WISH

Waste Industry Safety and Health Forum

FORMAL GUIDANCE DOCUMENT

LARGER WASTE CONTAINERS – DESIGN, PURCHASE, CHECKS, INSPECTIONS, AND REPAIR

This guidance has been developed by the Waste Industry Health and Safety (WISH) Forum to help control the safety and health risks associated with the design, procurement, checking, inspection, maintenance, and repair and refurbishment of large waste containers, such as hook-lift (also called roll-on-roll-off) containers, skips, FEL (front end loader) containers, bottle banks etc. The Health and Safety Executive (HSE) was consulted in the production of this publication. It endorses the sensible, proportionate, reasonable, and balanced advice on managing risk during waste-related activities as set out in this guidance.

This guidance is primarily aimed at those involved with the design, purchase, inspection, maintenance, repair and refurbishment of larger waste containers. It is also intended to assist operators to decide during inspections of their containers to identify the need for safe repairs, refurbishment and/or replacement. It does not directly cover operational issues relating to larger waste containers, although there is some obvious overlap. You should also read WISH's information sheet WISH INFO 28, available, along with other WISH information sheets, at https://www.wishforum.org.uk/information/. This information sheet provides tips and advice on how to conduct thorough inspections of containers.

***Note** – through this document reference is made to CHEM (Container Handling Equipment Manufacturers Association) standards. WISH understands that CHEM is reviewing and as required revising its standards. You are advised to check via the CHEM website regards progress on these potential revisions at: www.chemuk.org, or enquire via info@chemuk.org. Please also note that these contact details have changed recently, the old addresses being 'enquiries@chem.uk.com' and 'www.chem.uk.com' – these have now been closed.*

Contents

1. Introduction and scope

This guidance document covers the design, procurement, checking, inspection, maintenance, and repair and refurbishment of larger waste containers commonly used in the waste and recycling industry. The use of poorly constructed/maintained large waste containers has the potential to cause serious failures which could lead to severe injury, or worse, to drivers, customer employees, and/or members of the public. Failure to maintain containers in a fit and proper state also presents the risk of prosecution under environmental law for the escape of waste on site or during transport, which can attract heavy fines and damage to the operator's reputation.

This document covers the following types of large waste containers:

- Hook-lift containers (all variants, including portable compactors and compaction containers)
- Front end loader containers (FEL)
- Open and enclosed skips, including rear end loader skips (REL)
- Bottle, clothes etc banks and other similar crane-lifted containers

This document does not cover wheeled domestic and trade waste containers. It also does not cover directly other types of larger waste container, such as underground containers, although the general principles apply. This guidance does not cover operational issues during the placement and collection of larger waste containers, although there is some inevitable overlap as design, checking, inspection etc issues can impact on safety in use. Operational issues are covered in other WISH documents, such as WISH INFO 11 (available at WISH INFO 11) on commercial waste collections and single-person collections, WISH WASTE 08 on compactor unit safety (available at WASTE 08), and WISH WASTE 11 on safety at bring sites (available at WASTE 11). Tips, examples of wear etc to look for during thorough inspections of larger waste containers are included in WISH INFO 28, 'Larger waste containers – practical aspects of inspections', available, along with other WISH information sheets, at https://www.wishforum.org.uk/information/. You should read INFO 28 alongside the inspection sections of this guidance.

This guidance also does not cover directly ISO-type containers, such as shipping containers used to export baled recyclates, ISO-type containers used to transport waste by boat or rail etc. This is a specialised area and guidance on aspects such as the inspection of ISO-type containers is available on line, such as at https://www.hse.gov.uk/ports/container-examination.htm.

2. Design and procurement

2.1 General considerations and standards

There are no specific national, EN, ISO etc standards for larger waste containers, although there are standards for some of the components used in the manufacture of such containers, such as lifting eyes. There are a number of commonly used industry standards – the CHEM (Container Handling Equipment Manufacturers) technical standards are one example. A list of these CHEM standards is given in the further reading section of this document. Where applicable, the appropriate CHEM standard/s should be the starting point for the design and manufacture of larger waste containers. Deviations from CHEM standards are not necessarily unsafe (depending on factors such as use, systems of work etc), although any such deviation should be risk assessed. In addition, using different standards has the potential for a mismatch between container and the vehicle handling/lifting them. Any such mismatch can present risks which will need to be adequately controlled to ensure safety.

- Designers, manufacturers, and suppliers have a legal duty to provide equipment, including waste containers, which is suitable and safe in its intended use. For waste containers this should include consideration of the harsh environment/conditions and use they are typically employed in
- Buyers and users of equipment, including waste containers, have a legal duty to select containers which are safe to use, appropriate for the intended use, to ensure that they are used appropriately, and that they are maintained in a safe condition

The sub-sections below list some considerations for the design and purchase of specific commonly used larger waste containers. In all cases, waste containers should be sufficiently robust to resist the inevitable wear-and-tear they will be subjected to. In addition, all containers should be fitted with a unique identification number/reference. This may be as a plate or other suitable and robust method such as a welded number/reference.

2.2 Hook-lift containers (roll-on-roll-off containers)

These containers are specifically designed for use with hook loader collection vehicles. Typically, hook-lift containers are available in a variety of sizes and configurations. They can be open or closed, ranging in size from 1.5m^3 to 30m^3, or sometimes larger. Some Continental countries, in particular those where travel distances can be longer, use larger hook-lift containers. If purchasing from abroad you should note that the European DIN standard for hook-lift containers is different to the UK CHEM standard, such as in terms of bale bar height, width of subframe etc. Unless you specify the CHEM standard the result may be a container which does not fit onto your lorries.

