Dropped Objects
Awareness Package

Contents

Safety Prompts

Symbols are used throughout this module to highlight specific points, particularly those that involve safety. The symbols and their meaning are shown below.

DANGER

This prompt is used when there is an immediate hazard that IS LIKELY TO result in severe personal injury or death if proper procedures are not followed.

CAUTION

This prompt is used to warn against potentially unsafe practices that COULD result in personal injury or death and/or property damage if correct procedures are not followed.

NOTE

This prompt is used when an operation, condition, or information is of sufficient importance to warrant highlighting.

DROPPED OBJECTS

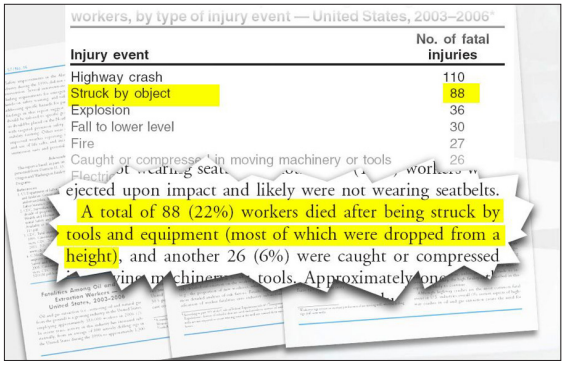
Introduction

Dropped objects are one of the biggest workplace killers!

In Australia, between 2010 and 2014 dropped objects caused:

- 125 deaths
- 15,410 serious injuries

(Source: Safe Work Australia Traumatic Injury Fatalities, 2014.)


workers, by type of injury event — United States, 2003–2006

Injury event	No. of fatal injuries
Highway crash	110
Struck by object	88
Explosion	36
Fall to lower level	30
Fire	27
Caught or compressed in moving machinery or tools	26

ejected upon impact and likely were not wearing seatbelts.

A total of 88 (22%) workers died after being struck by tools and equipment (most of which were dropped from a height), and another 26 (6%) were caught or compressed

According to OHSA, in the United States of America (USA), 140 people are struck by a falling object every day - that's one person every 10 minutes!

This awareness package is designed to:

- Raise awareness of potential dropped objects and industry facts
- Help workers recognise and understand:
  - The top 10 causes of dropped objects
  - Personal responsibilities for the prevention of dropped objects
  - Ways to stop dropped object incidents.

1. WHAT IS A DROPPED OBJECT

A dropped object is one that falls from its previous static position under its own weight. The object can fall downwards or sideways.

Examples are all around us and include:

- A book falling from a shelf
- A tile from a roof
- Hand tools that are, or were, being used at heights
- A raised load.

Dropped objects are most commonly associated with work at heights or lifting operations.

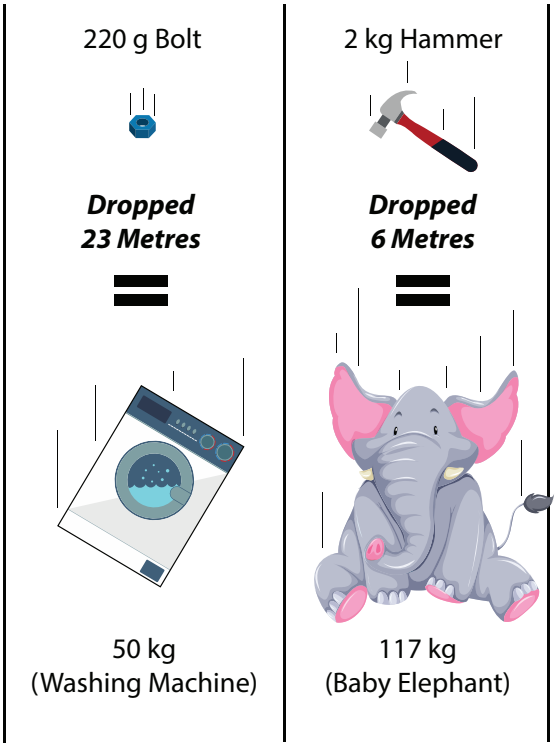
1.1 IMPACT STATISTICS

1.1.1 WEIGHT AND DISTANCE

The impact of a dropped object is a combination of the weight of the object plus the distance it falls.

