DISCLAIMER

This document is intended for information only and sets out best practice guidelines for the safe working at height within the chemical logistics supply chain. The information provided in these guidelines is provided in good faith and, while it is accurate as far as the authors are aware, no representations or warranties are made with regards to its completeness. It is not intended to be a comprehensive guide to the safe working at height within the chemical logistics supply chain. No responsibility will be assumed by ECTA/Cefic/Fecc in relation to the information contained in these Guidelines.
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INTRODUCTION

The risks associated with working at height require all parties involved in loading, unloading, storage, cleaning, repair/maintenance and shipping/rail terminal operations to introduce safe systems of work based on risk assessment and management.

These guidelines which have been developed by industry experts aim to promote “best practice guidance” for safe working at height in the entire chemicals supply chain.

There is a legal requirement for all participants in the supply chain to conduct risk assessments of their operations to eliminate or minimise risks, to protect employees and other personnel, and to cooperate and co-ordinate their activities. (See Directive 2001/45/EEC Of the European Parliament and of the Council of 27 June 2001 amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC)).

Within these overall obligations and measures taken to eliminate or minimise risk, a clear hierarchy of control should be used to guide this process (see section 4).

With regards to the number of serious incidents (see EU-OSHA statistics), personal injuries and near-misses that are encountered in the logistics supply chain with various types of equipment and locations, the authors (ECTA/Cefic/Fecc) feel it is imperative to develop these Working at Height guidelines to assist in the overall reduction of falls from height that cause death and injury.

Every working at height activity should be evaluated in detail, this will identify whether there are ways to avoid the working at height activity.

If working at height is unavoidable, the risk assessment will identify which infrastructure/equipment/procedure is the most suitable to carry out the work safely. In this regard, the hierarchy of control (see section 4) has been identified as the central guidance. In this context, the fact that the site management is legally responsible for providing a safe working environment for working at height should be taken into account.

The following website provides more background information on safe working conditions:
1. SCOPE AND OBJECTIVES

1.1 OBJECTIVES

All participants in the supply chain need to conduct comprehensive risk assessments and introduce safe systems of work based on risk assessment, management and appropriate procedures, and taking the corresponding actions.

The objective of these guidelines is to provide guidance on how to mitigate and manage the risks associated with working at height within the chemical supply chain.

1.2 SCOPE

The following activities are within the scope of these guidelines: Transport, Warehousing, Tank Cleaning and Repair stations, transfer terminals and depots at which the following activities are carried out:

Loading/Unloading of bulk or packaged goods, Top loading/unloading, opening/closing of covers/valves, connections/disconnections, sealing, sampling etc.

2. RESPONSIBILITIES

Analysis of accident statistics indicates that a majority of transport-related incidents and accidents occur during loading/unloading operations. Further detailed analysis shows that the human factor is by far the most important cause. It is therefore essential to increase safety during loading and unloading by clearly defining the respective responsibilities and by influencing human behaviour (see Cefic/ECTA BBS Guidelines for the safe loading and unloading of freight vehicles).

2.1. MANAGEMENT OF SITE

The management of the site should ensure that the site access requirements are communicated to the hauliers and that safety procedures are communicated to the drivers upon arrival. Site management should promote and maintain safety awareness, particularly during product handling. Site management should ideally ensure that loading/unloading operations are carried out under supervision.

There is a clear legal duty on the site management to ensure the safety of all people operating on their sites. This includes contractors, drivers, visitors etc.

Therefore the risks to the health and safety of these people should be assessed and eliminated or minimized. With working at height, the risk assessment should take account of all tasks and must seek to prevent persons falling.

For an un/loading site the working at height activity should be evaluated in detail. This will identify whether there are ways to avoid the working at height activity, if working at height is unavoidable
then steps must be taken as to which infrastructure/equipment is the most suitable to ensure that
the work can be undertaken safely.

Sites should have a **rescue plan**, in case an operator or driver falls from the vehicle and is suspended
in his safety harness, a site plan will help to ensure a quick response and avoid a potentially
hazardous improvised rescue operation.

Self-lowering fall arrest systems significantly reduce the likelihood of suspension trauma and make
the creation of the site’s rescue plan significantly better.

