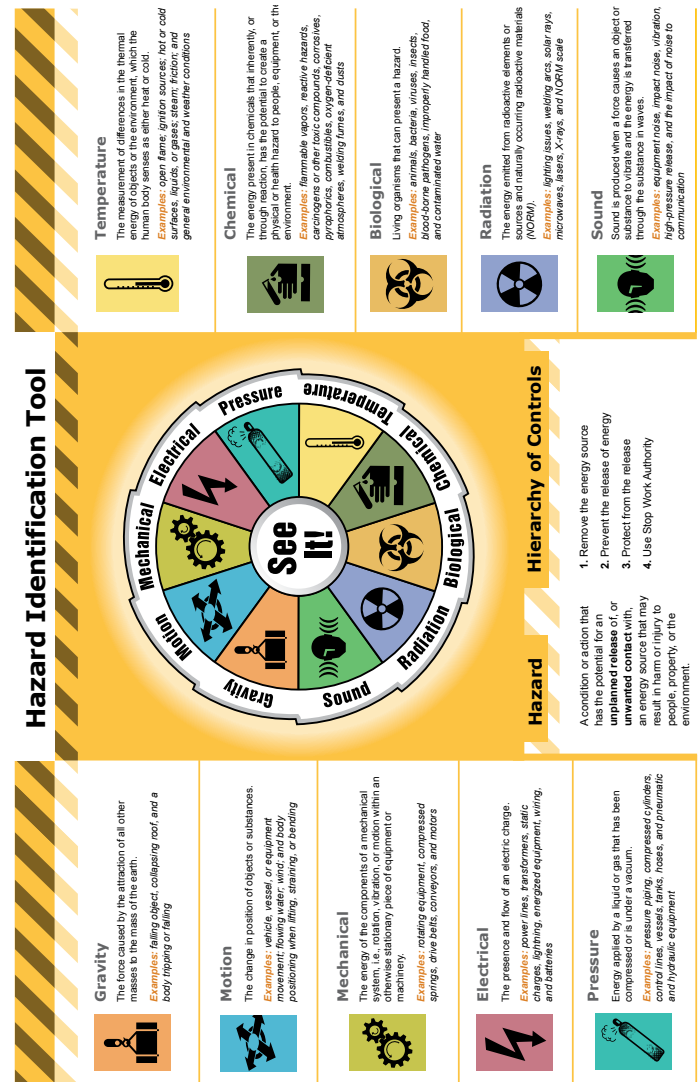
No matter where you work, from offshore platforms to onshore refineries, and in offices around the world, hazards are present. Inadequate identification of those hazards can lead to incidents and injuries across our industry.

Chevron has developed a tool that every employee and contractor can use to identify hazards.

A hazard identification tool should:

1. Be simple and intuitive to use.
2. Provide a platform for continuous and sustained improvement.
3. Be culturally neutral (easily understood in as many different cultures and languages as possible).
4. Improve the individual worker's ability to identify hazards.
5. Integrate easily with other hazard identification processes (Loss Prevention System [LPS], JSA, Behavior-Based Safety [BBS] and Permit to Work [PTW]).

A hazard identification tool should NOT be another process to implement.



Hazard ID Tool Purpose:

- Increase awareness of energy sources that present hazards in the workplace.
- For dropped objects, identify and eliminate gravity hazards through a focused Hazard Hunt.

Gravity Hazard Examples:

- Crane loads being lifted
- Falling objects, like tools overhead
- Body trips or falls

Are there any gravity energy conditions at your location that could pose a hazard?

- Areas routinely occupied under potential falling objects, such as overhead loads or tools? Are they identified?
- Areas requiring fall protection PPE?
- Surfaces slippery or wet from weather conditions, water or oil spills?
- Stairs and ramps with loose or missing handrails or damaged tread?
- Surface protrusions or loose surfaces, such as thresholds, cover plates or grating or unsecured floor mats?

This simple tool is a wheel featuring graphic icons illustrating specific sources of energy that, if not properly handled, could lead to injury or damage to property or the environment.

Energy sources are always present in the environment. Every aspect of our daily life requires the use of energy in one form or another. However, some energy sources can contribute to the dropped object hazard.

Those energy sources are:

- **Gravity** - Enables objects to fall, roofs to collapse and people to trip and fall
- **Motion** - The movement of vehicles, vessels, water, wind or even body movement
- **Mechanical** - Rotating equipment, drive belts, conveyors, motors or compressed springs
- **Electrical** - Including power lines, transformers, static charges, lightning, wiring and batteries
- **Pressure** - Piping, compressed cylinders, tanks, hoses, pneumatic and hydraulic equipment
- **Temperature** - Including ignition sources, hot or cold surfaces, steam, friction and weather
- **Chemical** - Vapors, toxic compounds, combustibles, corrosives, welding fumes and dusts
- **Biological** - Bacteria, viruses, animals, insects, and contaminated food or water
- **Radiation** - Including solar rays, microwaves, X-rays and welding arcs
- **Sound** - Equipment noise, vibration, high-pressure release and even voice communication

15.0 Part of a Complete Safety Package

The Hazard Identification Tool has been designed as either a stand-alone resource or to augment existing processes such as safe work practices, JSA and PTW.

It is important to understand that this is not a process to implement. It's a tool that can enhance our existing processes by strengthening our ability to recognize hazards.