Containers for small hook units (3-10 tonnes gross vehicle weight - GVW) and large hook units (11-32 tonnes GVW) should have sub-frames designed and manufactured in accordance with the appropriate accepted industry standards (see the list of CHEM standards in further reading below). CHEM standards set down the general dimensions for the sub-frames and front 'A' frames, including the position of the hook/bale bar, locking points and other essential information to ensure correct interfacing and safe use with hook-loader vehicles. As applicable, designers, manufacturers, and suppliers should ensure their hook-lift containers comply with these standards and users should specify that such standards are used for containers they purchase.

There is a significant accident history associated with hook-lift containers. Specifically, serious and fatal accidents have occurred as the result of mis-hooks (where the hook-lift lorry's lifting hook fails to engage correctly with the container bale bar but rather 'hooks' onto the beam above the bar) and bale bar failures (in particular with 'wishbone' type bale bars). In both cases the container becomes un-hooked partway through a lift with obvious and serious consequences. Correct design and specification can greatly reduce the likelihood of such accidents.

In general, and in addition to the CHEM standards, you should take the following issues into account when designing, manufacturing or purchasing hook-lift containers (please note the below is not a comprehensive list – also see issues in the formal inspections section of this guidance relating to hook-lift containers for further information):

- Container 'A' frames, body plates and all fittings such as hinges and locking devices etc should be fully welded
- Extra heavy-duty containers should have additional reinforcing plates at areas of high stress
- All upper edges should be reinforced with channel or rolled, hollow sections
- Container sub-frames and 'A' frames should be in accordance with the appropriate CHEM technical standard (see further reading below)
- Containers should have a deflector plate fitted at the top of the 'A' frame above the hook/bale bar to ensure that the vehicle hook engages correctly and safely with the container hook bar
- The main door locks should be strong enough to keep the door of a loaded container closed. They should withstand the forces exerted on them by the waste in the container as the result of any movement of waste during loading and travelling
- Unless there are significant practical considerations single rear doors rather than double doors should be specified – double doors pose significant risks as they almost inevitably put the driver 'in the line of fire' of any wastes falling from the containers when the doors are opened
- Top hinged doors pose specific issues, such as potential bowing of the container at the top hinge. Specific assessment of structural issues should be undertaken for top hinged doors

- A secondary lock should be fitted to prevent the container door opening suddenly in the case that the primary locking system fails. This secondary lock should be strong enough to keep the door of a loaded container closed on its own, even if the primary lock fails
- The operating device/system for the primary lock should be located at the side of the container and operate to ensure that the operator is not exposed to risk when the door is released – one of the most common serious accident types suffered by hook-lift drivers is being struck by door levers and similar which release suddenly and with force
- Door hold-back devices (restraints to keep the door secure and fully open during tipping) should be fitted. These should be strong enough to withstand the forces exerted by the door when the container is tipped for discharge and operate within a closed system such as a labyrinth or slide. The design should be such that the latch is positive and cannot become unlatched because of movement of the container. Chains are not recommended for restraining open doors

2.3 Compactor containers including portable compactors

Compactor containers are either removable from the compactor unit (typically hook-lift containers) or are non-removable and an integral part of the compactor – the whole unit is lifted for transport and tipping (portable compactors, also called ‘porta-packers’). Removable containers are usually lifted and transported by hook-lift vehicles. Smaller portable compactors can be lifted and transported by skip lorries or hook-lifts. Larger portable compactors are usually lifted by hook-lift. The relevant parts of the sections above and below for hook-lift containers and skips apply to compactor containers as applicable. For example, for ‘A’ frames and lift/bale bars for hook-lifts and lifting lugs for skips, and for doors on both types of container. The relevant CHEM standards (see further reading) should also be considered in the design and manufacture of compactor containers.

Specifically, there is a history of accidents involving compactor containers relating to the sudden and violent movement of door opening levers/devices because of the compacted pressure of waste in the container, resulting in the driver being struck by the lever. Dampers or similar on opening levers/devices should be fitted to reduce the risk of this type of accident (see also sub-section on compactor containers in the section on formal inspections below). Some older containers may have catch chains fitted – experience is that these are less effective and should be changed for dampers during refurbishment of older containers.

***Note** –.this guidance ONLY covers containers, not the compactor mechanism itself. For general guidance on machinery safety in the waste and recycling industry see WISH WASTE 33 at WISH WASTE 33 and for operational issues relating to compactors see WISH WASTE 08 at WISH WASTE 08. Readers may also find useful information on compactors in section 1.5 of WISH WASTE 26 on the safe operation of HWRC sites at WISH WASTE 26.*

2.4 Skips including REL (rear end loader) skips

Skips are designed for use with skip-loader vehicles. They come in a wide variety of sizes and configurations, from 'mini-skips' (1.5m^3 to 3m^3) to larger skips (3m^3 to 20m^3). There are no specific standards relating to mini-skips. For larger skips the relevant CHEM standard/s (see further reading) should be considered during design and manufacture. The general principles in CHEM standards would also apply to mini-skips. In particular, compatibility between mini-skips and the skip-loader/lorry being used to lift and transport them should be considered.