Here are some examples:

- A 220g bolt dropped 23 metres hits with 50+ kg impact; that's a full tool box or a washing machine landing on your head!
- A 2kg hammer dropped 6 metres hits with 117+ kg impact; that's a cement mixer, or a baby elephant!

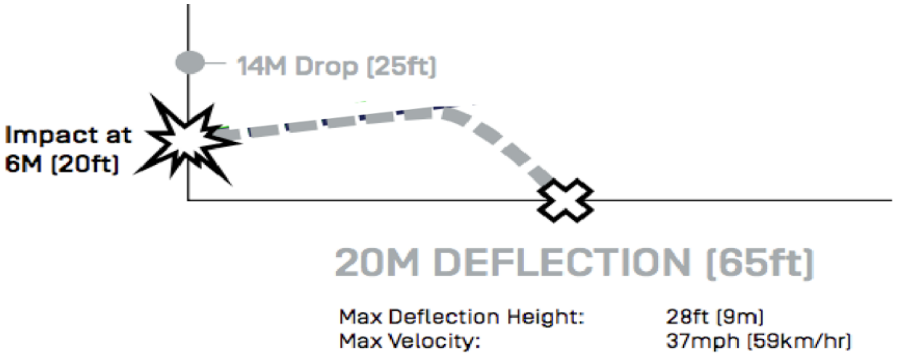


1.1.2 VERTICAL FALLS AND DEFLECTION

Gravity makes objects fall vertically.

A dropped object will fall vertically but can also bounce off a surface (be deflected) during the fall, increasing the danger zone.

- If an object falls 14 metres, and hits an obstruction at 6 metres, it will be deflected and can land over 20 metres away.



2. TOP 10 CAUSES OF DROPPED OBJECTS

The following have been identified as the top 10 causes of falling object incidents at the workplace.

Cause	Details
PROCEDURES AND SYSTEMS	
1. Inadequate Risk Assessment	A risk assessment can identify potential energy sources, catalogue tools and equipment required for the job, and create a heightened awareness about the potential dangers of falling objects.

Cause	Details
2. Lack of Planning	In addition to risk assessments, a management of change process can be used to identify and control risk from changes occurring at the workplace.
3. Previous Jobs	Tools, loose objects and equipment left behind from a previous job can pose unexpected risk if current job staff are unaware of them. Ensure the work site is cleared of objects at the completion of the job. Maintain good housekeeping and inspect the site before starting a new job.
4. Inadequate Repairs / Inspections	Scheduled inspections and maintenance can help identify corrosion, damages, wear and tear as well as structural and equipment faults or damage before they become a falling object risk.
TOOLS, EQUIPMENT AND STRUCTURAL FAULTS	
5. Failed Fixtures and Fittings	Poor design, corrosion, vibration, incorrect selection and implementation of fixtures and fittings can all lead to failure. Failed fixtures and fittings can, and will, often dislodge and fall from place, if not inspected and maintained.
6. Damaged Tools and Equipment	Improvised or home-made tools, equipment that is uncertified, or even damaged tools and equipment from previous jobs can fail or break unexpectedly. Timely inspection and replacement before each job can reduce this risk.
7. Loose Objects	Tools, materials, debris and communication equipment that is unsecured or untethered can be accidentally dropped.
TASK PLANNING	
8. Environmental Conditions	The following environmental conditions can change work conditions and compromise the stability of tools, equipment and structures, particularly when working at heights: • high wind (lifting debris) • rain (creating slippery surfaces) • humidity (perspiration leading to wet hands and fatigue, which in turn can lead to dropped objects) • cold (leading to numb hands) • glare from sun or work lights (restricting vision).
9. Collisions and Snagging	Lifting, moving equipment and tag lines can cause snagging or collision and the impact can create debris, or breakage which can then fall.
10. Human Error	Inadequate training or awareness of hazards, operator error, complacency, neglect and lack of reporting procedures can result in compromised safety. Toolbox sessions including an outline of falling object hazards and scheduled training or reporting can help reduce this risk.

2.1 OTHER HAZARDS

2.1.1 WORKING NEAR MOBILE EQUIPMENT

When working near mobile equipment or operating plant be aware of:

- Materials ejected from conveyor belts
- Items falling from unsecured loads during lifting (e.g. when using slinging and rigging equipment, cranes, cherry pickers, scissor lifts)
- Items falling during transport (e.g. from forklift tynes, excavator and front end loader buckets, truck trays).

