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Issue Number 0406

Serious injury (leg amputation) in UK Paper Mill

Background information

On the 26 September 2006 a contractor was injured while replacing a 1st press felt roll in the basement of a paper mill. The contractor suffered severe open wounds to his leg and was air lifted to hospital where his leg was subsequently amputated below the knee.

Basic facts

During a two day planned engineering shut the 1st press felt roll was to be replaced for the first time in 8 years. The incident happened at 14.40 when a 4 tonne press roll was lowered onto a 750mm long two wheeled trolley with narrow (50mm) wheels. This was being manoeuvred out of a constrained area in the basement (**Photo 1**) The cast iron drain cover failed under the weight of the roll plus trolley and the trolley wheel dropped into a drain run causing the roll to pin the contractor against a concrete plinth. (**Photo 2**)

Incident:

Members of the team made an initial survey of the job on the day preceding the shut, and again on the day of the shut after the felt had been removed from the press section and they had a clearer view of the work area. One of the team members had been co-author of the safe system of work written for this procedure and there was also a permit to work system in place. The team also moved and re-arranged the drain covers in the area to prevent the possibility of one of the trolley wheels from being deflected that might have resulted in damage to the roll.

The accident happened as the roll was lowered onto a 2-wheeled trolley that supported the roll about 3 – 4 feet from the backside end of the roll. (**Photo 3**) The front of the roll was supported with a Hyster 3 ton fork lift truck. The roll had moved about 6 feet when some of the team heard a cracking sound, consistent with the drain cover giving way. The trolley carrying the roll tilted towards the dry end trapping the contractor who was between the roll and the plinth running the length of the dry end side of the machine. (**Photo 4**) The roll pinned his right lower leg against the concrete plinth causing multiple open wound fractures.

The crew of five plus one contractor had 117 years of paper mill experience between them.

Immediate action points for all other mills:

- Risk assess all safe operating procedures, including a check on flooring, especially drain covers. With any flooring consider its suitability, maintenance programme and wear and tear before there is a chance of heavy point loads being placed upon them. Perhaps also consider a system of using steel plates to plate out all areas of work where work activities are being carried out if a heavy point load could occur;
- With trolleys (especially short based ones used for manoeuvring in constrained areas) ensure, in the event of a failure, that there is some 'belt and braces' method to spread the load. Consider lengthening trolley (in this instance to say 1200mm from 750mm), same width, same size centre axle wheels plus a smaller set of wheels at either end to spread the load IF such an incident occurs in the future;
- Emphasize by training that **NO ONE** is to stand in or walk through the area of danger when a piece of kit is being moved and there are solid objects to be crushed against in the near vicinity i.e. treat all such activities as if they are lifting operations throughout.

Long term solutions could include:

- A system of inspecting/maintaining drain covers and consider replacement of potentially brittle cast iron covers which could have invisible internal fractures / faults;
- A system to re-assess risk in all areas after any changes in procedures/technology to ensure redundant equipment etc is removed because it could potentially increase risk by creating an obstruction during future works;
- Work towards reducing hazards in all constrained area where work has to be undertaken.

Photo 1 - Area in basement where accident occurred



Photo 2 - Damaged cast iron drain cover



Photo 3 – Trolley used to support the roll



Photo 4 – Overturned trolley trapping the contractor between roll and the plinth

