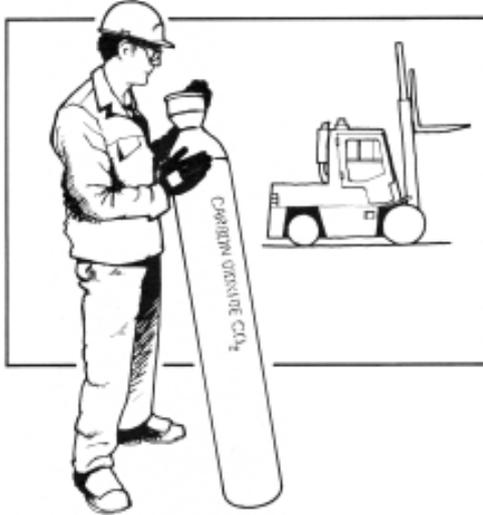


General cylinder handling



Accidents resulting from cylinder handling are the largest single cause of personal injury in Air Products.

Many of the accidents result in only minor injuries such as cuts and abrasions but some result in broken bones and sometimes, as in the case of back injury, permanent damage.

Increased mechanisation such as palletisation and the use of fork lift trucks, have reduced some types of cylinder handling accidents dramatically, but have introduced the potential for serious injury associated with mechanical handling.

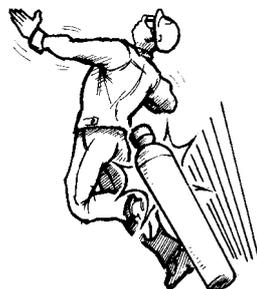
The introduction of footwear with metatarsal protection has reduced the seriousness of foot injuries, but preventing the cylinders falling in the first instance must be the priority.

In the event of an accident, an investigation is undertaken to establish the cause. Once the cause for the accident has been identified, actions to prevent re-occurrences must be taken. Accident prevention is often about raising awareness of the risks to keep people vigilant when undertaking hazardous tasks.

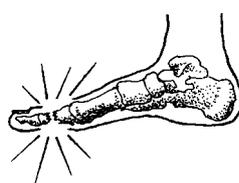
Falling cylinders

The types of accident which have resulted from falling cylinders:

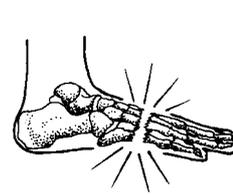
Leg injuries



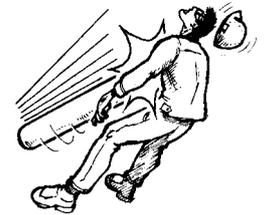
Broken toes



Broken metatarsal bones



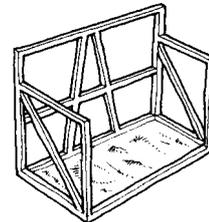
Injured chest



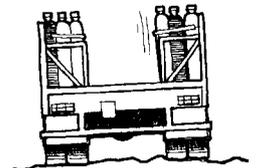
The main reasons these accidents occur are as follows:

Uneven floor surface:

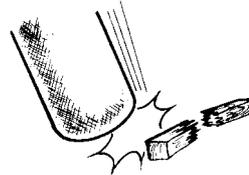
Damaged pallet bases



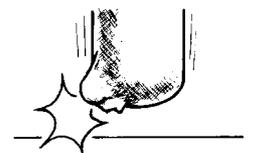
Trucks parked on uneven ground



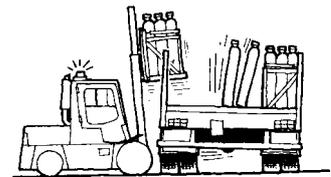
Rubbish on the floor



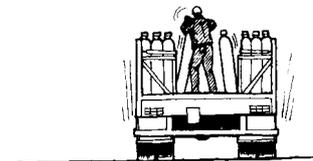
Dirt on the cylinder base



Removing pallets from truck when other cylinders are unrestrained.



Leaving free standing cylinders in the aisle of the truck while working in the area causing the truck to rock.



Unloading the truck unevenly causing cylinders to lean towards the centre so they fall when the straps are released.



N.B. Some cylinders have a slightly more rounded base profile. These cylinders are relatively unstable compared to other cylinders. Extra care should be taken when handling them.



For the reason stated above it is company policy to remove these cylinders from single cylinder operation to convert them for use in multi-cylinder banks. Constant vigilance is required to ensure that when these cylinder banks come up for retest, that the cylinders go back into banks when the test is complete.

If cylinders are found to be leaning in pallets, get help to straighten them up before releasing the restraining straps.



The introduction of footwear with metatarsal protection has reduced the number of foot injuries from falling cylinders. This type of footwear is only effective if kept in good condition and worn correctly.

You should **never** try to catch or restrain falling cylinders.

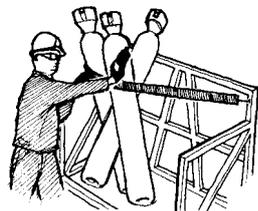


Trapped hands

The types of injury resulting from people trapping their hands are:

- Broken bones
- Dislocated fingers
- Cuts
- Bruises

The main reasons for this type of accident occurring are:-
Trying to straighten cylinders which are leaning in strapped pallets. To prevent this more care and attention must be paid to pallet loading and strapping.