### 2.2. MANAGEMENT OF TRANSPORT COMPANY

**EQUIPMENT**
The management of the transport company should always supply equipment that is fit for purpose
for the operation to be carried out and that all applicable legal requirements have been complied
with. The management of the transport company is responsible for the provision and maintenance of
adequate personal protective equipment and the training in its use.

In case an operator or driver falls from the vehicle and is suspended in his safety harness, a plan will
help to ensure a quick response and avoid a potentially hazardous improvised rescue operation.

Self-lowering fall arrest systems significantly reduce the likelihood of suspension trauma and make
the creation of the site’s rescue plan significantly better.

Safety harnesses must be included in the personnel protective equipment which the driver needs to
have on board the vehicle at all times.

**NEAR MISS & INCIDENT REPORTING**
The management of the transport company should ensure that there is a procedure to report all near
misses, incidents, loading/discharge problems and unsafe situations or conditions, including follow-
up. There should be a system in place to share information on important near-misses, incidents or
unsafe situations with the principal.

### 2.3. SITE PERSONNEL

Continuous monitoring of the (un)loading process or other activity by the site loading operator and
driver in close co-operation, is essential. To this end the site loading operator and driver should be
well aware of each other’s responsibilities.

### 2.4. VEHICLE DRIVERS

The driver has to fulfil and respect safety/security guidelines at the loading/unloading point and
follow the instructions from the staff at the plant.
Drivers must not work at height unless it is safe to do so.

If there are no appropriate tools available and a safe working environment is not guaranteed, the driver must stop the activity and contact his management.
3. LEGAL REQUIREMENTS


4. RISK ASSESSMENT AND MANAGEMENT

Site Management are legally required to undertake and document the Working at Height risk assessment (see Appendix C). It is recommended that all risk assessments associated with working at height are performed by competent personnel who are trained in risk techniques and assessment.

These risk assessments should identify the critical activities in the supply chain and shall:

- Identify all risks and hazards for each activity
- Where possible, eliminate the risk through not working at height
- Where it is not possible to eliminate the risk, identify proportionate risk management measures
- Identify the severity of the risks for each activity by the use of a Risk Matrix
- Identify persons who may be involved in the work associated with identified risks

Any risk assessment should be documented, retained and periodically reviewed.

HIERARCHY OF CONTROL

The main way to ensure safety is to avoid the need to get on top of the vehicle in the first place. – Measures should be undertaken to ensure this. The hierarchy of control should establish, the action to be followed to determine the most safe and practical method to be used:

1. Where access to the top of vehicles cannot be eliminated, fixed gantries should be provided at loading and discharge facilities that incorporate secure fencing on all sides of the high level working position from which a person could fall.

Where a fixed gantry loading/unloading is not reasonably practicable, – and vehicle top access cannot be eliminated –, ensure that secure fencing is provided to all sides of the walkway or load platform of the vehicle. A possible way to achieve this is the use of mobile gantries to access working at height areas. These have the advantage of being less expensive than fixed gantries and can be manufactured to cater for both tanker and packed goods operations.

2. Use of personal fall restraint – or fall arrest systems – should be seen as the last resort, or used as an interim solution, pending application of the points above and then only if all of the previous control measures are not reasonably practicable. Where used, rigorous controls and training measures need to be applied to support this.
Safety harnesses must be included in the personnel protective equipment which the driver needs to have on board the vehicle at all times.

The fitment of a “safety rail” should not be seen as a safe means of working at height, but merely as a guide to the edge of the vehicle. It is also a means for the driver to use when moving forward on the vehicle. The use of the handrail to affix a safety harness onto is considered unacceptable as the strength of the handrail will NOT support a person if they happen to fall.

**NEAR MISS AND ACCIDENT/INCIDENT REPORTING**

*It is a known fact that most near misses are NOT reported when they occur. This is shown in the “Iceberg” diagram shown below the next page.*

A Near Miss is an undesirable, unplanned event or condition which under other circumstances could have led to injury, damage to equipment, material release or security breach. Examples include: defective safety equipment, unsafe acts, unsafe conditions or chemical exposure.