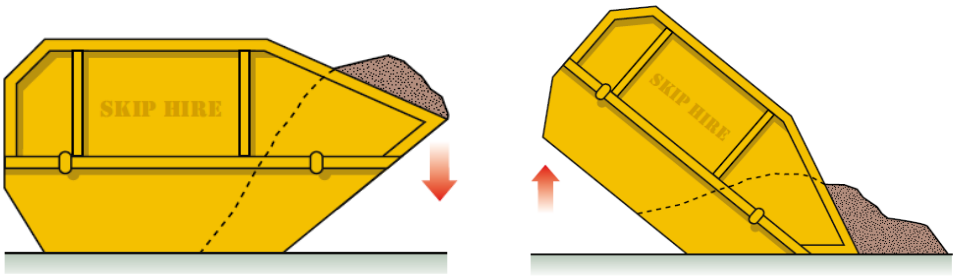
Some skips are intended for special applications, such as skips for transporting sludges, asbestos etc. These skips are outside of the scope of this guidance, although the general structural considerations below, in CHEM standards and in the section below on inspections would apply.

In general, and in addition to the CHEM standards, you should take the following issues into account when designing, manufacturing or purchasing skips (please note the below is not comprehensive – also see issues in the formal inspections section of this guidance relating to skips):

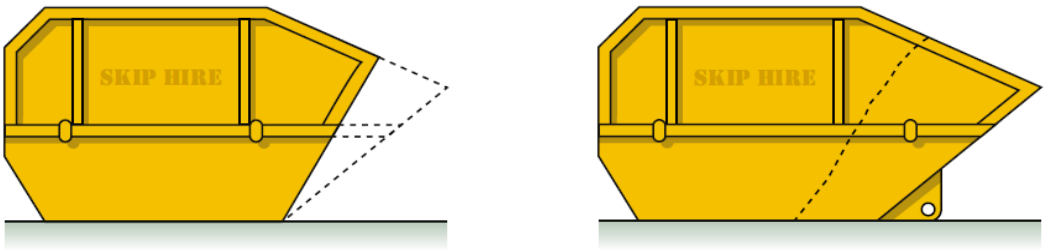
- The skip shell should be fully welded on all external edges and corners
- Extra heavy-duty skips (such as those used for scrap metal, waste aggregates etc) should also have, fully welded on the inside, additional reinforcing plates fitted to the discharge corners. (Some manufacturers weld the inside and outside of all skips as standard practice)
- All upper edges should be reinforced with channel section
- Lifting lugs should pass through horizontal channel sections that extend the full length of the skip or vertical channels welded between two horizontal channels, depending on the capacity of the skip. Lugs should also have reinforcing plates welded to the inside of the skip shell where the shank of the lifting lug passes through the side plate
- All channels which carry lifting lugs should be fully welded to the side plate
- Drop-down doors (such as on builders' skips) should have a locking device keeping them securely closed, and include a secondary lock fitted to main lock to ensure that the door remains closed and safe during moving and transporting. Locks should be of robust construction to withstand the rough treatment they are likely to receive, but easy to operate
- Some skips, such as some enclosed skips used at HWRC (household waste recycling) sites, are fitted with loading doors/hatches in their sides through which wastes are placed into the container. Such side doors/hatches should have their hinges fitted away from the tipping bar end of the skip to avoid injury to the operator if a door/hatch swings open while the skip is raised while being discharged
- Any hinged covers fitted to skips should be light enough to permit safe opening and closing by hand from ground level
- Hinges and locking devices should be designed for ease of operation and durability

Depending on their use, some lighter skips (notably REL skips, which typically have long, shallow, inclined front plates) have become unstable when heavy materials (rubble, scrap metal etc) have been loaded onto the inclined front plate without being evenly distributed across the base of the skip (see diagrams below). Where this could occur, designers and manufacturers should provide information for the user so that this risk can be controlled.

Where foreseeable misuse, as described above, could lead to an unevenly distributed load toppling the skip, possible design/manufacturing solutions can include making the angle of incline at the front plate steeper to prevent excessive amounts of heavy materials accumulating on the incline, and/or fitting wedge-shaped ‘stabilisers’ under the inclined front plate.



Above: uneven load of heavier wastes in skip with extended front plate resulting in skip tipping.



Potential solutions include a steeper angle of incline at the front to reduce the risk of wastes accumulating at the front and/or installing wedge-shaped stabilisers at the front.

There should be no ‘lip’ or other protrusion near to the skip’s tipping/catch bar. There have been accidents where tipping hooks have ‘falsely’ engaged on such lips/protrusions rather than on the skip’s tipping/catch bar. This can result in the skip coming-loose during tipping and swinging with serious consequences. CHEM standard TS14 is relevant regards design to avoid this hazard.

It is common practice to transport empty skips ‘nested’ into each other. If you transport skips nested, then they should be compatible with each other to allow safe nesting. As relevant, you should consider this issue during procurement.

2.5 FEL (front end loader) skips

FEL containers are designed specifically for use with front-end loading waste collection vehicles and are available in a range of sizes, typically from 1.5m^3 to 7.5m^3. Dimensions for positioning the lifting pockets should be in accordance with the relevant CHEM standard (see further reading) as applicable. Any other lifting provision fitted, such as lugs, should be in line with standards for skips. Some FEL containers have lower pockets for use by forklift trucks – container design and structure should take account of such alternative lifting provisions if fitted.

The principles of construction regarding strength of the container shell and loading doors apply as outlined above for skips. The practice of modifying other types of container for use as an FEL container by the addition of lifting pockets is to be avoided unless carried out by a suitably competent manufacturer who has the means to test the modified container.

2.6 Bottle, clothes etc banks and other similar containers

There are no formal specific standards, industry such as CHEM or otherwise, for bottle, clothes, book banks and similar. However, there are standards for components of such containers such as lifting eyes, which should be complied with dependent on the type of eye fitted etc. Bottle banks and similar should be suitably robust, both in use and when being lifted to be tipped/emptied.

