

Risk and Hazard Management

Models	HTL3010	Maximum Lift Capacity (kg)	2990	Maximum Lift Capacity to Full Height (kg)	2000	Maximum Lift Capacity at Full Reach (kg)	500
	HTL3210		3200		2500		850
	HTL3510		3500		2000		500
	HTL4010		4000		2500		1200

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In accordance with the relevant Occupational Health and Safety Legislation for the region, this report serves as confirmation that each model type Haulotte product has undergone a risk assessment to the applicable market. The risk assessment investigates potential hazards associated with operation, maintenance, servicing, inspection, transportation and storage of the subject plant.

To assist, HAULOTTE provides Operators and Maintenance manuals for the product, which provides information regarding residual risks and correspondingly their control measures. Also, in accordance with the legislation, the information required to be supplied to the Purchaser, or User of the plant by the designer, manufacturer, supplier and importer can be found in the Manuals provided.

In addition to these manuals there may be industry safe use standards for the products that can be used to help with identifying potential hazards on the jobsite (e.g. AS 2550.10).

Hazard Type Checklist

The table provides a summary of some potential hazards associated with the use of the plant. Haulotte evaluates each of these potential hazards during the risk assessment process in an effort to select specific control measures, (e.g. designs, guarding, warnings) that will reduce the likelihood that the operator, platform occupant(s), maintenance personnel or bystanders will be exposed to the hazard.

Many of these hazards can be identified in the relevant States Plant Hazard Guidance document.

Table 1 Hazard Type Checklist

<p align="center">CRUSHING, ENTANGLEMENT, CUTTING, SEVERING, STABBING, PUNCTURING, SHEARING, FRICTION, IMPACT, TRAPPING</p>	<ul style="list-style-type: none"> - Can anyone’s hair, clothing, gloves, cleaning apparatus or any other materials become entangled in moving parts, or objects in motion. - Can anyone be crushed due to: <ul style="list-style-type: none"> o material falling from plant o uncontrolled motion or unexpected movement of plant o the plant tipping or rolling over o inadequate slowing or stopping devices of plant to control movement o support structure collapse o being thrown from or under the plant o coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair o being trapped between the plant and materials or fixed structures -Cutting, stabbing & puncturing due to: <ul style="list-style-type: none"> o contact with sharp or flying objects o coming in contact with moving parts of the plant during testing, inspection, operation, maintenance, cleaning or repair of the plant o parts of plant or worksite material disintegrating or falling o movement of plant o can anyone’s body parts be sheared between moving parts or surfaces of the plant o can anyone be burnt due to contact with moving parts or surfaces of the plant o can anyone be struck by moving objects due to uncontrolled or unexpected movement of plant or work pieces (i.e. failure of the control system)
<p align="center">ERGONOMIC, SLIPPING, TRIPPING, FALLING</p>	<ul style="list-style-type: none"> - Can anyone be injured due to: <ul style="list-style-type: none"> o uneven or slippery work surfaces o poor housekeeping in the vicinity of or in the plant o obstacles being placed in the vicinity of the plant o due to repetitive body movements o constrained body posture or the need for excessive effort o design inefficiency causing mental or psychological stress o inadequate or poorly placed lighting of plant or workers IN THE WORKING AREA o lack of failsafe measures against human error or human behaviour o mismatch of plant with natural human limitations o unhealthy posture or excessive efforts o lack of personal fall protective equipment o inadequate design/positioning of controls
<p align="center">HIGH PRESSURE FLUIDS, HIGH TEMPERATURES, FIRE/EXPLOSION</p>	<ul style="list-style-type: none"> - Can anyone come into contact with fluids under high pressure, due to plant failure or misuse - Can anyone come into contact with objects at high temperatures, or objects which can cause fire or burning - Can anyone suffer illness due to exposure to high or low temperatures - Can anyone be injured by explosion of gases, vapours, liquids, dusts or other substances triggered by the operation of the plant or material handled by the plant
<p align="center">SUFFOCATION</p>	<ul style="list-style-type: none"> - Can anyone be suffocated due to lack of oxygen, or atmospheric contamination

