Accident involving a Cardox System and Pre-heater

WHAT HAPPENED

An operator suffered the partial amputation of a finger whilst using the Cardox system inside a Pre-heater.

The Cardox tube is inserted into the Pre-heater wall and secured with the locking clamp; once the tube has fired it can be unclamped and removed safely.

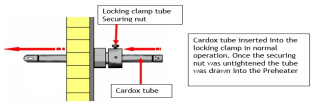
On this occasion, the tube fired and the operator then released the locking clamp grub screw holding the Cardox tube. As the tube was released from its position in the clamp, it was drawn into the Pre-heater wall orifice, leaving insufficient access to retrieve the tube.

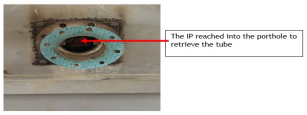
The operator removed the locking clamp flange to gain better access to remove the tube. As he attempted to remove the tube, it moved and trapped his hand. The operator was trapped for approx. 20minutes. Eventually, he was able to release his hand and call for assistance. Following an assessment by a First Aider, he was taken to hospital.

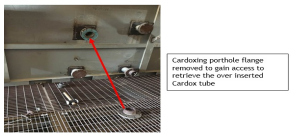
A review of the incident revealed the following facts.

The locking clamp is designed to stop the Cardox tube coming back towards the inside of the Pre-heater compartment when fired, it does not prevent it being drawn inwards. The greater risk was deemed to be the tube going backward not forwards.

The risk of the Cardox tube going forward had not been foreseen. Therefore, there were no procedures in place to safely retrieve over inserted tubes after they have been fired. Research would suggest that this issue has never been identified in other Cardoxing processes with the same locking clamp with a horizontal firing position.









LEARNING POINTS / ACTIONS TAKEN

- Risk assessments and safe systems of work have been reviewed and amended
- Retraining given to relevant employees.
- Instructions given not to retrieve any over inserted tubes and report it to the SPM/T. Leader.
- Further modifications have been made to the Cardox tube to prevent it going forward past the locking clamp.
- Informing the Kiln burner that Cardoxing is in process and lone working function is activated on the Cardoxing 2-way radio.
- Introduction of a reporting system for Cardox issues.

LOCATION:	**LIME & SLAG PLANTS**	**ALERT STATUS:**	**Normal**
ACTIVITY:	**MAINTENANCE & HOUSEKEEPING**	**DATE ISSUED:**	**01/11/2018 19:11:43**
SUB ACTIVITY:	**N/A**	**INCIDENT No:**	**01498**