Some types of bank are designed to be lifted by crane, such as a hi-ab, and waste such as bottles discharged via a lower hatch/door operated by cables and/or chains. Others, such as many clothes and book banks, can be emptied in-situ via an access door, or are taken away for emptying. In the latter case if lifting lugs etc are fitted to allow banks to be loaded onto a skip loader or similar then the relevant parts of CHEM standards on skip lugs apply. In all cases, whatever lifting provision is used it should provide a level and safe lift. It is not acceptable for containers to lift at a steep angle or for lifting lugs, eyes etc to be positioned such that containers will ‘swing’ when lifted.

One of the most common incidents relating to bottle banks is that the container lower hatch, the hatch mechanism, and/or operating chains/cables etc fail resulting in the contents of the bank discharging onto the floor (or other object the bank is being lifted over/near) rather than into the collection vehicle as intended. At the least such failures are ‘messy’ and take time to clear-up, at worst any person in the immediate area may be struck by bottles falling-out of the bank lower hatch while partially lifted.

- Bottle bank hatches and hatch mechanisms should be designed to be robust and reliable in operation and any maintenance required in supplier information provided with the bank should be carried-out to the required frequency

- Many ‘fizzy drinks’ are corrosive and can cause accelerated wear to bottle bank hatch mechanisms, cables/chains etc. Designers and manufacturers should consider using corrosion resistant materials such a stainless steel for safety critical parts. Maintenance procedures and inspection frequency should take this issue into account

Many clothes, book etc banks have a ‘letterbox’ or hinged shelf/tray mechanism through which waste items are placed into the container. There have been numerous examples of people attempting to remove clothes or other items via such feed openings and examples of children being used to access materials through such openings. Homeless people and others may attempt to remove clothes or other items to sell-on. In some cases people have become entrapped in hinged tray/shelf mechanisms requiring the assistance of the emergency services to free them, and, while rare, fatal accidents have occurred. There have been cases where people have managed to get into banks, such as to sleep during inclement weather, and have been unable to get out.

Clothes etc banks often have access doors/hatches for emptying. There have been cases where banks were being emptied and the door has slammed shut and locked, such as in the wind, behind the person emptying the bank resulting in them being trapped.

- Letterboxes, hinged shelf/tray mechanisms should be large enough to accept the items being placed into the bank but small enough to deter or prevent entry or designed in such a way to achieve the same result. As noted above children have managed to get into banks, or have been lifted into trays/shelves by adults to attempt to remove items – feed opening sizing should take this into account
- Access doors for emptying should be capable of being opened from the inside or of a design such that they cannot lock if blown etc shut, or be fitted with a door hold-back device

3. Routine checks and defects

Whenever a larger waste container is lifted and/or emptied the driver/collection operative should check the condition of the container. In addition, drivers may become aware of a defect during lifting, transport, and/or tipping/emptying of a container. It is not expected that drivers be qualified engineers. It is expected that they be given sufficient training to be able to identify obvious and serious defects, in particular safety critical defects. Examples of the items to be covered by such 'on-use' checks include:

- Lifting points such as lifting lugs and eyes, lift/bale bars, locking pockets etc
- Tipping bars and similar
- Doors, hinges, door locking etc mechanisms
- Door and other restraints, catch-chains, damper function etc
- Condition of safety critical features such as lift/bale bar defector plates
- General structural and physical condition of the container

Such routine checks often also include operational issues such as overloading etc, but these are outside of the scope of this guidance.

You should formalise and record such routine checks. In particular, defect reporting from on-use checks to ensure that unsafe containers are taken out of service and that defects are repaired promptly. Recorded systems can be paperwork based or electronic.

Containers with safety critical defects should be taken out of service until they can be repaired to a safe condition or replaced. This would include ensuring that defected containers are not accidentally put back into service before they are repaired. To achieve this many organisations have 'quarantine' or 'defect bin' areas in their container storage areas/parks. Defected containers are placed into such an area so that other drivers know not to take them out again. Quarantine areas should be clearly marked/signed, and drivers should be instructed on them and their use. Some organisations use other methods, such as tags to identify defected containers. Experience is that such systems may be less effective than quarantine areas. Where practical, tag and similar systems should be designed to prevent a driver inadvertently lifting a defected container. For example, lockable steel boxes that secure around lifting lugs, bars etc preventing the defected container from being lifted.

Whatever system is used, containers with safety critical defects should be removed from service promptly and not put back into service until they have been repaired to a safe standard and/or replaced. **Note** – driver checks on containers (FELs, RELs, bottle banks etc) which are emptied in-situ (never leave the customer site) are more likely to have unreported defects and particular attention should be given to ensuring such checks actually occur.

4. Inspections – general and PUWER and LOLER

The vast majority of larger waste containers etc are not required to be thoroughly inspected under LOLER (Lifting Operations and Lifting Equipment Regulations). Vehicle lifting equipment (lift arms, chains, hooks etc) is required to be inspected under LOLER. The frequency of inspections being annually, as a minimum. If chains are 'permanently' attached to a lifting arm, for example, they are part of the lifting equipment and inspection is annual as a minimum. If chains are 'demountable' and can be removed for other uses inspections are six-monthly as a minimum.

However, this does not mean that inspections of waste containers are not required. While most larger containers do not fall under LOLER, they are still required to be inspected under PUWER (Provision and Use of Work Equipment Regulations). PUWER requires that employers ensure that work equipment (including larger waste containers) exposed to conditions causing deterioration which is liable to result in dangerous situations is inspected at suitable intervals. Larger waste containers are often exposed to harsh conditions and use, and experience is that wear, damage etc can result in failures and serious accidents. PUWER also states that the results of inspections should be recorded.