2.1.2 WORKING ON OR NEAR STRUCTURES

When working on or near structures be aware of:

- Hand and power tools (underfoot and overhead)
- Building materials (roofing, steel sheeting, piping, bolts, nuts, welding rods)
- Collapse of an unstable structure (scaffolding, rigging gear)
- Failed fixtures and fittings (through poor installation, corrosion, or wear)
- Overstacked or incorrectly stacked items (drums, boxes, pipes, bricks).

2.1.3 WORK AREA

The following work area hazards can contribute to dropped objects:

- Uneven flooring and work surfaces (causing workers to trip, collide and items to roll away)
- Poor housekeeping (e.g. cords, tools and rubbish lying across walkways and platforms, causing trips and drops)
- Workers not following procedures (e.g. 3 points of contact, not erecting barricades and signage)
- Unsecured equipment and tools, especially when working at height.

3. WORK SAFELY

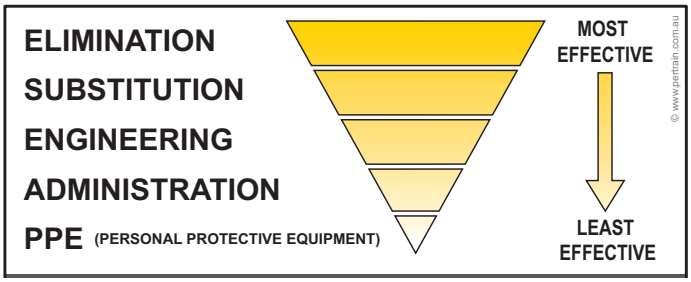
All workers have an obligation to ensure the safety and health of themselves and others and to protect the environment in which they work. The following actions can help you to do this.

- Make sure you are trained and authorised to do the work.
- Make sure all required authorisations (permits and certificates) are in place.
- Inspect the work site to identify hazards and control risks.
- Use properly fitted and appropriate PPE for the task.
- Inspect equipment to ensure that it is suitable to the task and stored safely when not in use.
- If changes to the task or work conditions occur during the task, stop work and reassess the risks.

3.1 CONTROLS

Once you have identified the hazards, you must assess the risks and implement the required controls.

Dropped objects is a major hazard at OTML and a Key Control Data Sheet has been developed that lists the critical controls to be in place.



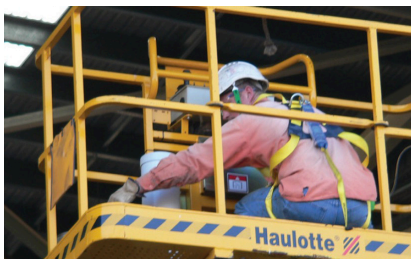
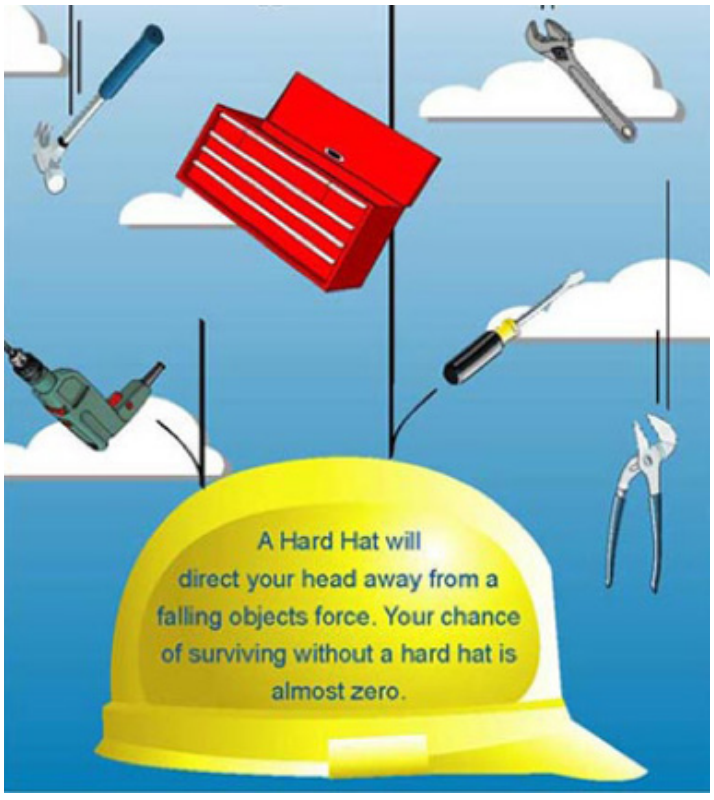
Other hazard control methods may be chosen according to the hierarchy of controls. The most effective level of control is to eliminate the hazard completely. For example, can you conduct work at ground level, so there is less risk of serious injury should you drop an object. Eliminating the hazard is not always possible, in which case other control methods, or a combination of controls, may be used. Always apply the highest possible level of control.

