

## VISIBILITY HAZARDS

Ergonomics plays a role in helping to reduce visibility hazards that can lead to a worker being struck by a vehicle or mobile equipment. Generally, these occur when the operator of a vehicle or mobile equipment:

- Cannot see a worker (e.g. blind spots).
- Does not notice a worker even though they were in their line of sight.

Every attempt should be made to separate pedestrians from vehicles/mobile equipment. Following the hierarchy of controls starting with eliminating pedestrians from areas where vehicles/mobile equipment are present is your best bet. Followed by engineering, administrative and personal protective equipment, these controls offer various levels of success to reduce and/or eliminate workers being struck by a vehicle or mobile equipment

The following table outlines some common problems and solutions to reduce visibility hazards and increase the ability for operators to see workers.

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TYPE OF HAZARD	PROBLEM	SOLUTION	TYPE OF CONTROL	APPLICABLE LEGISLATION/STANDARDS
Operator unable to see a worker	Their line of sight is blocked by: <ul style="list-style-type: none"> <li>▪ Some part of the vehicle or mobile equipment;</li> <li>▪ Loads that are being carried; or</li> <li>▪ The environment (such as stacks of materials, structural columns, etc.)</li> </ul>	<input type="checkbox"/> Line-of-sight comparisons should be a part of tender documents for all vehicle/mobile equipment purchases.	Engineering	
		<input type="checkbox"/> Install devices to improve operator and pedestrian visibility; <ul style="list-style-type: none"> <li>▪ Convex mirrors at intersections for pedestrian use;</li> <li>▪ Warning lights;</li> <li>▪ Proximity sensors; and/or</li> <li>▪ Reversing alarms.</li> </ul>	Engineering	
		<input type="checkbox"/> Implement a Traffic (pedestrian) Management System, or the “rules of the road”, including appropriate roles, responsibilities, barriers, markings, and signage. Eliminate and/or prevent the interaction between pedestrians and mobile equipment to reduce the likelihood of contact.	Engineering/Administrative	

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		<input type="checkbox"/> Eliminate/minimize blind spots through vehicle design and improve operator and pedestrian awareness of blind spots on vehicles.	Engineering/Administrative	
		<input type="checkbox"/> Line-of-sight improvements (e.g. mirrors, cameras) can reduce the risk of back injury and musculoskeletal disorders for operators.	Engineering/Administrative	
		<input type="checkbox"/> Consider Barriers, warning signs, or other safeguards for the protection of all workers in an area; these shall be used where vehicle or pedestrian traffic may endanger the safety of any worker.	Engineering/Administrative	
		<input type="checkbox"/> Use a small, average, and tall worker to determine where the operator's line of sight is impaired and where the blind spots are. Ensure proper adjustment of cab seating/ controls to maximize operator visibility.	Administrative	
		<input type="checkbox"/> Establish communication signals, use a competent signal person when required, and ensure they are stationed in the correct position.	Administrative	R.R.O. 1990, Reg. 851, s. 20.

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TYPE OF HAZARD	PROBLEM	SOLUTION	TYPE OF CONTROL	APPLICABLE LEGISLATION/ STANDARDS
	<ul style="list-style-type: none"> <li>▪ Unable to see a worker due to low lighting and/or glare</li> </ul>	<ul style="list-style-type: none"> <li>❑ Supply personal protective equipment (high visibility clothing) that offers enough contrast between the worker and the background.</li> </ul>	Personal	CSA Z96-15 - High-visibility Safety Apparel R.R.O. 1990, Reg. 851, s. 79
		<ul style="list-style-type: none"> <li>❑ Ensure adequate artificial lighting is provided if there is inadequate natural lighting.</li> </ul>	Engineering	R.R.O. 1990, Reg. 851, s. 21.
		<ul style="list-style-type: none"> <li>❑ Keep shadows and glare to a minimum. Often racking is obscuring lighting casting shadows on the ground. Consider this when installing racks and lighting.</li> </ul>	Engineering	ANSI/IESNA RP-7-17
		<ul style="list-style-type: none"> <li>❑ If natural lighting causes glare or impairs vision, consider using shades or window tinting film. Depending on the time of day and year the sun may obscure vision as the vehicle turns towards the light source.</li> </ul>	Engineering	
		<ul style="list-style-type: none"> <li>❑ Consider a lighting assessment to ensure adequate levels of lighting are being provided based on accepted standards.</li> </ul>	Engineering	

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		<ul style="list-style-type: none"> <li>❑ The transition from a well-lit area to a poorly lit area or vice versa should be as gradual as possible to allow workers' vision time to adjust to the change in light level</li> </ul>	Administrative	
		<ul style="list-style-type: none"> <li>❑ Consider providing quality, polarized sunglasses to reduce glare and improve vision in bright sunlit conditions. This is especially important when moving in and out of buildings</li> </ul>	Personal	
Operator fails to notice a worker	Risk increases if the operator is not expecting the presence of people	<ul style="list-style-type: none"> <li>❑ Considering eliminating pedestrians from areas where operators are not expecting people</li> </ul>	Elimination	
		<ul style="list-style-type: none"> <li>❑ Consider Collision Avoidance Systems, such as radar, RFID, or GPS when, line of sight issues are difficult to manage.</li> </ul>	Engineering	

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		<ul style="list-style-type: none"> <li>Operators will notice workers more readily if they expect them to be there. Educate pedestrians and operators about roles, responsibilities, and communication signals if there is a chance for pedestrians and vehicles to occupy the same space</li> </ul>	Administrative	
		<ul style="list-style-type: none"> <li>Communicate with operators if any non-typical work is being conducted in their area such as maintenance activities, tours, inspections etc.</li> </ul>	Administrative	
	<p>A heavy cognitive load typically creates error or some kind of interference in the task at hand, which may increase risk. It's impossible to do more than one thing at once, the risk increase as operators are juggling too many different tasks back and forth.</p>	<ul style="list-style-type: none"> <li>Consider reducing the amount of tasks the operator has to transition between to lessen the cognitive load; create a task schedule/plan. By minimizing distractions and allowing the operator to concentrate on the task at hand and may reduce risk.</li> </ul>	Administrative	
		<ul style="list-style-type: none"> <li>Implementing a traffic (pedestrian) management program will reduce the amount of distractions.</li> </ul>	Administrative	
		<ul style="list-style-type: none"> <li>Complicated tasks should be completed in the absence of pedestrians to minimize distractions.</li> </ul>	Administrative	

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	The worker is in their peripheral vision.	<input type="checkbox"/> Operators should try and place their vehicles in the direction with the largest possible field of vision.	Administrative	
		<input type="checkbox"/> Educate pedestrians to understand the working envelope. This area extends out in front of the vehicle and behind and to an extent beside the vehicle. Being in this envelop may put them at risk.	Administrative	

For additional information, ask to speak to your local Ergonomist.

Workplace Safety & Prevention Services

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