In summary, and in general, larger waste containers fall under PUWER while lifting equipment on collection vehicles falls under LOLER. **Note** – this is not always the case. For example, if a skip is to be lifted by a tower crane at a construction site or if a container is transported by multi-modal means (such as by train or boat) and is lifted by, for example, a gantry crane, then the requirements of LOLER may apply to such containers. The same rationale may also apply to 'plating' and similar requirements for iso-type multi-modal transported containers under ACEP and/or PES (Approved Continuous Examination Programme' and/or 'Periodic Examination Scheme'). If in doubt seek competent advice. See also HSE information at: https://www.hse.gov.uk/waste/faqs.htm under the question titled '*when does LOLER apply to waste and recycling equipment'*.

As noted above, containers should be routinely checked by the driver. Formal Inspections go beyond such routine driver checks and must be undertaken at suitable intervals. The frequency of inspections is determined by risk assessment based on factors such as the expected use, environment the container is exposed to etc. This is the responsibility of the employer. Inspections should be sufficient to detect faults before they pose an unacceptable risk of failure.

Typically, the minimum frequency of inspections is annual, or more frequently dependent on issues such as use in harsh environments or harsh use. In particular, employers should monitor the results of their inspections and use these as an input into their risk assessment to determine the frequency of inspections: that is, if your inspections indicate that a particular container, group of containers, container type etc is suffering accelerated wear, damage etc, which may result in a safety critical defect going undetected between 'annual inspections' then you should inspect them more frequently.

For larger containers such as hook-lift containers, the inspection regime should generally meet the same standard as would apply to ‘multi-modal ISO-containers’ under the ‘Approved Continuous Examination Programme’ (ACEP) and/or ‘Periodic Examination Scheme’ (PES), although these schemes do not generally directly apply to most waste containers. See detail at: https://www.hse.gov.uk/ports/container-examination.htm.

Inspections require that the container is:

- Completely empty of all waste and contaminants
- Inspected on the ground and raised, and then on the vehicle chassis. That is to inspect the underside/chassis of the container and how the container operates when loaded/unloaded

The safety of the inspector needs to be considered. For example, the use of an access gantry/walkway, preferably on both sides of the container, when inspecting the upper parts of the container and suitable safe support when inspecting the underside.

Inspections should be recorded and documented clearly to identify the condition of the container, highlighting all faults/wear and indicate if the container is fit to use. This report of the inspection, containing at least a summary of any faults or conditions likely to lead to a fault developing, should be recorded, including the unique identification number/reference/asset number for the container. The report can then be given to the repairer/refurbisher appointed to carry out any repairs to the container. Providing the repairer/refurbisher with a report ensures that required work has been listed, especially with items that are considered safety critical. This reduces any ambiguity which may arise and reduces the risk that an incomplete repair is carried out.

Inspections can be carried out by any competent person/s who is without fear or favour of the person commissioning the inspections. Inspections can be done by a third party but can also be completed by suitable internal persons, provided they are independent of the part of the company/organisation using the container. This includes LOLER, PUWER, and ACEP/PES inspections.

A summary report of all the containers inspected can provide a security/stock check and a snapshot of the large container status. Completion reporting demonstrates that all found defects have been repaired, modified, or refurbished as required.

The waste and recycling industry can be a harsh environment for waste containers. For example, the use of excavators to compact wastes in open top containers is widespread practice, especially on HWRC (household waste recycling centre) sites. Such practices can cause significant damage and accelerated wear to containers. Such use considerations should be part of your risk assessment relating to checks and inspections, including their frequency.

5. Inspections - critical points to check

This formal guidance document provides basic lists of many of the critical areas/points to check during formal inspections of various types of larger waste container. For some issues additional information is also provided for clarity. This guidance does not provide detail of how to check, examples of defects, wear, and damage tips on what to look for etc. This type of further detail, including photographs and examples of wear and damage, is provided in WISH INFO 28, 'Practical aspects of formal inspections on larger waste containers', available, along with other WISH information sheets, at https://www.wishforum.org.uk/information/. You should read INFO 28 alongside this formal guidance.

5.1 Hook-lift/roll-on-roll-off containers

Headboard and frontal area

The front area of hook-lift containers is often subject to the most damage and misuse. Key areas and points to check during formal inspections include:

- The headboard and its support tube and top rail, including for deformation
- The upper headboard protection plate (also called 'deflector' plate)
- The bale/lift bar, both for damage and wear (see below)
- The lower headboard, in particular for damage, punctures etc from misuse
- The headboard 'A' frame, including for verticality

The upper headboard protection/deflector plate has various functions, such as to protect the headboard during container lifting and to ensure that a 'mis-hook' does not occur resulting in the container coming off the lift hook during lifting – this has been the cause of multiple serious accidents. Older containers without an upper headboard protection/defector plate should either be taken out of service or a suitable plate added by a competent person.

The container bale/lift bar is a critical component – it is the only point of contact between the container and lorry lifting arm during the initial phase of lifting. In addition to damage, wear should also be checked for. Discussion and an example of measuring and interpreting bale bar wear is given in INFO 28. The permissible amount of wear depends on various factors, such as the original bar diameter and the material used – you should consult your supplier. However, in general bale bar wear should not exceed 10% as an absolute maximum and permissible wear may be as low as 5% before replacement is required. You should also include in your decisions the rate of wear – will the bar have worn beyond acceptable limits before its next formal inspection?

On some older containers the bale bar does not pass through the A frame uprights and is retained in the cheek plates only. If discovered during formal inspections, such containers should be modified to have the new bale bar which passes through the A frame. Wishbone type bale bars are not common in GB, however ongoing regular inspection before use is needed to monitor wear and for welds cracking – a failure of a single weld on a wishbone bale bar is likely to have more serious consequences than a similar failure on a bale bar which passes through the A frame.