**Table 1 Hazard Type
Checklist**

ELECTRICAL	<ul style="list-style-type: none"> - Can anyone be injured by due to: o the plant coming into contact with live conductors o plant being too close to high tension power lines o overload of electrical circuits o damaged or poorly maintained electrical leads and cables o damaged electrical switches o water near electrical equipment o lack of insulation against water contact shorting o thermal radiation o electrostatic radiation o magnetic interference from workplace affecting electrical components
STABILITY	<ul style="list-style-type: none"> - Can machine tip or roll over due to stabiliser not extending. - Stabilisers failing structurally, mechanically, or retract unintentionally. - Control valve or interlock failure. - Setting up on soft ground, unlevel or uneven ground, excessive slope. - Driving on rough surfaces, over potholes, hitting fixed objects, excessive side loads, operation in excessive
HYDRAULIC FAILURE	<ul style="list-style-type: none"> - Hydraulic system failure. - Check valve or relief valve failure. - Hose or cylinder failure - mechanical or fatigue.
STRUCTURAL FAILURE	<ul style="list-style-type: none"> -Structural failure due to fatigue, corrosion, or overloading. - Pin, cable or linkage failure. - General overload, lifting excessive load, loading platform/basket in an unintended way.
MAINTENANCE	<ul style="list-style-type: none"> - Can anyone be injured: o while carrying out routine, preventative or corrective maintenance o explosion due to an ignition source near charging battery o adjusting equipment for essential components faulty or seized o operating a machine that has been damaged or modified o operating a malfunctioning machine o if the machines guards/covers are missing
TRANSPORT	<ul style="list-style-type: none"> - Can anyone be injured: o due to machine instability while loading/unloading, transporting o plant or objects falling from transport truck
OCCUPATIONAL HAZARDS	<ul style="list-style-type: none"> - Plant obstructing other plants at site. - Unauthorised use by untrained personnel. - Unintended use of duplicate controls while working. - Hearing loss or communication interference due to excessive noise. - Lack of personal fall protective equipment. - Use of the plant as a crane.

OTHER HAZARDS, EJECTION OF PARTS VIBRATION	<ul style="list-style-type: none"> - Can anyone be injured or suffer ill-health from exposure to: <ul style="list-style-type: none"> o chemicals, toxic gases or vapours, fumes, dust, noise, vibration, radiation o neurological and cardiovascular disorders from excessive vibration o inadequate visibility o road traffic o inadequate means of access o safe use of controls (speed of movement) o failure of controls o safety signs or decals removed o energy supply failure (electrical or mechanical)
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Hazard Control Measures

HAULOTTE has instilled necessary control measures to minimize potential hazards to the operator, platform occupants, maintenance personnel and any bystanders. The control measures listed below is a summary of potential hazards associated with the plant itself and the necessary control measures implemented.

HAZARD CONTROL MEASURES				
HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
1	OCCUPATIONAL HAZARDS	General Operation by a trained, or untrained, operator leads to an accident.	<ul style="list-style-type: none"> • Comply with employer, job site and governmental rules. • Read, understand and follow the instructions in the operators and safety manuals supplied with the plant. • Use good safe work practices in a commonsense way. • Only have trained/certified operators, directed by informed and knowledgeable supervision, running the machine. 	<ul style="list-style-type: none"> • Address during company induction. • Manuals provided in a storage location on platform.

