

RR1085 – Exploring the human and physical factors associated with telescopic handler overturning risks

A combination of machine instability and various human factors elements are important precipitating factors in telescopic handler overturn incidents. Industry guidance makes a number of assumptions about the impact of operator “knowledge gaps”, however the link between operator knowledge gaps and overturn risk is, at present, hypothetical and remains empirically untested.

This study was done to identify:

- the full range of human factors issues that might potentially contribute to telescopic handler overturn incidents;
- the human factors issues that appear to be most important in terms of overturn risk and
- key operator knowledge gaps that could increase the probability of an operator overturning a machine.

The research indicates that a machine is more likely to overturn when its boom is raised and /or extended. Overturn incidents are also strongly related to lateral (in contrast to longitudinal) instability. As some operators were not aware of the overturn risk related to lateral instability, this implies the possibility of a knowledge gap among operators. Weaknesses in training and site management/supervision are also likely to increase overturn risk. The installation of lateral instability warning technology could reduce overturn risks by warning operators of dangerous situations before a critical threshold is reached.

Assistance in the use of Adobe Acrobat PDF files is available on our [FAQs](#) page.

RR1084 – Forklift truck reverse sensor systems assessment

Counterbalance forklift trucks (FLTs) are widely used in a variety of industry sectors for material handling. Incidents involving FLTs are typically vehicle/pedestrian, vehicle/vehicle, or vehicle/structure collisions. Of these, vehicle/pedestrian incidents have the most potential for reportable injury and around 500 incidents a year involving moving FLTs are reported to HSE.

Measures to improve or augment the operator's field of vision can include: mirrors and CCTV systems (which rely on the operator's observations) and sensor systems (including ultrasonic, radar, and Radio Frequency Identification (RFID)), similar to those commonly fitted to passenger vehicles; or simply improving the driver's operating position.

This report describes work undertaken to assess the active sensor systems (ultrasonic and radar) commonly used to reduce the risk of collisions. The systems tested appeared to provide a useful function in mitigating the risk of collision by stopping the truck when an obstruction was detected. However, certain configurations produced blind spots in the detection zones that could allow a pedestrian to approach the truck without being detected. The sensors also needed to be mounted to give an appropriate detection zone without producing a large number of false detections.

Companies should establish the conditions under which they will be operating an FLT and select a system that best fits their particular operating environment. Consideration should be given in the first instance to the practicability of removing pedestrians from the working area, although it is acknowledged that this is not always possible.

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RR1083 – Risks to respiratory health in the grain industry

A detailed literature search was carried out to summarise evidence about respiratory disease caused by exposure to grain dust. Long term epidemiological studies examining the risk for respiratory disease in grain workers were undertaken in Canada and the USA from the 1970s to the late 1990s. Smaller studies were undertaken in the UK and Europe but mostly focussed on respiratory disease in arable and livestock farmers.

The conclusion of this review is that the damaging effects of grain dust on the respiratory tract are accumulative and occur at high concentrations of exposure. Acute responses also occur and include declines in lung function as well as irritation and inflammation of the airways. There is less evidence that grain dust exposure causes occupational asthma despite the dusts containing allergens. This may be due to a 'healthy worker' effect with those already having, or developing, asthma leaving employment earlier than others. There is stronger evidence that the long term effects of exposure include emphysema, chronic obstructive pulmonary disease and interstitial fibrosis of the lung. The risk of developing extrinsic allergic alveolitis has reduced through preventing damp conditions in stored grain.

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Unregistered gas fitter fined

An unregistered gas fitter from Farnborough has been prosecuted for carrying out illegal gas work which was found to be unsafe.

Basingstoke Magistrates' court heard how Mr Leask, who also trades as Eldan Plumbing, had assured the homeowner that he was Gas Safe Registered. When he was unable to supply the gas safe certificate months after installing the boiler, the homeowner contacted Gas Safe, who confirmed Mr Leask was not gas safe registered. When inspected by the Gas Safe Register the boiler was found to be 'at risk', which indicates a risk to life or property.

Mr Leask pleaded guilty to breaching Regulation 3(3) of the Gas Safety (Installation and Use) Regulations 1998, for carrying out gas work without being gas safe registered and Regulation 3(7) for falsely pretending to be gas safe registered.

He was fined £1230 and ordered to pay costs of £350.

Notes to editors:

1. The Health and Safety Executive (HSE) is Britain's national regulator for workplace health and safety. It aims to reduce work-related death, injury and ill health. It does so through research, information and advice, promoting training; new or revised regulations and codes of practice, and working with local authority partners by inspection, investigation and enforcement. hse.gov.uk
2. More about the legislation referred to in this case can be found at: legislation.gov.uk/
3. HSE news releases are available at <http://press.hse.gov.uk>

Journalists should approach HSE press office with any queries on regional press releases.

University of Northumbria fined after

botched experiment nearly kills students

The University of Northumbria at Newcastle has been fined after two students fell seriously ill following a laboratory experiment.

Newcastle Crown Court heard how students were learning about the effects of caffeine as part of a sports experiment. Part of the course included a practical exercise where volunteer students would take quantities of caffeine to demonstrate the impact.

Two of the volunteer students drank a solution with 100 times the amount that should have been taken as part of the experiment. They immediately suffered from dizziness, blurred vision, vomiting, shaking and rapid heartbeat. They were rushed to hospital where their conditions were considered life threatening. Dialysis was required to rid their bodies of the excessive levels of caffeine.

An investigation by the Health and Safety Executive found that the protocols set out for the experiment were not followed. The instructions were to use 200mg tablets but as they were not available the students were provided with caffeine in a powdered form. This created a situation where the students miscalculated the amount of powder to use and overdosed the two volunteers.

University of Northumbria pleaded guilty to breaching Section 3 (1) of the Health and Safety at Work etc. Act 1974 and were fined £400,000 and ordered to pay costs of £26,468.22.

HSE inspector Cain Mitchell said: "Procedures where students are given supplements to assess their effect on the body need to be stringent and subject to very careful control. Caffeine is most popularly known as a constituent of coffee but it can be very dangerous and life threatening where pure caffeine powder is consumed.

"The University completely failed to control the risks during these experiments and two young students were made seriously ill which resulted in intensive care treatment for a number of nights. In other reported cases people have died after taking doses which were less than those administered to these two students.

"All organisations who engage in experiments where people are given chemical substances should ensure that the risks are fully identified and strict procedures are devised and followed to ensure that the experiments can be undertaken safely."

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