High Risk Work Programs
Serious Injuries or Fatality (SIF) / Red Flags

Pierre Reuse, Ph.D.
Head HSE&BC Third Party Inspection and Compliance, Novartis
Bio

- Chemical Engineer, PhD in Heterogeneous Catalysis
- Team Leader at Swissi Process Safety (Safety Lab)
- Global HSE & BC Manager Novartis Over The Counter
- Head Global Pharma Project Risk and Process Safety Management Novartis Pharma
- Currently: Head HSE & BC Third Party Inspection and Compliance, Novartis

Dr Pierre Reuse
Email: pierre.reuse@novartis.com
Introduction

Traditional programs like Process Safety Management only indirectly protect employees health and life.

More people targeted programs are required!

Programs are called:

• High Risk Work Programs
• Prevention of Serious Injuries or Fatality (SIF)

Most of the requirements are legal obligation in Europe / USA
Agenda

1. Confined Space Entry (CSE) Working at Heights (WAH)
2. Short Case Study
3. Working with Hazardous Energies (WWHE) Lifting Operations Manual Handling
4. Short Case Study
5. High Risk Contractors
6. Short Case Study
## Agenda

<table>
<thead>
<tr>
<th></th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confined Space Entry (CSE) Working at Heights (WAH)</td>
</tr>
<tr>
<td>2</td>
<td>Short Case Study</td>
</tr>
<tr>
<td>3</td>
<td>Working with Hazardous Energies (WWHE)</td>
</tr>
<tr>
<td></td>
<td>Lifting Operations</td>
</tr>
<tr>
<td></td>
<td>Manual Handling</td>
</tr>
<tr>
<td>4</td>
<td>Short Case Study</td>
</tr>
<tr>
<td>5</td>
<td>High Risk Contractors</td>
</tr>
<tr>
<td>6</td>
<td>Short Case Study</td>
</tr>
</tbody>
</table>
Confined Space Entry

This is an operation that takes often place although common thinking is that it’s only related to entering in small vessels.

Typical activities:

• Manual charging of reactors
• Visual inspection
• Cleaning of equipment
• Inspection and maintenance
Confined Space Entry - Risks

- Asphyxiating atmosphere
- Moving parts (hazardous energies)
- Exposure to chemicals
- Injuries / accident
- Difficulties during rescue
Confined Space Entry - Criteria

- No harmonized definition between companies, authorities, experts
- Usually related to a dimension (volume, length), difficulty of access, potential hazardous atmosphere / energies present
- Need to make sense, be consistent with other programs
- Need to be enforced!
Confined Space Entry – Program Elements

- Definition of Confined Space
- Inventory of Confined Space
- Permit system
- Atmosphere monitoring
- Planning of rescue operations
- Maintenance of equipment (oxygen monitoring, rescue equipment,...)
Work at heights

• All operations that are above ground; where a fall is possible.

• Access to remote places (inspections, reparations, cleaning, maintenance)

• Access to roofs

• Access to underground or excavated areas
Work at heights - Risks

- Fall
- Fall of objects
- Impact due to moving parts (scissor lift, MEWP)
- Failure of equipment (Lack of maintenance of the ladder, platform,...)
Work at heights - Criteria

• Definition of height
  • 0 meter
  • 1.8 – 2 meters

Mobile Elevated Work Platform (MEWP)

Scissor lift
Work at heights – Program Elements

- Definition
- Risk assessment
- PPE – Fall protection system
- Rescue
- Permit system
- Maintenance program
- Safety perimeter during operation
Agenda

1. Confined Space Entry (CSE)  
   Working at Heights (WAH)

2. Short Case Study

3. Working with Hazardous Energies (WWHE)  
   Lifting Operations  
   Manual Handling

4. Short Case Study

5. High Risk Contractors

6. Short Case Study
Working at Heights

- What is right?
- What is wrong?
- What are doing when you see such a situation during the audit?
- Which documents are you checking after the visit?
- What will be the finding(s)?
Confined Space Entry

- What is right?
- What is wrong?
- What are you doing when you see such a situation during the audit?
- Which documents are you checking after the visit?
- What will be the finding(s)?
Some wrong behaviors...
Agenda

1. Confined Space Entry (CSE)  
   Working at Heights (WAH)

2. Short Case Study

3. Working with Hazardous Energies (WWHE)  
   Lifting Operations  
   Manual Handling

4. Short Case Study

5. High Risk Contractors

6. Short Case Study
Working with hazardous Energies

- Any work done on an equipment that can release energy and harm people
- Working on a packaging line that is switched on by someone else
- Retained energy like compressed air, spring...
- Work on electrical equipment
Working with hazardous Energies - Risks

- Injuries due to moving parts
- Injuries due to electricity
Working with hazardous Energies - Criteria