Doors and locks

There is a significant history of drivers and others being struck by doors, wastes falling-out of containers during door opening, door lock bars and mechanisms etc. This issue is particularly prevalent with compactor containers (see below), but also occurs with non-compactor hook-lift containers. Doors and lock mechanisms need to be inspected carefully, including checking:

- Door operates smoothly and correctly with no gaps around its edges when closed
- Signs of misuse/damage to the door, such as from using mobile plant to force doors closed
- Condition of vertical lock shaft, including that they are not bent or distorted
- Condition of lock retaining lugs (snails), loops and latches, including that all lugs engage correctly with their retaining loops
- Span bar not bowed or damaged – can result in door locks failing to engage correctly and poor and/or difficult door operation
- Hinges in good condition and lubricated correctly
- Lock and similar mechanisms lubricated correctly and operate smoothly
- Rachet/rigging screws well maintained – look for signs of inappropriate tool use with stiff mechanisms
- Secondary lock mechanisms operate correctly, are undamaged, and no parts such as pins, retaining chains etc missing (any older container presented without a secondary lock mechanism should be removed from service until a secondary lock can be fitted)
- Door damper, if fitted, in good condition and operates effectively (see above on catch chains)
- Door retaining loop and labyrinth/retaining plate in good condition and door opens a full 270° allowing it to be retained open safely

Hook-lift container door lock and secondary lock mechanisms can vary from container-to-container, dependent on factors such as supplier, age etc. The competent person conducting inspections should be familiar with the different mechanisms used, how they work, their common failure modes etc. Should an inspector be presented with a mechanism they are not familiar with they should contact the supplier and/or consult with any operating manual provided for detail. This general principle applies to other aspects of container inspection – inspectors need to know what they are looking at.

General, bowing, runners, wheels etc

The general condition of containers should be inspected, including:

- General damage, weld condition, holing/punctures, signs of misuse etc
- Container bowing from over-loading, aggressive compaction methods (such as at HWRC sites) and other causes – container integrity can be severely affected by excess bowing. Degree of bow should be measured internally at several points along the container
- Condition of container floor/valley for gouges, holes, condition of any welding, integrity of how the floor sheets are fixed, any undulation in the floor, is the outline of the bearers visible indicating an excessively worn floor etc
- Condition of bearers and runners, including for deflection and crushing
- Check underbody lock pockets, underside of bearers, runner heels not worn thin etc
- Assess degree of any corrosion, including how this may advance between inspections
- Check wheels run freely, are undamaged, including their axles and brackets etc

Inspection should include loading and unloading the container onto a hook-lift lorry to observe how the container lands and sits on the bed supports and rollers, engagement of forks and underbody locks etc. Observing the loading and unloading process can reveal deformations etc that are not obvious to the naked eye during inspections.

Inspection of the underside of a container should be with the container securely and safely supported. It is not acceptable practice to work/inspect under a container with it raised partially using a hook-lift vehicle – hydraulics and their components can and have failed.

5.2 Compaction containers, including portable compactors

Many of the issues relating to compactor containers are also included in the sub-section above on non-compaction hook-lift containers and, for some portable compactors, the section below on skips. You should, as relevant, check the issues noted above and below, and also the specific items listed below for compactor containers.

As with all thorough inspections, the container should be cleared of all wastes before inspection. For portable compactors this would include wastes and detritus lodged behind the compaction ram. The compaction mechanism must also be securely isolated and locked-off for inspections. As noted in the design section of this guidance, this document only covers the container and not any associated compaction mechanism or other machinery – see references in design section for further information.

Checks in addition to those noted in the sections above and below include:

- That over-centre lever systems are free to move, not damaged or seized
- All latches move in the same plane and extend equally
- Retaining loops for latches are not cracked, otherwise damaged, or missing
- All latches pull equally and secure the door adequately
- Dampers fitted to doors operate effectively (see above on catch chains)
- All pins and their retaining chains, as relevant, are present and undamaged
- Pinning-off pockets and pin retaining clevises are undamaged and pins can be inserted easily
- Check and replace any bent or distorted pins and pinning-off tubes
- Check for distortion of the compactor flap (a common cause of lost tubes)

Compaction containers tend to suffer more from door opening issues than non-compaction containers, such as from the ‘overenthusiastic’ use of compactors, placement of inappropriate (‘springy’) wastes into compactors; the use of machinery to force closed the door of overfull containers etc. The results of such misuse can often be seen during thorough inspections. Any such indications should be reported to management.

5.3 Skips, including rear end loader (REL) skips

Skips tend to be subject to more abuse as their use and handling is often less controlled by the owner/operator/customer. However, damage to skips is usually more easily identified because of their relatively contained height and length and less complex door arrangements and lifting designs.