2	WORKSITE HAZARDS	Failure to perform a jobsite risk assessment	<ul style="list-style-type: none"> A complete jobsite risk assessment should be performed prior to using the plant. To assist with this effort, operators and maintenance manual identifies some of the common residual risks for the plant. 	<ul style="list-style-type: none"> Every employer, user, and operator should review these residual risks and implement the necessary control measures to avoid them. Users and employers should also research other supplemental information regarding the safe use of the plant, to support this effort (i.e. AS2550.10)
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HAZARD CONTROL MEASURES				
HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
	CRUSHING ENTANGLEMENT CUTTING SEVERING STABBING PUNCTURING SHEARING FRICTION IMPACT TRAPPING	General Operation	<ul style="list-style-type: none"> Guards are provided on the plant to protect persons standing adjacent to the plant at ground level, against thermal or mechanical hazards. Trapping and shearing points between moving parts which are within reach of persons standing adjacent to the plant at ground level are avoided by providing safe clearances or guarding, as applicable. When the plant needs to be raised for routine servicing purposes, the safety prop is to be installed which locks the cylinder in place. 	Address during company induction. Operator(s) to be aware of clothes and materials hanging near moving parts. Tools and equipment may be strapped if required by site assessment. Never let anyone stand or work under the boom when it is raised.

3	Crushing / Striking	Objects falling	<ul style="list-style-type: none"> Operator's cab is provided with ROPS/FOPS. Operators manual warns personnel to keep clear of area beneath boom and to cordon off the area. Plant is affixed with warning labels. 	
	Crushing / Striking	Improperly specified load centers	<ul style="list-style-type: none"> Precautions provided in the manual. Load charts compliant with AS 1418.19. Manual covers use with nonsuspended loads. 	
	SUFFOCATION	Inhalation of exhaust gases Operating in an area where obstacles, other people and plant may be present	<ul style="list-style-type: none"> Operator's manual contains instructions and guidelines for operating in these circumstances. 	<ul style="list-style-type: none"> Site management must ensure work area remains clear from obstacles.

HAZARD CONTROL MEASURES				
HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
	Crushing, Collision / Striking	Underneath raised boom	<ul style="list-style-type: none"> Plant is clearly labeled with warning decals due to the potential crushing hazard associated with the type plants Correct maintenance and operating procedures with safety instructions are provided in the manual. Safety prop is provided to be installed which locks the cylinder in place. 	<ul style="list-style-type: none"> Never let anyone stand or work under the boom when it is raised.

3 (cont'd)	Striking	Improper use of jibs (optional)	<ul style="list-style-type: none"> Warnings and instructions are provided in the manual. Correct procedures are contained in the Operator's manual 	<ul style="list-style-type: none"> Ensure that the correct attachment is selected and displayed. Ensure load is not travelled with the load set high.
	Improper use of function controls	Incorrect operation of the joystick	<ul style="list-style-type: none"> Decal matches joystick functions. Instructions for lifting provided in the manual. Total weight and front rear split weight is provided on the plant and in the manual. Lifting eyes available on the plant and marked. 	<ul style="list-style-type: none"> Ensure decal on the window corresponds to the operation of joystick.
	Entanglement, friction, cutting	Engine components & Maintenance	<ul style="list-style-type: none"> Engine components are enclosed under covers. Fan blades are shrouded. Warning decals are affixed. Operators are not subjected to friction as there are no high speed exposed components Guards provided is of a fixed permanent nature and can be removed with tools. 	<ul style="list-style-type: none"> Maintenance to be carried out by qualified personnel. Trained and competent personnel required to use cab controls.
<ul style="list-style-type: none"> Crushing hazard decals are clearly displayed on the plant. Warnings are placed in operator's manual to prevent entanglement. 				

