



Construction site transport safety: Safe use of compact dumpers

Construction Information Sheet No 52

Introduction

This information sheet outlines the precautions necessary to ensure the safe use of compact dumpers (commonly known as site dumpers) in the construction industry. It is aimed at managers and drivers and all those who influence the use of compact dumpers. The term **compact dumper** includes both articulated and rigid-frame machines, with two- or four-wheel drive, and with front, rotary or side-tipping skips.

Compact dumpers are involved in around a third of construction transport accidents, causing many deaths and serious injuries, particularly to drivers. The three main causes of compact dumper accidents are:

- overturning on slopes and at the edges of excavations, embankments, etc;
- inadequately maintained braking systems;
- driver error due to lack of experience and training, eg failure to apply the parking brake, switch off the engine and remove the keys before leaving the driver's seat.



What the law requires

Hirers and users of compact dumpers both have legal duties which aim to prevent accidents. Work equipment should be safe when supplied and the risks arising during use need to be controlled. Those in control of work should assess risks, plan safe systems of work and make sure workers on site know what they are, and follow them. Drivers should always follow safe systems of work and refrain from taking shortcuts.

Driver protection

Drivers need protection from the risks associated with dumpers rolling-over and from being hit by falling materials. Where there is a risk of compact dumpers overturning and injuring the driver, roll-over protective structures (ROPS) and seat restraints should be fitted. Where drivers are at risk of being hit by falling materials, compact dumpers should be fitted with falling-object protective structures (FOPS). ROPS, seat restraints and FOPS need to comply with the essential health and safety requirements of the Supply of Machinery (Safety) Regulations 1992 but do not need to be CE marked.

Some models of compact dumpers may become unstable on slopes greater than 1 in 4, so it is important to follow the manufacturer's guidance regarding the capabilities of each specific vehicle. Where there is a risk of compact dumpers overturning during use, eg on steep gradients or rough ground, they should be fitted with ROPS to International Standard ISO 3471:1994 and seat restraints to ISO 6683:1981. Seat restraints must be worn where ROPS are fitted to prevent injury if the dumper overturns.

Four-wheel drive compact dumpers supplied new or hired after the 5 December 1998 should be fitted with ROPS and seat restraints because they tend to be used on steep or rough ground where the risk of roll-over is high. Two-wheel drive compact dumpers supplied new or hired after the 5 December 1998 should also be fitted with ROPS and seat restraints, unless there is no significant risk of roll-over in the environment in which they are used.

Compact dumpers which were in use before the 5 December 1998 need to be fitted with ROPS and seat restraints by 5 December 2002. However, they should be fitted with appropriate protection before the 2002 deadline if used in environments where there are significant risks of roll-over or falling materials.

Safe systems of work

Managers play a key role in ensuring the safe use of compact dumpers. Managers need to ensure that safe vehicles are provided and that safe systems of work are planned and put into practice. Managers should ensure that all site vehicles:

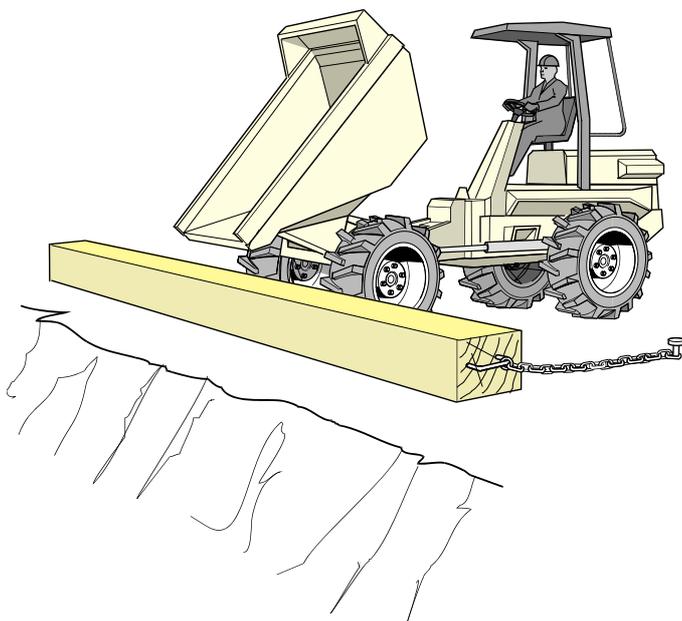
- are capable of safely performing the tasks they are expected to perform;
- are operated and maintained according to the manufacturer's instructions; and
- are driven by competent drivers.