Required controls will be:

- Discussed at a shift briefing
- Listed on the JSEA/Risk Assessment for the task
- Detailed on the Work at Heights Permit / Certificate
- Included in procedures and work instructions.

The following are some basic control measures for protecting people from dropped objects.

Control	Description
Barricades and Signage 	Erect permanent or temporary barricades to isolate the work area and restrict access. Make sure the isolation area is large enough to cover possible deflection of objects falling from height. Install signage at all entrances to the isolation area and at regular intervals along the barricades. Signs should warn people of the hazard, such as "Workers Overhead" or "Men Working Below".
Procedures 	All personnel must follow site procedures which include: • Perform work at ground level if possible then lift into position when work is complete • Ensure permits and procedures are in place • Secure unused objects and materials to the work platform and remove them from the work area as soon as possible • Never stand under a load being lifted, lowered or shifted. • Never throw objects to or from an elevated work area or into or out of a trench, excavation or pit.

Control	Description
Good Housekeeping 	Keep work area free of obstacles, debris and trip hazards. Place tools and equipment in boxes or buckets, away from edges. Check work area after work is completed to ensure no tools or equipment is left at height.
Edge Protection 	Ensure elevated work areas have suitable edge protection including guard rails and toe boards. Platform surfaces should be covered in rubber matting, mesh, plywood or other solid material to enclose gaps and prevent items falling through.
Tool tethering systems 	Use when working at heights (tool lanyards, tool cinches, tool pouches, hoisters, tool buckets). Securely fasten all tools and materials being raised or lowered in a bag/box or by tying off. Make sure that lines used to raise and lower items are within the Working Load Limit (WLL).
Personal Protective Equipment (PPE)  **NOTE:** Hard hats MUST have a chinstrap that is secured. Other PPE includes Falling Object Protection (FOP) in equipment cabins.	

4. CHALLENGES

So what is stopping us from implementing these controls and eliminating the risk of dropped tools?

Some identified challenges are listed below.

Culture	Consequences of dropped objects are not as straight forward as the dangers of falling from height. Tool drop prevention has tended to be overlooked in many industries. Additional education at all levels is necessary.
Lack of Risk Awareness	Falling objects has always been a risk on work sites. This may have lead to an attitude of complacency. However statistics are clearly showing that this is a very dangerous outlook with potentially deadly consequences.
Restricted Tool Functionality	Historically many drop prevention devices have inhibited tool functionality and therefore affected job performance. If attachments are obstructive and reduce productivity, workers may discard them.
Tool Diversity	The vast range of tools that are used at height makes it difficult to develop and implement a drop prevention policy. A 'one size fits all' approach does not tend to be sustainable and will invariably gain little acceptance.

5. SUMMARY

Everyone on site has a responsibility to perform their duties safely and to take accountability for their own actions. Protect your self and others from dropped objects by:

- Creating a restricted access drop zone using barricades and signage
- Wearing correct PPE
- Ensuring tools and equipment are secured to yourself or to the work platform
- Only working on elevated platforms that have the proper edge protection
- Maintaining good housekeeping practices so items are not left where they can be dropped or kicked from a height
- Following procedures
- Maintaining awareness of work area changes such as:
  - repositioned barricades or signs
  - tools, equipment, materials placed where there is potential for them to become a dropped object
  - unauthorised personnel entering the restricted drop zone.

If you do not understand what is required of you, stop! Do not continue with the task. See your Supervisor.