As with hook-lift and other containers skips sides, floors etc should be checked for wear, corrosion, damage, holing/punctures, bowing of skip sides etc. Reinforcing channels, fillets, gussets etc should also be checked for damage, corrosion and wear, and as required repaired or replaced. Specific areas for skips include the lifting lugs, and associated bracing channels, and tipping bar:

- Lifting lugs should be inspected for wear, distortion, fixing security, and damage, including any damage and wear to the ‘lip’ around the lug which could result in lifting chain attachments disengaging (this would apply to other types of container which may have lifting lugs such as FEL and REL containers)
- Bent/distorted lifting lugs should be replaced and not repaired – excessive force is required to bend a lifting lug, and repairs should not be relied on
- Check bracing channels for wear, corrosion and damage
- Tipping bars should be inspected for wear, distortion, and corrosion. Their attachment points and brackets to the body of the skip should be undamaged and free from significant wear and corrosion and allow tipping hooks to engage correctly and smoothly

- Check for any edges near to tipping bars, such as sharp edges left from previous repairs, which tipping hooks may ‘grab’ onto instead of the tipping bar

Some skips are fitted with drop-down doors, and others, such as enclosed skips, with hinged lids or hatches in their sides through which wastes can be loaded:

- Drop-down doors should be manageable by one person – that is one person can lift the door
- Spring bolts or locking pins to secure drop-down doors should slot-in easily and effectively, be free of damage and distortion, and prevent the door from opening during use or transit
- Hinged lids on enclosed skips should be free from significant damage, open and close easily, and their hold-back/securing mechanism should engage easily, be undamaged, and effectively hold the lid back during use and in transit
- Hinged side doors/hatches should be free from distortion, open and close easily, and their hold-back/securing mechanism should engage easily, be undamaged and effectively hold the door/hatch open during use and in transit

REL (rear end loader) skips tend to remain in situ at customer sites rather than being removed to be emptied – as with all containers which remain in-situ particular attention should be given to ensure they receive thorough inspections. In addition to the issues above for all skips, specific areas to check on REL skips include:

- Check front lifting box for cracked welds, distortion and other damage – this area is under significant load during emptying and can suffer excessive wear and tear
- Where lifting tubes/pins are permanently attached (welded) to the skip check these are fully welded into the front box, that they are not distorted or overly worn or otherwise damaged
- Where removable lifting tubes/pins are fitted check that these engage into the lifting box smoothly and easily, that the lifting box at the point where the tubes/pins are inserted is not flared or otherwise worn or damaged, and check for damage that may have resulted from the use of inappropriate alternatives to lifting tubes/pins (removeable tubes/pins can be lost resulting in a temptation to use alternatives)
- Where lifting lugs for delivery transport or tipping bars are fitted, see above on skips

Front end loader (FEL) containers

Front end loader containers are emptied in-situ at customer locations, and as such particular attention should be given to ensuring they receive a thorough inspection. These containers can also be lifted by skip loaders if lifting lugs are fitted. Some also have channels to allow the container to be moved by a forklift truck. All of these lifting areas/points, where fitted, require checking and thorough inspection.

The comments and requirements for inspection noted above for skips and similar regarding general damage, wear, corrosion, deformation etc apply to FEL containers, along with those on hinged lids, doors, hatches etc where fitted. As for skips, lifting lugs, where fitted, should be given particular attention. Specifically for FEL containers points to check include:

- Check lifting pockets for excessive wear, damage and flaring around the mouth of the pockets. Damage at the mouth of the pockets is often caused by inconsiderate lifting and tipping
- Check forklift pockets/channels, if fitted – customers can often use these to move FEL containers around, sometimes causing damage. They may also be prone to damage if the container is dragged or pushed by the FEL lorry collecting waste

Industry experience is that FEL containers can sometimes be missed-out in thorough inspection regimes – FEL containers require inspection, and you should ensure that all of your FEL containers are inspected as required.

5.4 Bottle banks and other similar containers

The inspection of bottle, paper, clothing and other similar banks/containers which are bottom emptying are subject to the requirements of PUWER inspections. The frequency of inspection should be at least annually, although many organisations inspect more frequently because of the corrosive effect of ‘fizzy drinks’ (see below). Banks which are not bottom emptying, such as those emptied via an access door/hatch, still require inspection although if they are only lifted infrequently that can be a valid input into your risk assessment regarding frequency of inspection.

Specifically for bottle banks, and other bottom emptying banks, checks should include:

- Check for bowing and splits in the body of the bank. Bottle banks are often constructed from plastic which can bow and split over time – any split or excessively bowed banks should be removed from service
- Internal mechanisms including cables, links, hatch release mechanisms etc, should be checked for corrosion and wear – for bottle banks the corrosive effect of ‘fizzy drinks’ etc can result in accelerated corrosion of mechanisms etc
- Hatch release and closure mechanisms should be checked for their smooth and correct operation and that cables etc run smoothly
- Lifting eyes and attachments should be checked for wear and deformation, and for security and damage

Clothing, book etc banks are usually constructed from steel and should be checked for damage, wear, corrosion etc as for other types of waste container (see sections above). Clothing etc banks are commonly located at ‘bring sites’ and may not be placed on hard-standing. This may promote accelerated corrosion in the base of the bank. Specifically for clothing etc banks:

- Hinged tray/letterbox and similar load systems should be checked for smooth and correct operation with no sharp edges etc caused by corrosion, wear etc – check for damage caused by attempted forced entry into the container
- Unloading doors/hatches should open and close smoothly and hinges, lock mechanisms, and door hold-open devices should be undamaged and operate correctly – as for lead trays and letterboxes, check for damage caused by attempted forced entry
- Lifting eyes, lugs etc should be checked for wear, damage and deformation, including to their attachment points to the container

6. Safe large container repair and refurbishment

Major repairs and refurbishments of larger waste containers should be carried-out in a suitably equipped workshop. Ideally, routine and minor repairs should also be conducted in a workshop, although it is accepted that this may not always be practical (see below). It is not the intent of this guidance to repeat advice on workshop safety, which is freely available elsewhere, such as from the HSE (Health and Safety Executive) at HSE workshop guidance.