Site managers should pay attention to the provision and maintenance of a safe work environment for compact dumper operations by ensuring vehicle traffic routes are safe. In particular, site managers should ensure that:

- stop blocks are positioned a safe distance from the edges of excavations, pits, spoil heaps, etc, to prevent dumpers falling during tipping;
- edges of roadways and tipping points are supported where necessary to prevent collapse and provided with physical protection to prevent vehicles running off the roadway;
- the public are not put at risk from site operations.

Workers on site need to know the site health and safety rules, so the provision of site induction training is an important part of ensuring compact dumpers are used safely. When selecting people to drive dumpers, managers should ensure that they:

- are competent to safely operate the specific vehicle and carry out daily maintenance checks;
- hold valid driving licences and training certificates; and



- are not unfit to drive due to the influence of alcohol or drugs.

Drivers should be instructed to always follow safe systems of work, specific site traffic routes and refrain from taking shortcuts. Particular attention should be paid to ensuring drivers use seat belts where ROPS are fitted to compact dumpers.

Managers should make regular checks to ensure the effectiveness of systems of work. Examine the work environment to ensure precautions, such as stop blocks, are maintained in a safe condition. Review maintenance records to ensure compact dumpers are kept in good working order, paying particular attention to braking systems. Monitor the performance of drivers and give them feedback and any appropriate retraining.

Safe driving practices

Drivers have a key role to play in ensuring the safe use of compact dumpers. Drivers should always:

- read the manufacturer's instruction book before operating an unfamiliar vehicle;
- understand the differences in performance when loaded and unloaded, particularly relating to braking and stability on slopes;
- know the different handling and braking characteristics of the vehicle in wet or icy conditions;
- check tyres, brakes, etc, to ensure compact dumpers are safe to use at the start of the working day;
- wear appropriate protective equipment, eg ear defenders, high visibility jacket, etc;
- use seat belts where ROPS are fitted;
- check that nobody is at risk of injury before moving off, particularly in the area obscured by the skip when going forward, and behind the vehicle when reversing;
- keep to designated vehicle routes and follow site rules and safe systems of work;
- drive at appropriate speeds for site conditions;
- follow directions given by traffic signs and signallers;
- load only on level ground with the parking brake applied;
- get off the dumper when it is being loaded and ensure that the skip is not overloaded;
- check that loads are evenly distributed and that they do not obscure visibility from the driving position;
- stop, select neutral gear and apply parking brake, when the machine is tipping into excavations while stationary;
- use proper towing pins with jump out restraints (not bent pieces of reinforcement bar); and
- apply the parking brake, switch off the engine and remove the key when leaving the driver's seat.

Drivers **should not**:

- drive on gradients steeper than those specified as safe for the specific dumper in the manufacturer's instructions;
- operate the site dumper's controls unless seated in the driving position;
- carry passengers unless purpose built seats are provided;
- drive around site with the skip in the vertical discharge position; or
- alter tyre pressures outside the manufacturer's specifications.

When using a starting handle, drivers need to:

- select neutral gear and firmly apply the parking brake;
- clear any obstructions;
- select the correct type of starting-handle, which should be in good condition with a handle grip which rotates freely;
- keep the thumb on the grip of the handle to prevent injury in case of kickback.

Drivers need to take particular care when moving on sloping ground. Avoid slopes which exceed the vehicles capability. Descend significant slopes down the gentlest gradient in low gear or reverse down slopes to ensure good stability and traction. If turning is unavoidable when travelling across slopes - turn uphill, not downhill.