HAZARD CONTROL MEASURES

HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
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3 (cont'd)	Friction	Mechanical Failure	<ul style="list-style-type: none"> Operators are not subjected by the plant to friction, as there are no high speed exposed components. Mechanical failure due to friction is reduced with self-lubricating bushes and wear pads. Locations of lubrication points are shown in the manual. Also a lubrication schedule is provided along with grease types to be used. 	
	Cutting Stabbing Puncturing	General Operation	<ul style="list-style-type: none"> Controls and other contact surfaces have no sharp edges. Controls are ergonomically designed. 	<ul style="list-style-type: none"> Bystanders must stay clear when plant is operational.
4	ERGONOMIC	Loss of braking while travelling	<ul style="list-style-type: none"> Control position (cab) on the plant is designed to allow excellent visibility. Brakes on the plant automatically engage when the power to them has stopped or failed. Brakes are capable of holding the plant on approved slopes. 	<ul style="list-style-type: none"> Ensure operator is seated before starting the engine. Ensure operator remains seated at all times when driving the plant. Ensure that the unit is only driven with the cab closed, seat belt worn and plant is used within specification. That the unit not travelled on side slopes. Traveling must be when the load is low and the boom is fully retracted and the forks tilted back.
		Crushing	<ul style="list-style-type: none"> Operators cab is protected from falling objects with ROPS/FOPS. 	<ul style="list-style-type: none"> Site management to ensure operator wears safety belt.
		General operation - Lighting	<ul style="list-style-type: none"> Headlights are fitted. 	
		Unintended movement	<ul style="list-style-type: none"> Extending system is designed and constructed to prevent any inadvertent movement. 	

HAZARD CONTROL MEASURES

HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
5	HIGH PRESSURE FLUIDS HIGH TEMPERATURES FIRE / EXPLOSION	High Pressure fluid jets resulting puncturing the skin or eyes	<ul style="list-style-type: none"> • Hydraulic hoses used have a bursting pressure well over the working pressure. • Relief valves are used to prevent over pressurizing the hydraulic system. • Engine exhaust is directed away from the control positions and from all electrical wirings. • High temperature components such as engine and pump are positioned out of arms reach and in enclosures. • The battery is constrained to prevent unintentional displacement. • Filling points for flammable fluids are positioned to minimize the risk of fire from spillage on hot parts. 	<ul style="list-style-type: none"> • Fire extinguishers to be provided following job assessment. • JSA, training and supervision must be provided by site management.
6	SUFFOCATION	Inhalation of exhaust gases	<ul style="list-style-type: none"> • Exhaust gas is directed away from the cab. • The size of the machine prevents operation in confined spaces, therefore exhaust gas inhalation is not considered to pose a problem. 	
7	ELECTRICAL	Electrocution, Working too close to energized power lines	<ul style="list-style-type: none"> • Machine is clearly marked with electrical warning deals to reduce the risk. • Warning decals are placed on the machine and are marked noninsulating. • Operator’s manual states that the machine is not insulated. • Safe operating procedures and minimum approach distances are placed in the manual. • Decal - Minimum safety distance from the energized/power lines is fitted to the plant. 	<ul style="list-style-type: none"> • JSA, training and supervision must be provided by site management to ensure safe working clearances from the electric field are assessed. Consider boom deflection and loads in the assessment of the safe working distance.
		Poor design of electrical circuits	<ul style="list-style-type: none"> • Connectors used are either insulated crimp lugs, locking plastic plugs, or permanent type clamps. • Wiring is routed to prevent chaffing. Plants are fitted with the control system which uses malfunction/error signals to assist in faultfinding. 	<ul style="list-style-type: none"> • Conduct inspections as scheduled.

