

BEST PRACTICE GUIDELINES FOR THE SAFE WORKING AT HEIGHT IN THE CHEMICAL LOGISTICS SUPPLY CHAIN



Issue 1 – November 2012

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.

TABLE OF CONTENTS

Disclaimer	2
Table of Contents	3
Introduction	5
1. Scope and Objectives	6
1.1 Objectives	6
1.2 Scope	6
2. Responsibilities	6
2.1. Management of Site.....	6
2.2. Management of Transport Company	7
2.3. Site Personnel	7
2.4. Vehicle Drivers	7
3. Legal Requirements.....	9
4. Risk Assessment and Management	9
Hierarchy of Control.....	9
Near Miss and Accident/Incident Reporting.....	10
Appendix A. Iceberg Effect/Accident Triangle	11
Appendix B. Good and Bad Examples Pictures	12
Appendix C. How To Conduct A Risk Assessment	13
Appendix D. Risk Assessment – Severity Risk Matrix	15
Terminology	23
Contacts	24
disclaimer	2
Table Of Contents	3
Introduction	4
1. Scope And Objectives	5
Objectives	5
Scope	5
2. Responsibilities	5
2.1. Management Of Site	5

<u>2.2. Management Of Transport Company</u>	6
<u>2.3. Site Personnel</u>	6
<u>2.4. Vehicle Drivers</u>	6
<u>3. Legal Requirements</u>	6
<u>4. Risk Assessment And Management</u>	7
<u>Hierarchy Of Control</u>	7
<u>Near Miss And Accident/Incident Reporting</u>	8
<u>Appendix A. Iceberg Effect/Accident Triangle</u>	9
<u>Appendix B. Good And Bad Examples Pictures</u>	10
<u>Appendix C. How To Conduct A Risk Assessment</u>	11
<u>Appendix D. Risk Assessment – Severity Risk Matrix</u>	13
<u>Terminology</u>	21
<u>Contacts</u>	22

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 co-operate 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 wWorking at hHeight gGuidelines 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, tthis 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:
<http://osha.europa.eu>.

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

[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](#)).

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.

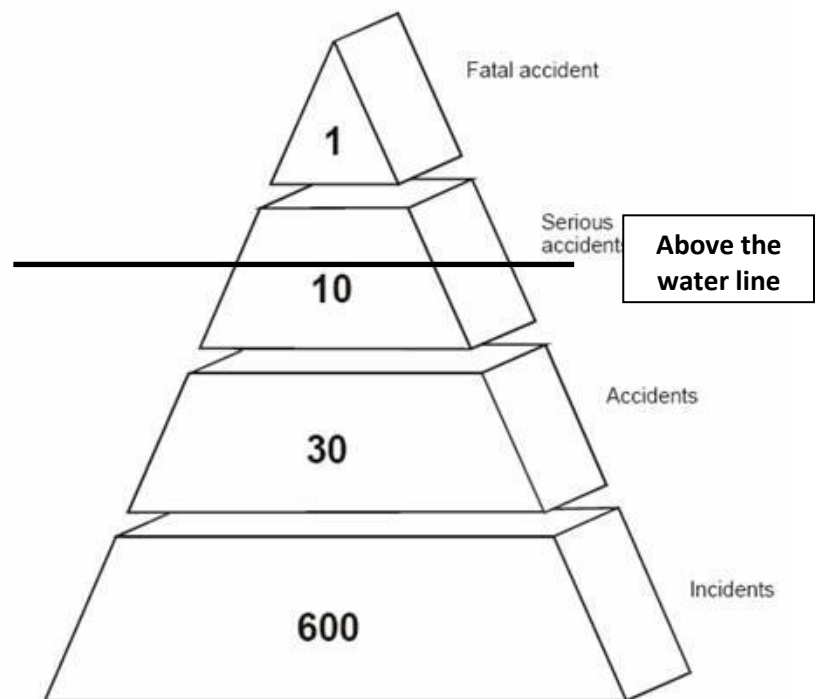
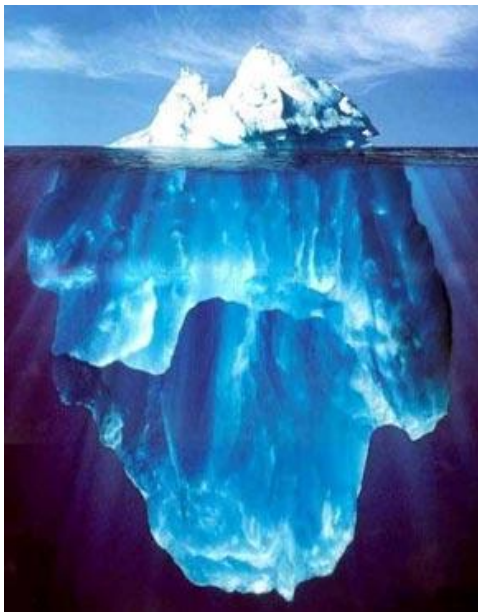
NEAR MISS AND ACCIDENT/INCIDENT REPORTING

