

**Identifier:** LANL-2019-1672

**Date:** January 23, 2019

**Priority Descriptor:** Caution

**Contact:** Alicia Romero

## **When is a Wound a Wound?**

### **Lessons Learned**

Microscopic amounts of radioactive material can be injected into the body even if there is not an observable wound or break in the skin. Even without the presence of associated skin contamination in such an event, a pinch, poke, scrape, twist, or other skin annoyance in areas where high-specific activity isotopes are used should alert radiation protection personnel of a potential injection of radioactive material requiring a confirmatory wound count.

Los Alamos National Laboratory (LANL) employees follow the Safe Conduct of Research Principles. The Safe Conduct of Research Principle applicable to this situation is "A healthy respect is maintained for what can go wrong." Small failures can be seen as clues to more consequential failures, and complacency must be avoided as routine tasks can result in serious injury or operational upsets.

### **Summary**

During work on steel cables used to operate glovebox guillotine doors, an employee felt a "poke" on their glovebox glove. Contamination was detected on the employee's glove, but there was no visible wound on the employee's skin. Contamination on the employee's skin was not discovered until several days later.

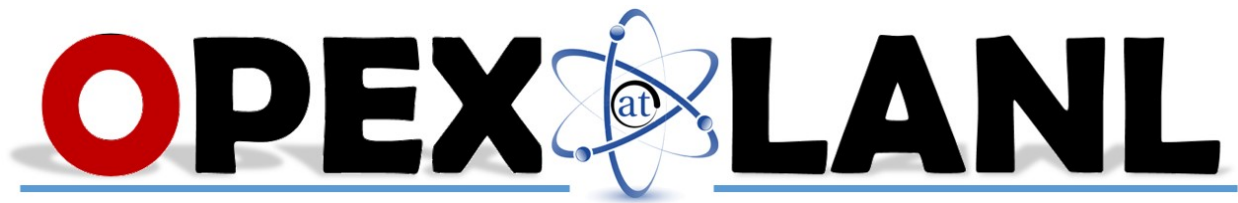
### **Background**

On August 18, 2018, personnel from LANL's Process Equipment Maintenance and Decontamination Services (NPI-3) were performing counterbalance spool door cable removal/replacements at Technical Area 55. This performance required personnel working in a glovebox to replace wire braided steel cables used to operate guillotine doors in the glovebox train.

During removal, a knot in the cable prevented the cable from being pulled through the pulleys of the glovebox.

An employee (E1), who was wearing appropriate personal protective equipment (PPE), including anti-contamination (anti-c) coveralls, booties, and Trionic anti-c gloves, was using a pair of forceps from the glovebox to untie the knot when they felt a "poke" on the glovebox glove on the ring finger of their left hand.

E1 exited the glovebox gloves, self-monitored, and alarmed the glovebox monitor.



The Operations Center was notified and radiological control technicians (RCTs) responded. RCTs detected 2,000 disintegrations per minute alpha on E1's left PPE glove. The RCTs secured the contamination with tape, and escorted E1 to the decontamination room.

In the decontamination room, the PPE glove was removed and 2,000 dpm alpha was detected on the skin of E1's left ring finger. However, neither the RCTs nor E1 believed there was a break in the skin or a wound. Since there was not a break in the skin or wound identified, a wound count was not required.

E1 was decontaminated to no detectable activity (NDA). The Deployed Environmental Safety and Health (DESH) manager was called and was notified of the event.

The DESH manager and the RCTs discussed whether there was an observable wound or break in the skin. Since there was none, no further action was taken at that time.

Two days later, on August 20, 2018, a special bioassay kit was issued to E1, and E1 was restricted from radiologically controlled areas.

On August 30, 2018, management was notified that the initial result from E1's special bioassay kit was elevated. E1 was sent to Occupational Medicine for a wound count, which was positive. A daily chelation regimen was initiated.

On August 31, 2018, a hand surgeon excised the majority of the contamination from E1's finger.

