

These flashes summarise key safety matters and incidents, allowing wider dissemination of lessons learned from them. The information below has been provided in good faith by members and should be reviewed individually by recipients, who will determine its relevance to their own operations.

The effectiveness of the IMCA safety flash system depends on receiving reports from members in order to pass on information and avoid repeat incidents. Please consider adding the IMCA secretariat ([imca@imca-int.com](mailto:imca@imca-int.com)) to your internal distribution list for safety alerts and/or manually submitting information on specific incidents you consider may be relevant. All information will be anonymised or sanitised, as appropriate.

A number of other organisations issue safety flashes and similar documents which may be of interest to IMCA members. Where these are particularly relevant, these may be summarised or highlighted here. Links to known relevant websites are provided at [www.imca-int.com/links](http://www.imca-int.com/links). Additional links should be submitted to [webmaster@imca-int.com](mailto:webmaster@imca-int.com)

## 1 Breathing Gas Contamination

A member has reported an incident involving the contamination of a diver's breathing gas.

CO<sub>2</sub> contamination was found to be present in three cylinders of a diver's breathing gas (96/4%). The discovery was made after a gas transfer to the vessel Kelley tubes during routine testing. Subsequently, a full gas chromatographic analysis (to determine if additional contamination products were present) revealed levels of 3600 ppm CO<sub>2</sub> with no other significant findings. The supplier's gas quads were then analysed, with readings of 850 and 110 ppm CO<sub>2</sub> noted in these.

A full inspection of the gas plant and routeing onboard was then made, which confirmed that there was no cross-contamination within the system. The 'dirty gas' was scrubbed and an investigation as to the source of the contamination was initiated.

The investigation also revealed that:

- ◆ the supplier's quality certificate indicated a maximum allowable concentration of 300 ppm CO<sub>2</sub>. The company's own standard is < 10 ppm for breathing gas;
- ◆ the quality standard referenced by the supplier was the UK Ministry of Defence standard 68-284 – Compressed Breathing Gases for Aircraft, Diving and Marine Life-Support Applications. This document sets a maximum limit of 5 ppm CO<sub>2</sub> for oxygen/helium gas mixtures.

The company has removed the supplier from its 'approved vendor' list and now requires independent laboratory certification for all gas. Calibration frequency for the gas analyser and instrument limitation for detecting the lowest level of impurity is also to be studied.

## 2 Fatality – Fall from Height in Shipyard

IMCA has received a report of an incident wherein a worker lost his life falling from height. The incident occurred onboard a vessel in a shipyard whilst a worker was lifting an elbow pipe to dismantle it from a pipeline. A lifting lug, which was used to rig the pipe, gave way and struck the worker, causing him to fall from a height of about 7 metres. The worker was taken to hospital, but subsequently died of his injuries.

The accident could have been prevented had safe work procedures been used, such as a pre-lift toolbox meeting including discussion of rigging methods to be used in lifting the elbow pipe. The use of appropriate fall restraint equipment could also have assisted in preventing the fall.

This incident highlights the following lessons to be learnt:

- ◆ workers should be properly trained and able to comprehend the hazards of their work, particularly when lifting is involved;
- ◆ appropriate safety equipment – in this case, fall restraints – should always be used;
- ◆ companies need to ensure adequate procedures are in place and followed to prevent accidents, including risk assessments and toolbox meetings.

### 3 Falling Object – Load Dropped By Crane

We have received a report of a crane incident that happened in connection with the transport of a riser joint from pipe shuttle to pipe storage deck. In order to transport the riser joint to the pipe storage deck, it was lifted up approximately 1 metre with a gantry crane (pipe handling crane). The crane hook loosened from the hook block fastening point and both the hook and the riser joint fell down again into the pipe shuttle. The 12m long pipe weighed 7.3 tonnes. No persons were in the area during the incident.

