

How to Increase Safety & Productivity Handling Wheelie Bins

The WheelieSafe™ Bin Management System



Wheelie Bin Origins & Characteristics

Wheelie bins originated as the kerbside component of an innovative highly mechanized domestic waste collection system. Their innate utility has led to their invasion of all manner of commercial, industrial, institutional and recreational environments.

Whilst the wheelie bin is a very clever concept, it has its drawbacks.

Although 240 litre bins can be loaded to above 150kgs, the bin itself has no brakes. It is extremely easy to lose control of a load on a slope with potentially disastrous consequences in terms of spinal injuries and tendon damage to the hands and forearms.

As well, to move a wheelie bin it has to be tilted backwards and over-tilting a bin is also a common source of injury. The further the bin is tilted the greater the proportion of the bin's all-up weight is taken by the operator's back. As well as the tilt load the operator must also propel the all-up weight, often up adverse slopes. As a result, back injuries are common.

Wheelie bins also have narrow, small diameter wheels that are difficult to move across rough terrain or soft surfaces such as loose gravel, mud or lawn. To move them in these circumstances means tilting the bin further back, increasing the tilt load on the operator's back at a time when the effort required to propel the bin is increased.

To facilitate emptying, wheelie bins are wider at the top than at the bottom, but this makes them inherently unstable and likely to upset, especially if attempts are being made to move two bins at once.

Empty wheelie bins are very noisy, producing a loud drumming noise when moved. They create a noise nuisance when large numbers are moved in multi-residential developments.

WH&S Injuries

With work related injuries costing in the tens of billions each year, every possible cause of workplace injury is worthy of alleviation. A prominent Sydney surgeon has written up the incidence and nature of injuries involving wheelie bins and it is obvious that their ubiquity has also led to WH&S problems in the workplace.

Dr Richard Lawson of Royal North Shore Hospital, writing in the Medical Journal of Australia described the sequence of events leading to wheelie bin related injuries. The issue came when wheelie bins were 'over-tilted' to reduce the pushing or pulling force required to move them. As the bin fell the victims (often women) tended to hold on thinking they could regain their balance. But the weight of the bin often exceeds the operator's strength, especially on a downward slope and the wheelie bin pulls away. The operator typically falls while still gripping the bin handle. Under these circumstances their hand hits the ground first and is dragged along by the momentum of the sliding bin.

Overloading bins is another major source of bin related injury, although the injury scenario is similar. WorkSafe Victoria banned the use of unassisted bins in one meat wholesaler preparation facility because tilting heavily laden bins constituted an unacceptable WH&S risk. The problem was solved using the WheelieSafe™ 'Dolly' model.

The WheelieSafe™ Bin Handling System has also been used to provide a more WH&S-friendly undercarriage for a bin-mounted Wheelie Bin Vacuum. The WheelieSafe™ 'Dolly' model provided the ideal solution to lift and carry the bin and support the tilted weight of the system.

The WheelieSafe™ Bin Management System

The WheelieSafe™ Trolley

The WheelieSafe™ Bin Management System is made up of a basic purpose-designed trolley, together with either one or two Handling Brackets. Five models are available, depending on the nature of the task. There are three manual models and two electric versions to suit all manner of bin movements. The handling bracket enables more than one bin to be handled at a time. The addition of two handling brackets enables up to four empty or lightly laden bins to be moved at once.

All manual trolley models have a failsafe mechanical braking system which, as well as assisting in loading the bins, also prevents the loaded trolley getting out of control. The WheelieSafe™ Electric models have a magnetic brake that automatically applies when the throttle lever is released.

Loading Wheelie Bins

At the core of the WheelieSafe™ Bin Handling System are the patented hooks on the purpose-designed trolley's shafts. These can handle all sizes of bins between 120 litres and 240 litres. Besides making bin loading practically effortless, these hooks can pick up any of these bin sizes from any side, which is an advantage in extracting awkwardly located bins.

The manual trolleys are equipped with a failsafe braking system that also assists in loading the bins. The trolley is simply tilted towards the bin and moved slightly forward so that the hooks are located under the bin handle bar. The brake lever is released so that the trolley wheels are locked. When the trolley is pulled backwards the bin will load onto the trolley.

If two bins are being loaded abreast the same procedure applies, except that the trolley hooks are placed under the inside ends of the bins' handles. A Handling Bracket is placed across the inside front corners of the two bins prior to pulling backwards on the trolley handle bar. The Handling Bracket locks the two bins together so they cannot be dislodged when the trolley is in motion. The Handling Bracket can then be used to pick up a third bin, or even another two empty or lightly laden bins. In a four-bin movement a second Handling Bracket is placed across the front inside corners of the second pair of bins to lock them together.



Other WheelieSafe™ System Benefits

All WheelieSafe trolleys have a wide track for increased stability, but will still fit through standard doorways. The manual models have large puncture-proof maintenance free balloon type tyres. The WheelieSafe™ Electric models have wide pneumatic tyres to provide traction up steep slopes.

Besides reducing the effort to move wheelie bins the trolley wheels prevent the deep rumbling sound associated with wheelie bins being moved on their own wheels. WheelieSafe™ trolleys are equipped with a folding stand that minimises their footprint when not in use.

In normal circumstances, two bins are often moved at once, pushing one and pulling the other. The second bin will continually foul the heel of the operator and its awkward position in relation to the rest of the body can lead to wrist, forearm and spinal injury. With the WheelieSafe™ System multiple bins are locked together and located in front of the operator where they cannot constitute a WH&S risk.

The ability to move more than one bin at a time increases productivity without increasing WH&S risk. Typically two laden bins can be transported abreast to the discharge point and up to four empty bins carried on the return trip, greatly increasing efficiency where large numbers of bins are moved regularly.

The Addition of Electric Power

Electrically motorizing the WheelieSafe™ Bin Management System has proved the ultimate method for handling wheelie bins in such a way as to overcome any physical loads on the operator. Once the bins are loaded, all the operator has to do is steer a safe course and control the speed - the powerful trolley does the rest.

Powered in both forward and reverse by dual 24-volt, 180-watt electric motors working through worm drives directly onto the axle, the WheelieSafe™ Electric is the ultimate in bin moving technology. The heavy-duty version has the ability to operate continuously for up to two and half hours and has all the other attributes of the WheelieSafe™ Bin Management System.



WheelieSafe™

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