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



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



GOOD PRACTICE



Individual fall protection

GOOD PRACTICE



Fall arrestor

GOOD PRACTICE

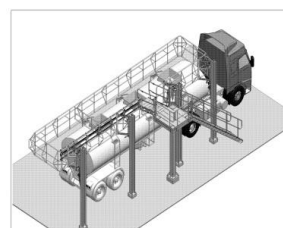


GOOD PRACTICE

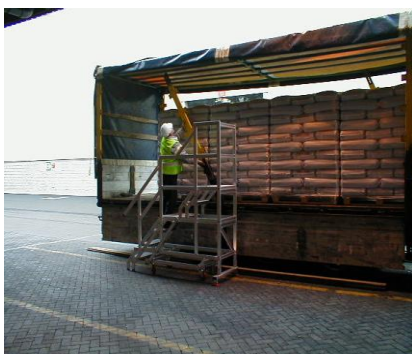
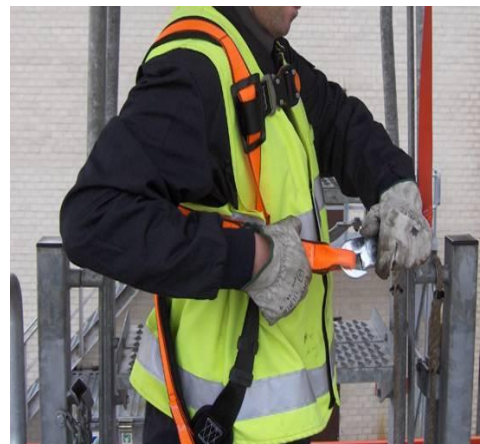