HAZARD CONTROL MEASURES

HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
7	ELECTRICAL (cont'd)	Water bridging	<ul style="list-style-type: none"> • Electric components are tested for water damage to meet IP requirements. • Inspection and maintenance procedures are placed in the operator's manual. 	
		Battery charging	<ul style="list-style-type: none"> • Battery is automatically charged while engine is running. • Safe charging procedures are placed in the operator's manual. 	<ul style="list-style-type: none"> • As required, charge battery in a well ventilated area.
8	STABILITY	Occupational Hazard Unauthorized use	<ul style="list-style-type: none"> • Plant is equipped with lockable cab and a key switch in the Operator's cab to prevent unauthorized use. 	
		Overloaded Poor design of Load Management System	<ul style="list-style-type: none"> • All plants are fitted with an EQSS – a Load Management System which monitors and manages the load on the plant in all positions. • System includes default to safe. • Load charts provided for each attachment on the plant and in the manual. • Boom reach indicators are provided. • EQSS system calibrated at the time of commissioning. • Refer to supplementary manual included with supply of plant fitted with EQSS system. 	<ul style="list-style-type: none"> • Check correct sensor operation. • Daily check procedure for system specified in the manual • Ensure system is calibrated and the test function works as required. • Ensure load charts are in the cab for each attachment. • Ensure that the EQSS load management manual is provided with each unit.
		Tip Over	<ul style="list-style-type: none"> • All plants have undergone detailed stability analysis. • These calculations take into consideration the machines expected operating configuration, envelope, and approved operating conditions. 	
		Tip Over	<ul style="list-style-type: none"> • Stability analysis takes into consideration a number of foreseeable forces including gravitational (based on rated lifting capacity), dynamic, and wind forces. 	
		Tip Over	<ul style="list-style-type: none"> • Stability analysis not only evaluates the plant's static condition, but also potential effects of dynamic conditions (i.e. braking, and depressions). 	

		Tip Over	<ul style="list-style-type: none"> Stability analysis is verified by physically testing the static and dynamic stability of the design. 	
HAZARD CONTROL MEASURES				
HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
8 (cont'd)	STABILITY	Longitudinal instability during load shifting	<ul style="list-style-type: none"> Stability of plant during load shifting is tested in accordance with EN1459 with boom lowered Warning decals are placed on plant, and safe operating procedures are placed in the operator's manual. 	<ul style="list-style-type: none"> Site management to ensure operators are trained in plant operation and plant is operated within specified limits.
		Instability during Load lifting/lowering	<ul style="list-style-type: none"> Compliant level is fitted in the operator's cab Specifications provided on load charts and in manual. 	<ul style="list-style-type: none"> Ensure that the plant is always setup within the slope limits defined before use.
		Instability due to swaying load	<ul style="list-style-type: none"> Interlocks provided to prevent use when boom above horizontal. Precautions provided in the manual. Use of optional attachments is included in the Operator's manual. 	
		Travelling	<ul style="list-style-type: none"> Slope limits specified on a decal in the cab. Braking is designed to hold the plant on its maximum rated grade. Plant is tested for dynamic stability in various conditions as per requirement. A permanent type specification plate is stamped with design limits. Plant tested to requirements of AS 1418.19. For loading by ramps onto a truck, instructions are provided in the manual and gradeability limits defined in manual. Instructions provided in the manual detailing tie down points and associated precautions. 	<ul style="list-style-type: none"> Site management to ensure cab occupant wears a safety belt. Operate plant in accordance with load, slope and wind limits.
		Unloading on soft or uneven terrain	<ul style="list-style-type: none"> Wheel loads provided in manual and on the plant. 	

		Retracting extended outriggers	<ul style="list-style-type: none"> Plant is equipped with outriggers to improve stability of the plant. Ground pressure limitations and outrigger loads specified on the plant and in the manual. 	<ul style="list-style-type: none"> Ensure that the outriggers are founded on firm ground capable of supporting the loads specified.
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HAZARD CONTROL MEASURES				
HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
9	HYDRAULIC FAILURE	Unintended movement	<ul style="list-style-type: none"> When power to the controls stop or fails, this system automatically locks the movements, in any position. 	<ul style="list-style-type: none"> Training and supervision must be provided by site management.
		Excessive pressure buildup	<ul style="list-style-type: none"> Relief valves are used to prevent over pressurizing the hydraulic system. Holding valves prevent unsafe descent in the advent of failure. Correct pressures listed in the service manual. Hydraulic hoses used have a bursting pressure well in excess of the working pressure. Inspection and maintenance procedures are placed in the operator's manual. 	
		Poor design of hydraulic systems	<ul style="list-style-type: none"> Holding valves on cylinders prevent inadvertent movement. Holding valves are installed on all load-bearing devices. System relief valves fitted to main functions. Inspection and maintenance procedures and daily inspection list are placed in the operator's manual. Plant is equipped with outriggers, and they are protected from unintentionally retracting. 	<ul style="list-style-type: none"> Inspection, cleaning, maintenance and repair must be conducted when plant is stationary. Ensure that hydraulic relief valve settings are periodically checked in accordance with the manual.