Failing to remove the hand from between the cylinder being rolled and other cylinders or the side of pallets. Constant vigilance is required when moving cylinders by hand to ensure that hands are not caught or trapped.

Floor condition is also a contributing factor to this type of accident so good housekeeping is essential.

Excessive speed is a cause of many trapped-hand accidents.

Wet cylinders, due to weather conditions, can be slippery and therefore more difficult to handle.



Constant awareness is vital when man-handling cylinders.



Hand protection is essential when handling cylinders. Stout gloves will greatly reduce the probability of cuts and abrasions.

Injured backs

Back injuries can be serious and sometimes result in permanent disability.

The types of back injuries recorded are:

- | | |
|---|--|
| Strained muscles
Curable with rest | Slipped disc
Permanent injury |
| Torn muscles
Curable but can need surgery to repair | Trapped nerves
Can be curable or permanent to repair |

The main reasons for this type of accident are:

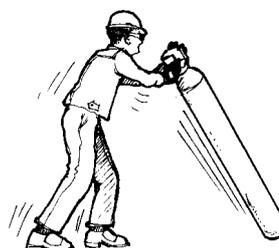
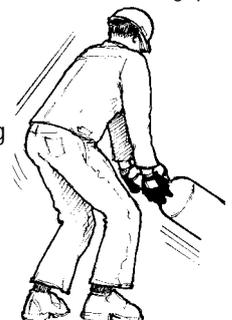
Trying to catch or restrain falling cylinders. This is the primary cause of the majority of cylinder accidents. Never try to restrain or catch falling cylinders.



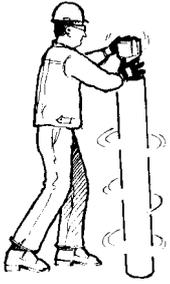
Attempting to lift fallen cylinders. If the correct method of lifting had been adopted, the injury could have been prevented.

When lifting cylinders from the horizontal to the vertical position, the following rules must be followed:-

- **Wear appropriate protective clothing**
Stout gloves
Footwear with metatarsal protection
- **Foot position**
Hip width apart with one slightly in front of the other, astride the valve end of the cylinder.
- **Bend knees**
Bend the knees to lower your body. This will enable your strong thigh muscles to do most of the lifting.
- **Firm grip**
Ensure the guard is secure then take a firm grip using both hands.
- **Straight back**
Keep your back straight throughout its length. This does not mean it has to be vertical. Doing this will prevent a slipped disc.
- **Pull the chin in**
By pulling the chin in, the back is locked in a straight line.



- **Lift decisively**
This is done initially by straightening the legs then following through with the arms, at the same time walking forward until the cylinder is upright.



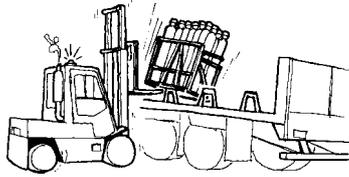
- **Move the cylinder**
When the cylinder is upright do not leave it free standing, but move it to a safe storage area.

Fork lift trucks

The use of fork lift trucks is a significant area for accidents and incidents reported.

The types of accidents during use of fork lift trucks are:

Pallet falling from the forks because it catches on another pallet as the driver reverses.

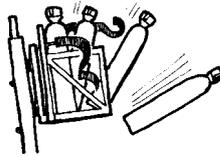


Pallet coming off the forks because it is not lifted high enough to clear the securing pintle.

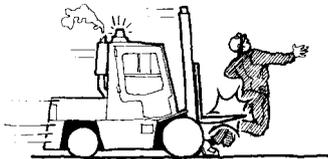


Uneven ground.

Pallet coming off the forks because it is not tilted back enough.



Cylinders not secured.



Driving too fast.
Untrained operator.
Hitting pedestrians.

The potential for serious injury or fatality exists in areas where fork lift trucks operate and for this reason strict rules for fork lift truck operation exist and must be observed.

Only people who have been formally trained and certificated are considered competent to operate fork lift trucks.

To be considered competent the operator must undertake a practical test and demonstrate a full understanding of fork lift truck operation.

Such a test must include:

- Operation of the truck within the safe working limits.
- How to carry out a routine inspection each day before the truck is used.
- The correct mounting and dismounting procedure and driving position.
- Competent use of all the controls
- Movement of the truck with the forks or attachments in the correct travel position, laden and unladen.
- Correct insertion and withdrawal of forks or other handling attachment.
- Manoeuvring a loaded truck forward and in reverse in a narrowly confined area.
- Performing both a left and a right 90 degree turn with a loaded truck in a narrowly confined area without touching the sides of the area.
- Stacking and de-stacking loads at different levels, in front of a fixed vertical face and on the floor alongside similar loads.

- Loading and unloading a vehicle.
- Correct parking of the truck.

Systems have also been introduced to prevent trucks being driven away during loading and unloading.

Pedestrian routes should be marked out with barriers to segregate pedestrians from fork lift truck movement areas.

Only by observing all the rules and by safe truck operation will serious injury and in the extreme a fatality be prevented.

If operating in areas where pedestrians have access' keep them in your view at all times. If they disappear from your view due to your manoeuvring of the truck, **STOP** until they can be seen again.

Video available

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