*In this respect, support is also necessary from the site management, so that no disadvantage results to a driver who has reported a potential unsafe situation. Furthermore, it should be possible for the site staff to report internal Near Misses and Accidents/Incidents to their own management too.*
Appendix A. ICEBERG EFFECT/ACCIDENT TRIANGLE

Above the water line
Appendix B. GOOD AND BAD EXAMPLES PICTURES

BAD PRACTICE

Fall restraint system not properly designed / Gaps which allow a worker to fall through

BAD PRACTICE

Harness not fitted correctly

BAD PRACTICE

Driver climbing on top of pallets and increasing risk of falling

GOOD PRACTICE

Individual fall protection

GOOD PRACTICE

Fall arrestor

GOOD PRACTICE

Collective fall protection systems
GOOD PRACTICE EXAMPLES
Appendix C. HOW TO CONDUCT A RISK ASSESSMENT

Train all involved personnel and conduct refresher training when required including the recording and maintenance of personnel files that appropriate training has been conducted.

Develop training programmes for each Risk/Hazard

WORKING AT HEIGHT – RISK ASSESSMENT FLOW CHART
Appendix D. RISK ASSESSMENT – SEVERITY RISK MATRIX

An example of a severity risk assessment is shown to assist companies to measure the severity of the working at height activities. There are a number of methods that are in use within the industry, but the KEY area is for a risk assessment to be conducted - meaning the best method to do the risk assessment need to be identified by each individual site.

Example risk assessment for existing Working at Height facilities on logistics platforms (Fine and Kinney method)

<table>
<thead>
<tr>
<th>equipment</th>
<th>activity</th>
<th>finding</th>
<th>Risk</th>
<th>existing control</th>
<th>S</th>
<th>P</th>
<th>E</th>
<th>R</th>
<th>Control measures</th>
<th>Respon sibility</th>
<th>S</th>
<th>P</th>
<th>E</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>lifeline system</td>
<td>climbing and working on top of truck while wearing a safety harness</td>
<td>Point of attachment of lifeline is not above user.</td>
<td>Risk of swing fall if driver falls to the ground</td>
<td></td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>126</td>
<td>Modify existing facilities so that point of attachment is always above the driver.</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>18</td>
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<tr>
<td>ladders of trucks</td>
<td>not in good condition</td>
<td>Risk of injury if ladder is broken</td>
<td>Risk of injury if ladder is broken</td>
<td></td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>126</td>
<td>Include inspection of ladders in vehicle inspection checklist</td>
<td>7</td>
<td>1</td>
<td>6</td>
<td>42</td>
<td></td>
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<tr>
<td>Issue</td>
<td>Corrective Actions</td>
<td>Frequency</td>
<td>Period</td>
<td>Code</td>
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<td>Drivers do not always wear their harnesses correctly</td>
<td>Risk of injury if driver falls down.</td>
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<td>Trainings. Hauliers to be informed of risks. Spot checks on sites.</td>
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<tr>
<td>Hauliers to be informed of risks. Spot checks on sites</td>
<td>Risk that driver touches the ground in case he falls off the truck.</td>
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<td>Ensure that all operators check the harnesses.</td>
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<td>Inform hauliers that long extension leads and shock absorbers are not fitted.</td>
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<td>Increase maintenance frequency from quarterly to monthly.</td>
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<td>Raise awareness to drivers to report these faults.</td>
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<td>Precise inspection.</td>
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<td>Clear driver instructions and regular spot checks.</td>
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<td>Hauliers to be informed of risks. Spot checks on sites</td>
<td>Risk that driver touches the ground in case he falls off the truck.</td>
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<td>Inform hauliers that long extension leads and shock absorbers are not fitted.</td>
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<td>Increase maintenance frequency from quarterly to monthly.</td>
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<tr>
<td>Drivers sometimes work unsupervised</td>
<td>Risk of suspension trauma if driver falls down</td>
<td>Injury</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>270</td>
<td>Improve monitoring of drivers (e.g. install camera system). Rescue plan. Regular evacuation exercises. Tell hauliers to fit harnesses with trauma straps</td>
<td>15</td>
<td>1</td>
<td>6</td>
<td>90</td>
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<tr>
<td>Fall arrest block was found inoperable (cable does not rewind)</td>
<td>Driver may not be adequately protected in case of a fall</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>126</td>
<td>Increase maintenance frequency. Include visual inspection of life line systems in safety tours (including fall indicator...) Precise inspection</td>
<td>7</td>
<td>1</td>
<td>6</td>
<td>42</td>
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<tr>
<td>Drivers have to carry loading rings when climbing up the ladder of the containers</td>
<td>Ladders of containers are dangerous. Drivers have only one hand free. Risk of falling off the ladder</td>
<td>7</td>
<td>3</td>
<td>6</td>
<td>126</td>
<td>Install safety stairs for containers (hooking safety harness onto lifeline from ground level)</td>
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<td>1</td>
<td>6</td>
<td>18</td>
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</tbody>
</table>
| Scenario | Action | Issue | Control
|---|---|---|---
<p>| Loader stands on top of the truck to load. When truck has to drive forward, the loader comes down. | The lifeline can be caught by the truck which is moving forward and operator may be severely injured | Give clear instructions to operators about the risks. Harness to be hooked to the lifeline only when going on top of truck | 7 3 6 126 |
| Platform with adjustable barrier system | The barrier system does not fully protect the driver in all circumstances (e.g. driver forgets to adjust the barriers) | Driver can fall between bottom of adjustable barrier system and side of the tanker | 15 3 6 270 |
| | The access is at the opposite side of the tanker’s walkway: the driver has to walk on the slippery curved top of the silo to reach the walkway | Driver can slip and injure himself. Especially during winter | 7 3 6 126 |
| | | | 7 1 6 42 |</p>
<table>
<thead>
<tr>
<th>Platform with fixed barrier system</th>
<th>Working on top of truck</th>
<th>The barrier system does not fully protect the driver in all circumstances (e.g. when truck is not correctly positioned)</th>
<th>Driver can fall between bottom of adjustable barrier system and side of the tanker</th>
<th>Install proper signs indicating the right position of the truck. If gaps are left, modify barrier system to close all gaps for all types of trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform with fixed rail</td>
<td>Working on top of truck</td>
<td>If the handrail of the truck is not put in place, a gap is left between the fixed rail and the walkway of the truck</td>
<td>Driver can fall between fixed rail system and side of the tanker</td>
<td>Install lifeline system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>15</th>
<th>3</th>
<th>6</th>
<th>270</th>
<th>15</th>
<th>1</th>
<th>6</th>
<th>90</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>3</td>
<td>6</td>
<td>270</td>
<td>3</td>
<td>1</td>
<td>6</td>
<td>18</td>
</tr>
</tbody>
</table>
### Loading Ladders for Containers