Collective fall protection systems

GOOD PRACTICE



GOOD PRACTICE EXAMPLES

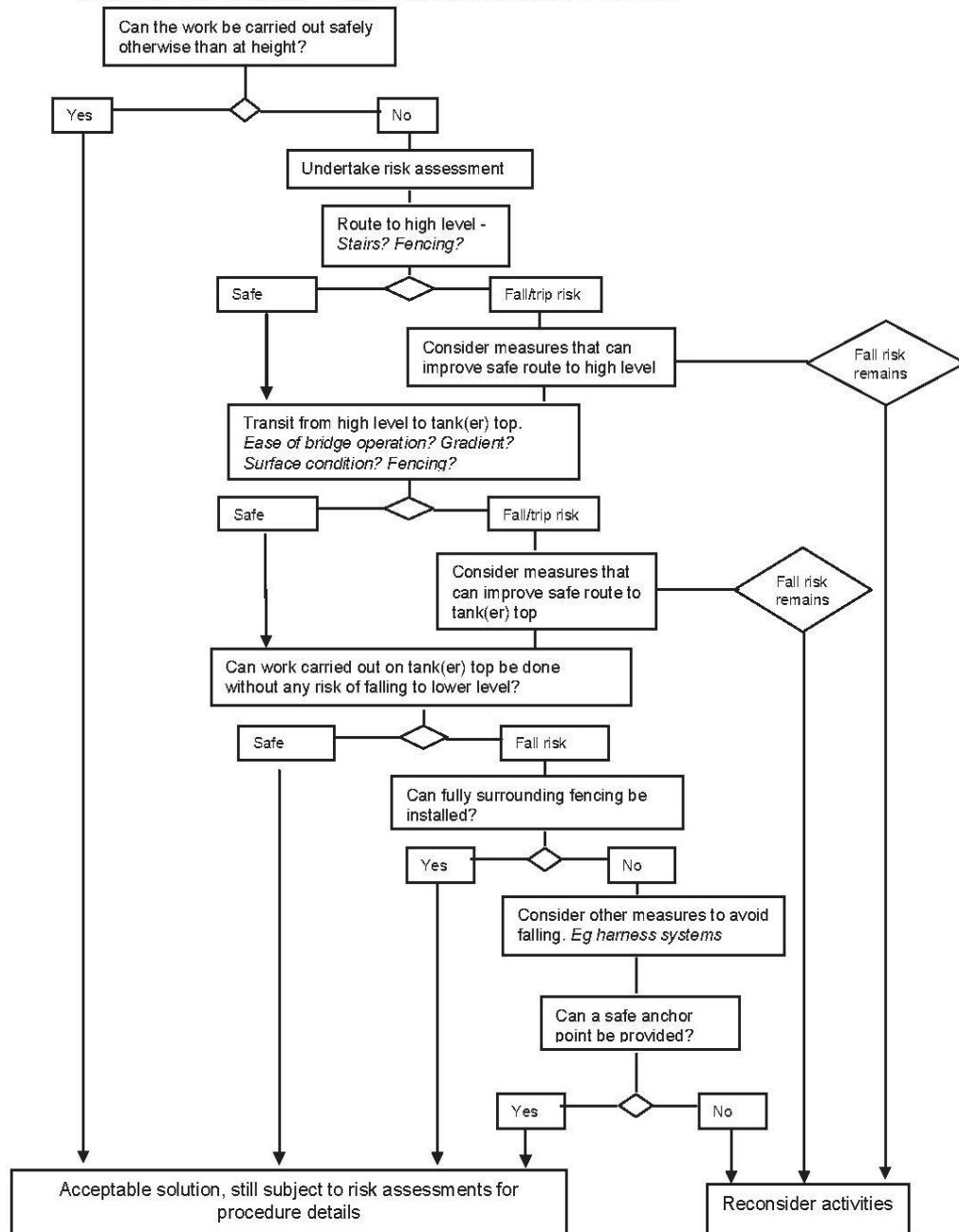


Appendix C. HOW TO CONDUCT A RISK ASSESSMENT

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

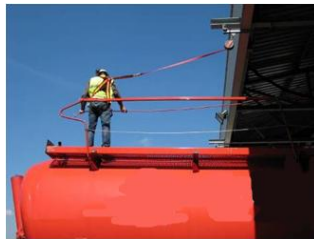
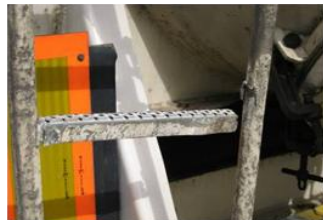





Appendix D. RISK ASSESSMENT – SEVERITY RISK MATRIX

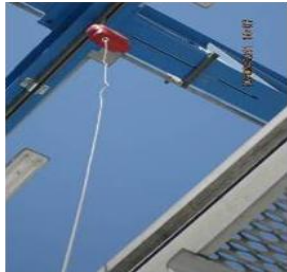
An example of a severity risk assessment is shown to assist companies to measure the severity of the working at height activities. There are a number of methods that are in use within the industry, but the KEY area is for a risk assessment to be conducted - meaning the best method to do the risk assessment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


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



list not exhaustive - only examples

equipment	activity	finding		Risk	existing control	S	P	E	R	Control measures	Responsibility	S	P	E	R
lifeline system	climbing and working on top of truck while wearing a safety harness	Point of attachment of life line is not above user.		Risk of swing fall if driver falls to the ground		7	3	6	126	Modify existing facilities so that point of attachment is always above the driver.		3	1	6	18
		ladders of trucks not in good condition		Risk of injury if ladder is broken		7	3	6	126	Include inspection of ladders in vehicle inspection checklist		7	1	6	42