10	STRUCTURAL FAILURE	Failure of any structure	<ul style="list-style-type: none"> The plants have undergone detailed structural analysis. These calculations take into consideration the machine's expected operating configuration, envelop, and approved conditions (i.e. slope). 	
			<ul style="list-style-type: none"> Structural analysis takes into consideration a number of foreseeable forces including gravitational (based on rated capacity). 	

			<ul style="list-style-type: none"> Structural analysis is verified by physically testing the structural soundness through both static and dynamic loading. 	
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HAZARD CONTROL MEASURES

HAZARD NUMBER	HAZARD TYPE	LOCATION / SITUATION	CONTROL METHOD IN PLACE TO REDUCE RISK	ADDITIONAL CONTROL METHOD REQUIRED
10 (cont'd)	STRUCTURAL FAILURE	Fatigue	<ul style="list-style-type: none"> The plant has been cyclic tested beyond its rated design life cycle against fatigue. Maintenance schedule provided in the manuals. Annual inspections are required as stated in the manual 	
		Wear and corrosion	<ul style="list-style-type: none"> Corrosive surfaces are painted, components subject to wear have provisions to minimize wear by using sacrificial components or lubrication e.g. wear pads, selflubricating pins. Lubrication points and a schedule for maintenance are provided in the manual. 	<ul style="list-style-type: none"> Conduct pre-operational inspections and periodic inspections as scheduled.
OTHER	Insufficient communication procedures or equipment	General Operation	<ul style="list-style-type: none"> Instructions relating to emergency exit from cab and emergency load lowering provided in the manual. 	<ul style="list-style-type: none"> Supply and storage of safety chocks is the owner's responsibility.
			<ul style="list-style-type: none"> Where controls are mechanical in nature operating effort is reduced as far as practicable. Controls return to neutral upon release and movement will only occur when physically actuated. 	<ul style="list-style-type: none"> Site management to ensure platform remains in clean, free of debris and safe condition.

HAZARDS	Excessive effort	Maintenance	<ul style="list-style-type: none"> • Components which require regular maintenance such as filters are placed in an easily accessed area. 	<ul style="list-style-type: none"> • Only trained, qualified personnel must do maintenance work.
	Operating stress	General Operation	<ul style="list-style-type: none"> • Control box faceplates use pictures for functions, and switches, which control 'direction', operate in that direction. • Plants are field tested for controllability and ease of use. • Handrails are provided around control station for support during motion. • Warning decals are used to warn of incorrect operating procedures. 	<ul style="list-style-type: none"> • Replace control box faceplate label(s) if illegible or damaged.
	Noise	General Operation	<ul style="list-style-type: none"> • Engine and other hydraulic components have a shroud around them and are not considered to pose noise problems. • Where noise is considered excessive, level testing is done and noted in the operator's manual. 	

Product Safety

The information provided in this document is only a small example of the activities which have been undertaken by Haulotte GROUP to ensure the safety of the plants.

These include:

- Performing computer simulation/modeling of product and internal design calculations.
- Independent design review by an independent engineer to local design requirements is completed in Australia.
- Cycle testing of components to ensure fatigue life is adequate for a 10 year life is completed.
- Extensive field testing of prototype units to ensure faults and hazards are identified.

Occupational Health & Safety Legislation

The below legislation has been used to produce this document.

ACT, NSW, QLD: Work Health and Safety Act 2011
 NT: Work Health and Safety (National Uniform Legislation) Act 2011
 SA, TAS: Work Health and Safety Act 2012
 VIC: Occupational Health and Safety Act 2004
 WA: Occupational Safety and Health Act 1984