<table>
<thead>
<tr>
<th>Ladder Placement</th>
<th>Correct Orientation</th>
<th>Incorrect Orientation</th>
<th>Correct Ladder Orientation</th>
<th>Incorrect Ladder Orientation</th>
<th>Safe Ladder Placement</th>
<th>Ladder Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loading ladders</td>
<td>OK</td>
<td>NOK</td>
<td>OK</td>
<td>NOK</td>
<td>OK</td>
<td>NOK</td>
</tr>
<tr>
<td>for containers</td>
<td>going onto top of</td>
<td>cannot be positioned</td>
<td>'square' with the tanker,</td>
<td>leaves an opening between</td>
<td></td>
<td>inspection date is</td>
</tr>
<tr>
<td></td>
<td>containers</td>
<td>'square' with the</td>
<td>tanker, leaves an opening</td>
<td>ladders and container</td>
<td></td>
<td>overdue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>tanker, leaves an</td>
<td>between ladders and</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>opening</td>
<td>container</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Driver Can Fall Down**

- Ensure there is always enough space to place the ladders.
- Clear instructions to drivers.
- Regular spot checks.
- Drivers to hook their harness onto lifeline from ground level.

**Clear Instructions to Drivers**

- Regular spot checks.
- Drivers to hook their harness onto lifeline from ground level.