drivers do not always wear their harnesses correctly		Risk of injury if driver falls down.		7	3	6	126	Trainings. Hauliers to be informed of risks. Spot checks on sites	3	1	6	18
harnesses are sometimes fitted with long extension leads or shock absorbers		risk that driver touches the ground in case he falls off the truck	harnesses are checked by the operators who are aware about the risks	7	3	6	126	ensure that all operators check the harnesses. Inform hauliers that long extension leads and shock absorbers are not fitted	7	1	6	42
Securing clip was found to be faulty and did not spring back into the secure position every time it was opened		driver is not protected in case of a fall	quarterly visual inspection	15	3	6	270	Increase maintenance frequency from quarterly to monthly. Raise awareness to drivers to report these faults. Precise inspection.	15	1	6	90
drivers use to temporarily clip the life line onto the truck		risk of damaging lifeline if driver forgets to remove		7	3	6	126	Clear driver instructions and regular spot checks	7	1	6	42

		drivers sometimes work unsupervised		risk of suspension trauma if driver falls down Injury		15	3	6	270	Improve monitoring of drivers (e.g. install camera system). Rescue plan. Regular evacuation exercises. Tell hauliers to fit harnesses with trauma straps		15	1	6	90
		fall arrest block was found inoperable (cable does not rewind)		driver may not be adequately protected in case of a fall		7	3	6	126	Increase maintenance frequency. Include visual inspection of life line systems in safety tours (including fall indicator...) Precise inspection.		7	1	6	42
		Drivers have to carry loading rings when climbing up the ladder of the containers		Ladders of containers are dangerous. Drivers have only one hand free. Risk of falling off the ladder		7	3	6	126	install safety stairs for containers (hooking safety harness onto lifeline from ground level)		3	1	6	18

		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		7	3	6	126	give clear instructions to operators about the risks. harness to be hooked to the lifeline only when going on top of truck		7	1	6	42
etc...															
platform with adjustable barrier system	working on top of truck	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	driver instructions displayed	15	3	6	270	Give training to driver before first use. Spot checks for compliance . (Consider to add life line system)		15	1	6	90
		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	change orientation of truck		7	1	6	42

platform with fixed barrier system	working on top of truck	The barrier system does not fully protect the driver in all circumstances (e.g. when truck is not correctly positioned)		driver can fall between bottom of adjustable barrier system and side of the tanker		15		3	6	270	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		15	1	6	90
platform with fixed rail	working on top of truck	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		driver can fall between fixed rail system and side of the tanker		15		3	6	270	install lifeline system		3	1	6	18

[illegible]

S = Severity : possible damage and consequences when the risk occurs			
1	Minor	First aid	< 250 €
3	Important	adapted work	< 2500 €
7	Serious	Days away from work	< 25.000 €
15	Very serious	1 fatality	< 250.000 €
40	Disaster	multiple fatalities	> 250.000 €

P= Probability that the risk occurs			
0.1		Virtually impossible	
0.2		Practically impossible	
0.5		Thinkable but unlikely	
1		Only borderline possible	
3		unusual but possible	
6		occurrence very well possible	
10		occurrence to be expected	

E= exposure to the risk			
0.5		Very rarely -once a year	
1		rarely - a few times per year	
2		Unusual - monthly	
3		Occasional - weekly	
6		Frequently - daily	
10		continuously	

R = Risk index = P x E x S		
1	≤ 20	Probably acceptable risk
2	$20 < R \leq 70$	requires attention
3	$70 < R \leq 200$	requires improvement
4	$200 < R \leq 400$	immediate measures required
5	$R > 400$	consider to stop activities

“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.

CONTACTS



Michael Koch
Head of QSHE & Training
Bertschi AG
Hutmattstrasse 22
CH – 5724 Dürrenäsch
Switzerland
T +41 62 767 68 38
F +41 62 767 68 00
M +41 79 286 10 41
michael.koch@bertschi.com



Maria Jesus Almenar Martin
RC & Logistics Manager
European Association of Chemical Distributors (FECC)
Rue du Luxembourg 16 b
B – 1000 Brussels
Belgium
Tel.: + 32 2 679 02 64
Fax: + 32 2 672 73 55
mja@fecc.org



Andrew M Baird
Director - Safety, Health, Environment & Quality
Suttons Transport Group Limited
Gorsey Lane, Widnes
WA8 0GG
United Kingdom
Direct Tel: +44(0) 151 4222852
Mobile Tel: +44(0) 7725 458544
andrew_baird@suttons-group.co.uk