## **Corrective Actions**

The following corrective actions were developed following this incident:

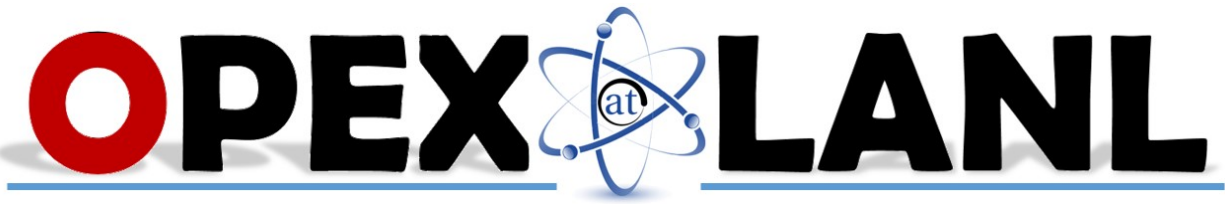
- Investigate the potential for a less-susceptible cable material or the use of integrally counterweighted doors.
- Revise the integrated work document (IWD) to address the potential for corrosion-caused fraying as a sharps initiator, and the practice of cutting/taping potentially frayed/knotted section vs. manual manipulation.
- Perform a sharps review of the modified IWD.
- Issue a Lessons Learned on event to reinforce awareness of potential for cable fraying.

**FOD:** TA55

**Location:** TA-55 PF-4

## **References**

- **Issues Mgmt. (IM):** 2018-1847
- **ORPS:** NA-LASO-LANL-TA55-2018-0013



## ISM

- Perform Work

## Functional Areas

- **Major** FA11 Radiation Protection **Minor** E. Contamination Control (including glove box)

## HPI Errors

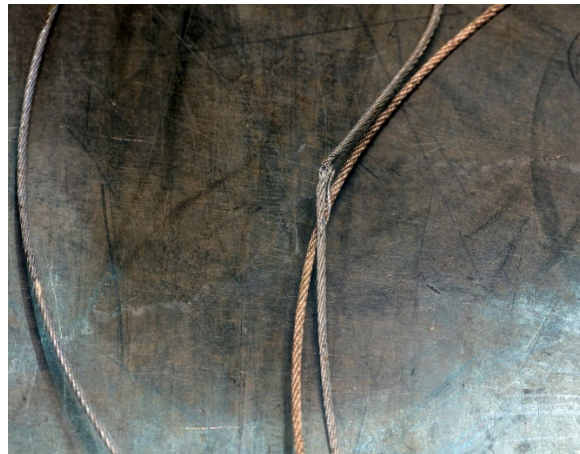
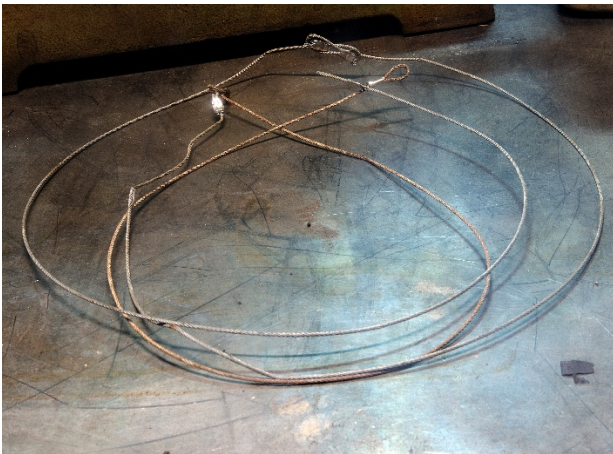
- **Major** Work Environment **Minor** Hidden system response

**Derivative Classifier:** Charles Tesch

## SME/Manager(s)

- **Role** RP-PROG Group Leader **Name** Stephen Andrew Costigan, Steve Costigan
- **Role** DESH-TA55 Group Leader **Name** Gerald L. George, Jerry George

## Additional Images



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