

SAFETY BULLETIN

Broken pull chain results in fatality

BACKGROUND

Directional boring contractors were withdrawing polyethylene pipe (PE) from beneath a creek. To retrieve the pipe, it appears that a nominal diameter 10mm high-tensile double-legged chain was tied to the pipe via a clove hitch and the other end of the chain attached to a 20 tonne excavator.

It appears when the excavator pulled to retrieve the pipe, the high-tensile chain broke and the PE pipe recoiled (refer to *SA09-10 Directional boring fatality*).

RECOMMENDATIONS

All mines should review current towing, pulling and snigging standards (activities). The review should include:

Note: Towing includes pulling or snigging activities.

- Identifying all circumstances where mobile plant and / or chains may be used in a towing (including pulling or snigging) situation
- Carry out a risk assessment to identify all hazards, assess and control risks arising from towing activities
- Provide fit-for-purpose equipment and safe systems of work for people to safely tow or pull plant.

Consideration should be given to:

- Using towing systems (including attachments) that are designed to withstand the maximum pull force available from the pulling equipment (e.g. maximum tractive effort, maximum cylinder pull force, etc). Where this is not practicable, provide a towing system that will fail safely, rather than unexpectedly (as may exist with high tensile chain) in the event of overload. Note: Such systems may include, slings purposely designed for towing, weak links with loose end restraints, ductile materials, load cells, etc
- Potential impact forces on the towing system resulting from dynamic loading

- Using drawbars or rigid connections, in preference to slings or chains and provide a means of measuring the towing load where possible (i.e. load cell)
- Providing a minimum factor of safety of 2.5 (FOS) on rigid parts of the towing system, such as attachments, drawbars, etc. Note: $FOS = \frac{\text{minimum breaking strength}}{\text{load}}$
- Only using lifting equipment within its rated safe working load limit (WLL). A FOS of 4.0 should apply to lifting equipment such as slings, chains, etc
- Never using high-tensile chains for towing unless the WLL of the chain exceeds the maximum pulling force available from the pulling equipment or there is no other practicable alternative
- Never using lifting equipment (such as chains and slings) in lifting applications following use in towing applications
- Identifying safe areas for people to stand that are outside a potential danger area, in the event the towing system fails
- The recommendations in NSW DPI Safety Alerts SA03-10 Crane dogman killed unloading trailer, SA04-06 Crane dogger killed unloading trailer - updated and SA04-09 Broken chain connector results in serious injuries.
- Ensuring that personnel using towing and pulling equipment are competent with the use of such equipment and it's WLL
- Communication between all people involved.

NOTE: Please ensure all relevant people in your organisation receive a copy of this Safety Alert, and are informed of its content and recommendations. This Safety Alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

Signed



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