

This safety alert has been prepared by the RSTA. Completed forms for adding to the RSTA website should be submitted to Clive Mitchell [clive@rsta-uk.org](mailto:clive@rsta-uk.org) For further information regarding this safety alert please email Clive or phone 07557529410

**Safety Alert**

**Hydraulic Injection Injury**

**PURPOSE**

The purpose of this safety alert is to raise awareness of the risk from hydraulic injection injuries (HII).

**BACKGROUND**

An incident occurred earlier this year during the maintenance of the tracks by a fitter on another companies piling rig. During tensioning of the track, a release of grease under high pressure struck the fitter. This tragic incident later resulted in the death of the fitter.

**HSE INVESTIGATION FINDINGS**

Whilst the fitter was using a hand powered grease gun to tension the track of a piling rig, the nipple connecting the grease gun to the track mechanism detached. This resulted in the grease (under significant stored energy) to release, injecting the fitter.

Initial findings from a HSE investigation have concluded that anyone involved in the maintenance of mobile or static plant where greasing occurs on high pressure systems are

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potentially at risk of a HII.

**CAUSATION**

HII’s often result from a failure of a component in the mechanical system. This can result in the equipment

remaining in use and pressurised whilst leaking fluid.

A HII occurs, when the outer layer of skin is broken by a jet of fluid under pressure. Although serious

reported instances of hydraulic injection have occurred at pressures over 100 bar (1450 psi), anecdotal

evidence suggests a HII may occur at pressures as low as 7 bar (101.5psi).

A person may come in to contact with a fluid jet while using equipment or when carrying out inspection and

or maintenance prompted by a reduction in performance of the equipment.

This can cause harm in two ways:

* The mechanical pressurised penetration and subsequent trauma to the surrounding and underlying tissue.
* The toxicity of the fluid injected into the injured party.

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The severity of the injury varies according to the following:

* Pressure.
* Proximity
* Jet size.

**PHYSICAL EFFECTS OF A HII**

* Initial impact from a HII may result in severe bruising, tenderness and swelling of the affected area.
* After four – six hours the victim may experience intense throbbing pain that is unresponsive to pain medication.
* This can then lead to amputation of affected parts and be fatal.

**IMMEDIATE ACTIONS FOLLOWING A HII**

* Following any HII, prompt action is essential to save the injured persons limb, or even life.
* Staff should receive immediate professional medical treatment.

**ADDITONAL PRECAUTIONS / PREVENTATIVE MEASURES**

* Ensure staff are wearing suitable personal protective equipment as per your risk assessment findings when conducting maintenance on plant and equipment.
* Employees should give consideration to general greasing



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of other parts of plant equipment such as

greasing the hydraulic rams as these MAY also be pressurised.

* All maintenance on a pressurised system should be in accordance with the manufacturer’s

specifications.

* Where replacement or maintenance takes place on a pressurised system, fittings should be matched

and be compatible as per the original equipment manufacturers specification.

* Verification of such replacement should be regarded as a pressure test and appropriate precautions

taken.

**NOTE:** This alert relates to the initial HSE preliminary investigation findings and the subsequent HSE alert that

has been issued. Any further recommendations from the HSE will be communicated at a later date (if required).

This alert is to be communicated to all personnel or subcontractors who are working on a BSHEL site or within a BSHEL workshop, that are involved in the maintenance and greasing” of plant and equipment.

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