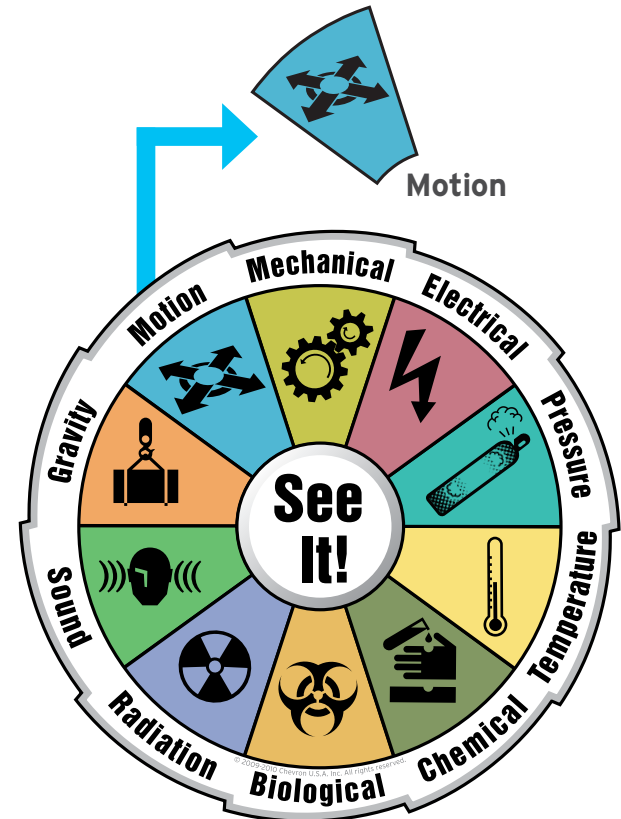
15.1 Hazard Hunt Using the Hazard ID Tool

Purpose

- Increase awareness of energy sources that present hazards in the workplace.
- Identify and eliminate motion hazards through focused Hazard Hunts.

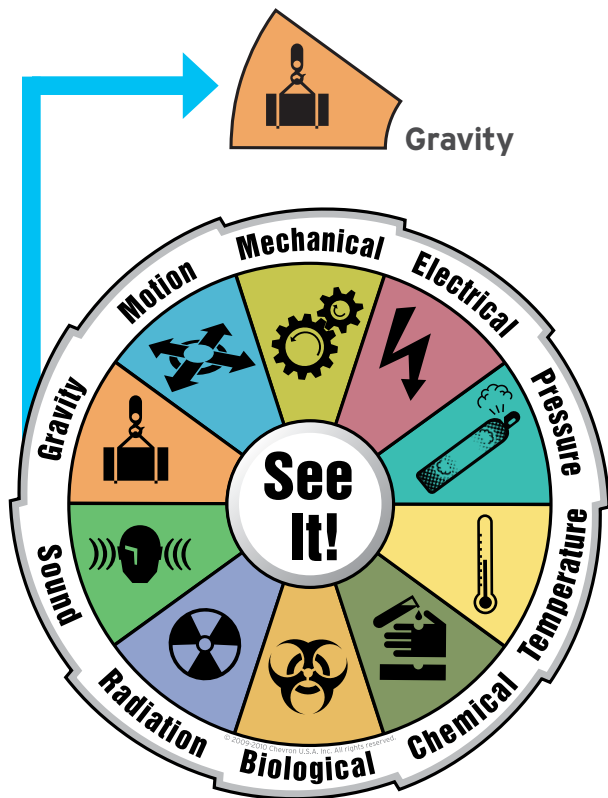
15.2 What Is a Hazard?

A hazard is a condition or action with the potential for an unplanned release of, or unwanted contact with, an energy source that may result in harm or injury to people, property or the environment.



15.3 What to Do Following a Hazard Hunt

- Use SWA to immediately address the imminent hazards.
- Prioritize hazards and identify actions required to eliminate or mitigate.
- Enter maintenance items into database.
- Leaders communicate a summary of the Hazard Hunt by email to their immediate manager.



15.4 Inspections

One of the most important aspects of a good dropped objects program is the ability to inspect all equipment aloft.

- Periodic inspections identify potential hazards.
- Report all nonconformities found in these inspections for correction immediately.

15.5 Temporary Equipment

- Any temporary equipment brought into the site is subjected to the same guidelines as fixed equipment.
- Site management ensures inspection of any third-party equipment before installation.
- To ensure all temporary items are accounted for and have been removed, document the temporary equipment.
- Review all temporary equipment to ensure hazards from dropped or falling objects are identified and monitored.

16.0 Area Ownership

Site management should clearly identify all risk areas and assign risk area ownership.

- Divide the location into areas.
- Assign the areas to an individual or group to check the area as often as the level of risk demands.
- Use checklists for consistency.
- Identify actions for each area of concern.
- Deal with all actions.
- Include any transportable or temporary equipment.
- To make the area safe, use SWA if a dropped object is found.

17.0 Pre-Job Risk Assessment

Complete a pre-job risk assessment such as a JSA before beginning any job/task, with the following goals in mind:

- Identify any dropped object hazards before starting a job or task and communicate these at a toolbox talk.
- Include discussions on tools and equipment in the JSA.
- Ensure all personnel are involved in the discussion, understand the associated hazards and implement the mitigation.
- Include the use of a **dropped objects checklist**.

Dropped Objects Observations

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IDC 1112-095709