Carolyn Kleinjohann
Sustainability Officer
Kube & Kubenz Internationale Speditionen
Chemiepark Knapsack
Industriestraße / Geb. 444
D-50354 HÜRTH
Germany
49.2233/481359
49.2233/481332
carolyn.kleinjohann@kubekubenz.com



Stuart Greenhill
European HSSE Logistics Manager
European Acetyls
BP R&M - Acetyls BU
Chertsey Road, Sunbury on Thames
Middlesex, TW16 7BP
UK
Mobile: +44 (0) 7810 658037
stuart.greenhill@uk.bp.com



Paul Lancaster
Compliance Verification Auditor
S&OR Audit
BP, Sunbury, Building B
Tel +44 1482 662017
Mob +44 7810 071393
paul.lancaster@bp.com

INEOS Olefins & Polymers Europe

Luc Van de Velde
Logistics HSE manager
Ineos Olefins & Polymers Europe
Amocolaan 2A
2440 Geel
Belgium
Tel: + 32 3210 36 47
Fax:: + 32 3210 39 21
GSM: + 32 475 27 23 31
Luc.vandevelde@ineos.com



Chemical Business Association

Peter J C Newport
Chief Executive Officer
Chemical Business Association
Lyme Building
Westmere Drive
Crewe Business Park
CREWE
Cheshire
CW1 6ZD
Telephone: +44 (0) 1270 258200
Fax: +44 (0) 1270 258444
Mobile: +44 (0) 7786515407
peter.newport@chemical.org.uk



Sabrina Robba
 Head of Corporate Center SHEQ
 SHEQ: Safety, Health, Environment & Quality
 Managing Director HOYER (Svizzera) SA - HOYER Italia srl
 HOYER (Svizzera) SA
 Via Borromini 20A - 6850 Mendrisio - CH
 Tel: +41 91 640.78.17
 Fax: +41 91 640.78.25
 Mobile: +39 338 6729536
sabrina.robba@hoyer-group.com



Alex Sobota
 Group Division Manager
 LKW WALTER Internationale Transportorganisation AG
 AT-2355 Wiener Neudorf, IZ NOE-Sued, Strasse 14
 Telefon: +43 5 7777-2358
 Telefax: +43 5 7777-52358
sobota@lkw-walter.com



Victor Trapani
 SQAS Manager
 CEFIC
 Av. E. van Nieuwenhuyse 4
 B-1160 Brussels
 Belgium
 Tel + 32 2 676 73 85
 Fax + 32 2 676 74 32
vtr@cefic.be



Huub Vergoossen
 Manager European Transport Safety & Compliance
 Supply Chain Management
 SABIC Europe
 Europaboulevard 1
 P.O. Box 5151
 6130 PD Sittard
 The Netherlands
 T +31 46 722 2758
 F +31 10 264 4838
Huub.Vergoossen@SABIC-europe.com



Andreas Zink
 Director
 LKW WALTER Internationale Transportorganisation AG
 AT-2355 Wiener Neudorf, IZ NOE-Sued, Strasse 14
 Telefon: +43 5 77772344
 Telefax: +43 5 777752344
 Mobile: +43/6642419360
zink@lkw-walter.com



John de Graaf
 Standfast
 Director
 Azewijnseweg 12 SF – 4214 KC Vuren,
 The Netherlands
 Ph: +31 (0) 183 820280
 Mob: +31 (0) 653 940851
www.standfastcorp.eu
jdg@standfastcorp.eu



Steve Jervis
 Standfast
 Managing Director
 Foulkes Consulting Ltd
 t | +44 (0) 1782 366 055
 m | +44(0)7765 881 956
 e stevej@foulkescl.com
www.foulkescl.com



Colin V Humphrey
Managing Director
Responsible Care Coordinator
ECTA
Avenue de Tervueren 270
1150 Brussels
Belgium
T +32(0)2 741 86 81
F +32(0)2 741 86 82
M + 44 (0) 781 732 5834
colinvhumphrey@ecta.be



Sara Correa Roa
Admin Manager
ECTA
Avenue de Tervueren 270
1150 Brussels
Belgium
T +32(0)2 741 86 81
F +32(0)2 741 86 82
Sara.correa@ecta.be