



## SAFETY COMMUNICATION

**Type of Incident:** Puncture wound -  
Recordable Injury

**Asset:** Greater Prudhoe Bay

**Location:** Drill Site Manifold Building

**Date:** 3/23/05

**Brief Account of Incident:** While operating a choke, the o-ring seal failed in the choke body releasing high-pressure gas through the pin hole opening in a grease fitting used as a tattletale for leak detection. Employee sustained a high-pressure injection injury to thumb when he passed his hand over the grease fitting in an attempt to locate the leak.

**Potential Outcome:**

Could have been a more serious injury.

**What Went Wrong:**

Puncture wounds caused by the injection of a substance under high pressure into the skin.

**What Went Well:**

Medical treatment was timely.

**Lessons Learned:** In addition to oilfield production equipment, other high-pressure equipment such as hydraulic lines, airless paint sprayers, high-pressure grease guns, and high-pressure fuel injection apparatus found on diesel engines, has the potential to produce serious injury if not used properly. Grease is the most commonly injected substance, followed closely by paint products. Fluid in any of this type of equipment is most dangerous while under high pressure ranging from 600 to 12,000 pounds per square inch. The velocity of fluid through a pinpoint break in the line can be in excess of 600 feet per second - this is close to the muzzle velocity of a rifle.

This velocity is sufficient to drive fluids through protective clothing such as gloves and coveralls. Penetration has been recorded with distances of up to four inches between the fluid source and skin. High-pressure injection injuries of the hand are a medical emergency. Unfortunately, because the injection itself is often painless, medical treatment is sometimes delayed.

**Messages:**

- Most high-pressure injection injuries affect the hands and fingers. These injuries are at high risk for infection, swelling, underlying tissue injuries, and possibly amputation. The risk of amputation increases if medical treatment is delayed for 6 hours or more.
- A procedure should be used whereby identification of leaks can be carried out under a safe pressure regime or introduce a faultfinding solution that protects the body from fluid injection.
- Do not use your hands to check for leaks.



Example of a high-pressure injection injury resulting from mineral oil injected through leather gloves at 9,000 psi.