### Safety Ladders for Packed Goods

<table>
<thead>
<tr>
<th>Ladder</th>
<th>Load securing/removing side boards etc.</th>
<th>Inspection Date is Overdue</th>
<th>Driver Can Fall Down if Ladders Are Not in Good Operable Condition</th>
<th>Spot Checks of Tags/Labels with Inspection Dates During Safety Tours</th>
<th>Start a Grating Inspection Program. Spot Checks During Safety Tours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>Load securing/removing side boards etc.</td>
<td>Inspection Date is Overdue</td>
<td>Driver Can Fall Down if Ladders Are Not in Good Operable Condition</td>
<td>Spot Checks of Tags/Labels with Inspection Dates During Safety Tours</td>
<td>Start a Grating Inspection Program. Spot Checks During Safety Tours</td>
</tr>
<tr>
<td>Ladder</td>
<td>Load securing/removing side boards etc.</td>
<td>Inspection Date is Overdue</td>
<td>Driver Can Fall Down if Ladders Are Not in Good Operable Condition</td>
<td>Spot Checks of Tags/Labels with Inspection Dates During Safety Tours</td>
<td>Start a Grating Inspection Program. Spot Checks During Safety Tours</td>
</tr>
</tbody>
</table>

### Platforms in General

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Platforms</td>
<td>working on top of platform</td>
<td>grating clips loose. Gratings in bad condition</td>
<td>tripping hazard. Operator/Driver may fall though grating</td>
<td>Start a grating inspection program. Spot checks during safety tours</td>
</tr>
</tbody>
</table>

**Etc...**

<p>| | | | | |</p>
<table>
<thead>
<tr>
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<tbody>
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</tr>
</tbody>
</table>

**Page 20 of 26**
**S = Severity** : possible damage and consequences when the risk occurs

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minor</td>
<td>First aid</td>
</tr>
<tr>
<td>3</td>
<td>Important</td>
<td>adapted work</td>
</tr>
<tr>
<td>7</td>
<td>Serious</td>
<td>Days away from work</td>
</tr>
<tr>
<td>15</td>
<td>Very serious</td>
<td>1 fatality</td>
</tr>
<tr>
<td>40</td>
<td>Disaster</td>
<td>multiple fatalities</td>
</tr>
</tbody>
</table>

**P= Probability that the risk occurs**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>Virtually impossible</td>
</tr>
<tr>
<td>0.2</td>
<td>Practically impossible</td>
</tr>
<tr>
<td>0.5</td>
<td>Thinkable but unlikely</td>
</tr>
<tr>
<td>1</td>
<td>Only borderline possible</td>
</tr>
<tr>
<td>3</td>
<td>unusual but possible</td>
</tr>
<tr>
<td>6</td>
<td>occurrence very well possible</td>
</tr>
<tr>
<td>10</td>
<td>occurrence to be expected</td>
</tr>
</tbody>
</table>

**E= exposure to the risk**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>Very rarely - once a year</td>
</tr>
<tr>
<td>1</td>
<td>rarely - a few times per year</td>
</tr>
<tr>
<td>2</td>
<td>Unusual - monthly</td>
</tr>
<tr>
<td>3</td>
<td>Occasional - weekly</td>
</tr>
<tr>
<td>6</td>
<td>Frequently - daily</td>
</tr>
<tr>
<td>10</td>
<td>continuously</td>
</tr>
</tbody>
</table>

**R = Risk index = P x E x S**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>&lt;= 20</td>
</tr>
<tr>
<td>2</td>
<td>20 &lt; R &lt;= 70</td>
</tr>
<tr>
<td>3</td>
<td>70 &lt; R &lt;= 200</td>
</tr>
<tr>
<td>4</td>
<td>200 &lt; R &lt;= 400</td>
</tr>
<tr>
<td>5</td>
<td>R &gt; 400</td>
</tr>
</tbody>
</table>
“SAFETY IS OF PARAMOUNT IMPORTANCE WHEN WORKING AT HEIGHT”

STOP, THINK BEFORE UNDERTAKING ANY WORKING ACTIVITY AT HEIGHT!!!!!!
TERMINOLOGY

ECTA: European Chemical Transport Association

Cefic: European Chemical Industry Council

Fecc: European Association of Chemical Distributors

Site Management: The party/management responsible for the site and e.g. takes care of all installations, traffic regulation etc.

Loading/Unloading Site: A site at which chemical products are loaded in and/or unloaded from transport vehicles.

Site Personnel: The party/company which is operating the site and responsible for all operations, e.g. the procedures connected to the loading and/or unloading of a transport vehicle.
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