Some organisations have external repair areas in their container storage areas/yards or similar. The types of controls as noted below for in-situ repairs would apply in these cases. In general, external repair areas should only be used for minor repairs and not for extensive repairs and refurbishments, (these should take place in a workshop). External repair areas need to be segregated from general container storage, preferably by physical means such as barriers. It is not acceptable to expect repair personnel to work on containers at ‘random’ points across a container storage area/yard – there have been cases where a driver has not seen a repair person and attempted to lift a container while it was being worked on. Exposure to workplace transport risks while working in storage yards etc needs to be assessed and properly managed. Workplace transport is one of the largest causal factors in fatal injuries in the waste and recycling sector.

Inspection and maintenance regimes should be organised and implemented so that damage is detected and repaired before it reaches a condition where it would be unsafe to transport a container to a workshop for repair. However, there will always likely be occasions when there is the need to carry out urgent safety critical container repairs at a customers’ premises or at a HWRC (household waste recycling centre/civic amenity) site etc because the nature of the defect/damage means it would be unsafe to lift and/or transport the container to a workshop.

Such in-situ repairs should, as far as possible, be restricted to the minimum required to be able to lift and transport the container safely to a workshop. Where emergency repairs may need to be undertaken in places away from a workshop, arrangements should be put in place to ensure that the required repair work can be completed safely prior to the work commencing (even if the work is only to make the container safe to transport).

For in-situ repairs, procedures, practices, and training should be in place to ensure that such emergency repairs are undertaken safely. Procedures/assessments will need to include requirements to check/agree issues such as the contractor's liability insurances, risk assessments/safe working procedures, permits to work, including ‘hot works’ and may also require ‘working at height,’ plus the visiting repairer's competencies.

On-site repairs should be in a segregated, screened area on stable hard standing (preferably concrete), sheltered to reduce wind, and stick welders (SMAW) should be preferred to MIG welding (MIG). The working area must be properly and effectively segregated from pedestrians and vehicles and other workplace transport. Welding should not be undertaken in damp or wet conditions. Electricity and water do not mix. Where possible, use battery powered grinders/cutters in lieu of cabled tools. If not practical, then use only 110 volt cabled tools if a battery substitute is not available.

If outside, while ventilation of weld fume etc, may be less of a problem the exposure and resultant risks should still be assessed and suitable management control measures put in place as are proportionate and necessary. The correct respiratory protective equipment (RPE) and personal protective equipment (PPE) should be supplied, worn, and used as defined in risk assessments/safe working procedures.

Damaged containers should be empty so far as is practical of any waste, before welding, cutting, grinding or other hot work takes place. Fire control and prevention should be considered before starting hot works, such as having fire extinguishers readily available at the location of the repair. Lone working should be avoided, and suitable supervision should be on hand. A permit to work system can assist in ensuring safe working practices are observed and followed.

Disclaimer and WISH

Nothing in this guidance constitutes legal or other professional advice and no warranty is given nor liability accepted (to the fullest extent permitted under law) for any loss or damage suffered or incurred as a consequence of reliance on this guide. The guidance is not a substitute for duty holder judgment and/or professional safety advisor's judgment, Notwithstanding the good practice in this guidance, duty holders are responsible for ascertaining the sufficiency and adequacy of their internal and independent procedures for verifying and evaluating their organisation's compliance with health and safety law. WISH accepts no liability (to the fullest extent permitted under law) for any act or omission of any persons using the guidance

The Waste Industry Safety and Health (WISH) Forum exists to communicate and consult with key stakeholders, including local and national government bodies, equipment manufacturers, trade associations, professional associations and trade unions. The aim of WISH is to identify, devise and promote activities that can improve industry health and safety performance.

Further information

This guidance is issued by the Waste Industry Health and Safety (WISH) Forum to help control safety and health risks. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance. This guidance is available free to download at https://www.wishforum.org.uk/.

Further reading

The list below comprises available (except TS 12) CHEM technical standards with brief summaries. Please note the caveat on the front page of this guidance regarding potential review and revision of these standards.

TS1 Static compactors - stationary compactor rating criteria, Charge box volumes/dimensions etc
TS2 10 cubic metre compactor lift off containers - 10cu m compacted waste container skip loader
TS3 Lifting lugs - container lug requirement. (skip lift lugs etc.)
TS4 Safety aspects of static compactors - safety requirements to be incorporated in manufacture
TS5 15 cubic metre compactor lift off containers - 15 cubic metre waste containers, similar to TS2
TS6 Sub frames and containers roll-on-off hook lift general - compaction containers for hook-lift type units. Information for manufacture, dimensional information for attachment to static compactor, suggested secondary lock and hold open device etc
TS7 Open containers for hook lift roll-on-offs - general overall dimensions and manufacturing information, including door locking and secondary latches etc
TS8 Sub frame etc for large hook lift roll-on-off containers - manufacturing and dimensional information for the sub frame of large hook-lift containers, including bale bat details etc
TS9 Pin bars and tubes for compactor containers - dimensional information for attaching compactors to static compactors etc
TS10 General arrangement REL containers - general arrangements for 11.5 cubic metre rear end loader (REL) containers, dimensional information for use with rear end loading refuse trucks and skip loaders etc
TS11 Lifting pockets for FEL containers - dimensional information for the size and location of the lifting pockets for use with front end loaders
TS12 Access ladder etc information for hook-lift containers - withdrawn 2006 following issues with the use of ladders and risks posed
TS13 Basic sub frame small hook lift roll-on-off containers - contains similar information to TS 8 but for smaller hook-lift units
TS14 Standards for skip containers - standard specification for skip units, provides dimensional and manufacturing information for skips 3 cubic metres to 20 cubic metres capacity
TS15 Load cells for bin lifts - guidelines for and installation of weighing and identification of load cells on refuse collection vehicles