The company discerned that the immediate causes of the incident were:

- ◆ worn-out threads; and
- ◆ 'play' in the hook;

with underlying causes including:

- ◆ the 'play' in the hook had been reported earlier but this had not been followed up;
- ◆ check routines had been insufficient;
- ◆ mounting failure was possible;
- ◆ there had been insufficient control; and
- ◆ the hook fastening was badly designed.

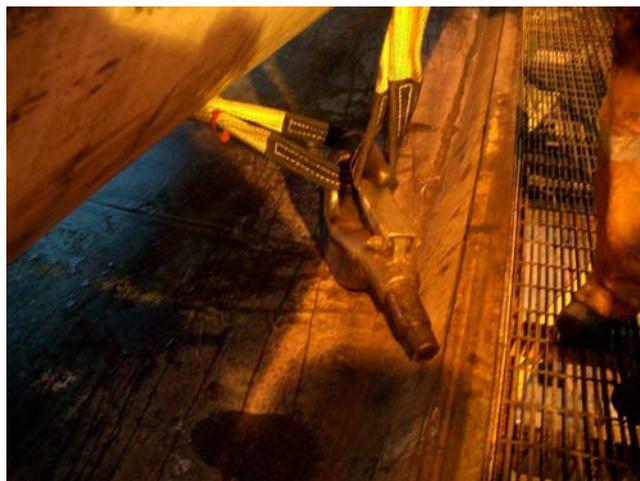
The following actions were recommended:

Immediate:

- ◆ Establish relevant check routines;
- ◆ Control other similar hooks/lifting arrangements;
- ◆ Contact supplier.

Further:

- ◆ Soft material inserts to be replaced and a better designed hook to be installed;
- ◆ Total survey of technical condition of crane to be executed;
- ◆ Operating time to be evaluated;
- ◆ Checks to be carried out to ensure that all necessary certificates for lifting equipment are in place and easily accessible.



### 4 Hammer Dropped from Height

IMCA has received details of an accident wherein a tool was lost from work at height and fell 6-7 metres to a walkway. No-one was injured.

Work was ongoing to remove an obsolete bracket from a derrick beam. A 1.6 kg hammer in use came loose from its double sealed spring hook and fell 6-7 metres



to a walkway below, which at the time of incident was completely sealed off. The hammer, safety wire and two double sealed spring hooks were all tools dedicated and solely used for work in height.

The resulting investigation identified the following direct cause:

- ◆ The finger articulation on the carbine hook was riveted to the spring hook body. However, the spring hook was found to be without this rivet. It might have slid out during the work due to incorrect riveting or the rivet might have been broken in two pieces during the work. The spring hook itself was not deformed or damaged in any way.

and the following contributory factors:

- ◆ The spring hook (length = 54 mm, bow diameter = 25 mm, t = 5mm) is made of solid stainless steel.
- ◆ The spring hook was designed for tension along its longitudinal axis and not for loads directly on its locking mechanism.

The company recommended the following immediate actions:

- ◆ All similar spring hooks have been taken out of use
- ◆ Spring hooks have been temporarily replaced with shackles with split pins

plus the following preventive measures:

- ◆ The spring hooks are to be replaced with a better quality double seal type
- ◆ The vendor has been informed of the incident
- ◆ Relevant findings from the investigation are being distributed appropriately.

## 5 Falling Object – Grating Fell onto Pipe Deck

One of our members reports an incident wherein a piece of grating, of size 37x15 cm and weight 3 kg, fell 11 metres from a catwalk onto the pipe-deck below. Whilst there were crew members in the area, no-one was hurt.

The following causes were identified:

- ◆ Insufficient quality control/verification of finished work
- ◆ The weld that secured the piece of grating failed
- ◆ Work management – insufficient following up of work

The following actions were recommended:

- ◆ Inspect grating in derrick and grating in other elevated areas for similar unsupported cut-outs.
- ◆ Ensure the areas around lifting operations are well closed off in all directions. (This was done in this case.)
- ◆ Ensure personnel avoid area below elevated areas when repairs are being conducted.