Legislation

Health and Safety at Work etc Act 1974
Supply of Machinery (Safety) Regulations 1992
Management of Health and Safety at Work Regulations 1992
Construction (Design and Management) Regulations 1994
Construction (Health, Safety and Welfare) Regulations 1996
Provision and Use of Work Equipment Regulations 1998

References and further reading

The safe use of vehicles on construction sites
HSG144 HSE Books 1998 ISBN 0 7176 1610 X

Workplace transport safety HSG136 HSE Books 1995
ISBN 0 7176 0935 9

Reversing vehicles INDG148L HSE Books 1993

Hiring and leasing out of plant: application of PUWER 98, regulations 26 and 27 MISC156 HSE Books 1998

Retrofitting of roll-over protective structures, restraining systems and their attachment points to mobile machinery MISC175 HSE Books 1999

Health and safety on construction sites HSG150 HSE Books 1995 ISBN 0 7176 0806 9

ISO 3471:1994 *Earth moving machinery. Roll-over protective structures: laboratory tests and performance requirements*

ISO 6683:1981 *Earth moving machinery. Seat belt and seat belt anchorages*

Further advice

Site Dumper Association
C/o Winget Ltd, PO Box 41, Edgefold Industrial Estate,
Plodder Lane, Bolton BL4 OLS
Tel: 01204 665165

Construction Industry Training Board (CITB)
Bircham Newton, Kings Lynn, Norfolk PE31 6RH
Tel: 01485 577577

Construction Plant-hire Association
52 Rochester Row, London SW1P 1JU
Tel: 0171 630 6868

Hire Association Europe
2 Holland Road West, Birmingham B6 4DW
Tel: 0121 380 4600

Further Information

HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA Tel: 01787 881165 Fax: 01787 313995

HSE priced publications are also available from good booksellers.

For other enquiries ring HSE's InfoLine Tel: 0541 545500 or write to HSE's Information Centre, Broad Lane, Sheffield S3 7HQ.

HSE home page on the World Wide Web:
<http://www.open.gov.uk/hse/hsehome.htm>

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Case study

A contractor was fined a total of £150 000 and ordered to pay costs of £7500 for two separate accidents involving site dumpers. As the offences were so serious, the magistrates refused to hear the matters and transferred them to the Crown Court.

The accidents happened on consecutive days. The access ramp on the site was dangerous because of the steep slope and loose surface. The downward slope averaged 1 in 3.5, which was steeper than the maximum permissible gradient for the safe use of dumpers of 1 in 4.

Workers had been hired from an agency as extra dumper drivers and labourers to help complete a contract on time. No checks were made to find out if the drivers had the necessary experience and training. After some minor incidents, such as punctured tyres and dumpers running out of diesel, it was obvious to the site foreman that the men supplied were inexperienced and he requested new drivers. When they arrived, again no checks were made on the drivers' competence.

One of these drivers appeared to lack confidence and was replaced by a labourer who said he could drive. The following day, the foreman gave the new driver an incorrect demonstration of how to operate the dumper on the slope. Shortly after this demonstration, the same driver lost control of the vehicle and it overturned, throwing him clear. Luckily he only received minor injuries. He did not drive on site again.

The next day, the same men reported for work. A man who had previously worked on site as a labourer, and who had no experience of driving a dumper (he didn't even possess a provisional driver's licence) was asked to drive a dumper. This he did, but tragically the dumper overturned on the slope and the young man was killed.

The accidents could have been prevented if:

- only people with appropriate skills, knowledge and training were allowed to drive dumpers;
- dumpers were not driven on or across slopes of 1 in 4 or less;
- there had been better communication between the agency and site management;
- the management had taken positive action to identify and remedy causes of the minor incidents which had occurred before the dumpers overturned.

The contractor was convicted under Section 3(1) of the Health and Safety at Work etc Act 1974 for failing to ensure that people not in their employment were not exposed to risks to their health and safety. No proceedings were taken against the agency.

Site safe news

Accidents unfortunately do happen. *Site safe news* describes some of these incidents and explains what could have been done to prevent them in the first place. In Spring 1998, *Site safe news* included the dumper-truck story above.

Site safe news is published twice a year. If you'd like to hear more about these real-life incidents then why not order your free copies of *Site safe news* from: Sir Robert Jones Memorial Workshops, Units 3 and 5-9, Grain Industrial Estate, Harlow Street, Liverpool L8 4XY (or tel: 0151 709 1354/5/6).