Hazardous energies are

- Moving or rotating machine parts
- Pressure or steam systems
- Hazardous materials
  (e.g., chemicals, solvents, toxic gases, asphyxiants gases etc.)
- Gravity & stored energy
  (e.g., springs, potential energy which would cause equipment to move or rotate, explosion suppression systems, etc.)
- Electricity
  (mains and stored e.g., capacitors)
- Pneumatic valves
- Extreme temperatures
- Ionizing and non-ionizing energy sources
  (e.g., nuclear, x-ray, lasers, UV, etc.)
Working with hazardous Energies
Program Elements

- Definition
- Permit system
- Lock-out tools
- Tag-out tools
- Procedure for special cases
- Possibility of locking out
  (can be checked during visit also if there is no LOTO currently taking place)
Lifting Operations

- Moving goods and materials using dedicated equipment
- Lifting of equipment for maintenance or repairs
Lifting Operations - Risks

• Fall of transported goods
• Failure of lifting equipment
• Injury of persons nearby
• Damage to nearby installation (→ chain reaction)
Lifting Operations—Program Elements

- Task assessment
- Equipment clearly and visibly labeled with appropriate information
- Inspection of the equipment prior to use
- Respect of limitations
- Maintenance program
Manual Handling

- Lifting, transport of equipment
- Lifting, transport of chemicals (bags, drums...)
- Repetitive tasks involving body movements
Manual Handling - Risks

• (Back) injury
• Short term absence
• Long term absence
Manual Handling - Criteria

• Lifting heavy objects

• Pulling, pushing or pressing with high force

• Repetitive or sustained lifting, pulling, pushing or pressing

• Awkward body positions or bad postures – either repetitive or for prolonged periods

• Exposure of whole or part of body to sustained vibration

• Driving a vehicle with significant vibration

• Manual handling of loads that are difficult to hold (e.g. slippery), or unstable / unbalanced
Manual Handling – Program Elements

- Risk assessment
- Management of Change (inclusion of this hazard in the triggering list)
Agenda

1. Confined Space Entry (CSE)  
   Working at Heights (WAH)

2. Short Case Study

3. Working with Hazardous Energies (WWHE)  
   Lifting Operations  
   Manual Handling

4. Short Case Study

5. High Risk Contractors

6. Short Case Study
Working at Heights

• What is right ?
• What is wrong ?

• What are doing when you see such a situation during the audit ?

• Which documents are you checking after the visit ?

• What will be the finding(s) ?
During your visit, no operation like entry in a Confined Space Entry or Working at Heights take place...

What do you do to get an idea of the efficiency of their programs?
Is that a proper Lock-out?
If you see this...

What is your conclusion?
Agenda

1. Confined Space Entry (CSE)
   Working at Heights (WAH)

2. Short Case Study

3. Working with Hazardous Energies (WWHE)
   Lifting Operations
   Manual Handling

4. Short Case Study

5. **High Risk Contractors**

6. Short Case Study
High Risk Contractors - Purpose

• Works that are not routine (= complex and high risk) are usually realised by specialised, external companies

• Includes Construction workers

• Trend in Europe/USA to have also routine work being done by external companies
High Risk Contractors - Risks

- Activity in itself
- Contractors lacking training / experience
- Not familiar with the facility
- Discrepancy between industry and «local» way of working
- Impact on adjacent / remote operations
High Risk Contractors - Criteria

Contractors performing high risk activities → definition, see f.ex. SIF activities

Resident contractors vs. one time contractors
High Risk Contractors – Program Elements

• Pre-selection of contractors
• On-boarding orientation
  (know the site)
• Need to use the Permit to Work system
• PPE / approved tools
• Checks during works
• Assessment of performance
Agenda

1. Confined Space Entry (CSE)
   Working at Heights (WAH)

2. Short Case Study

3. Working with Hazardous Energies (WWHE)
   Lifting Operations
   Manual Handling

4. Short Case Study

5. High Risk Contractors

6. Short Case Study
Short Case Study

• What is right?
• What is wrong?
• What are you doing when you see such a situation during the audit?
• Which documents are you checking after the visit?
• What will be the finding(s)?
Short Case Study

• What is right?
• What is wrong?
• What are doing when you see such a situation during the audit?
• Which documents are you checking after the visit?
• What will be the finding(s)?
Besides usual risks of getting injured (trips, falls...):

Important fire load
Programs

When you review those programs...

• Make sure that the program makes sense
• Make sure that what is written in a SOP is implemented
• Look for proofs of efficiency of those programs
• Look for consistency of those programs
• Look for interdependency
Conclusion

Those High Risk Work or SIF Programs are very important. They might be seen as low priority because they impact only one person at a time...

but those operations takes place several time a day therefore they make a difference!