Lessons Learned from a Decontamination Accident

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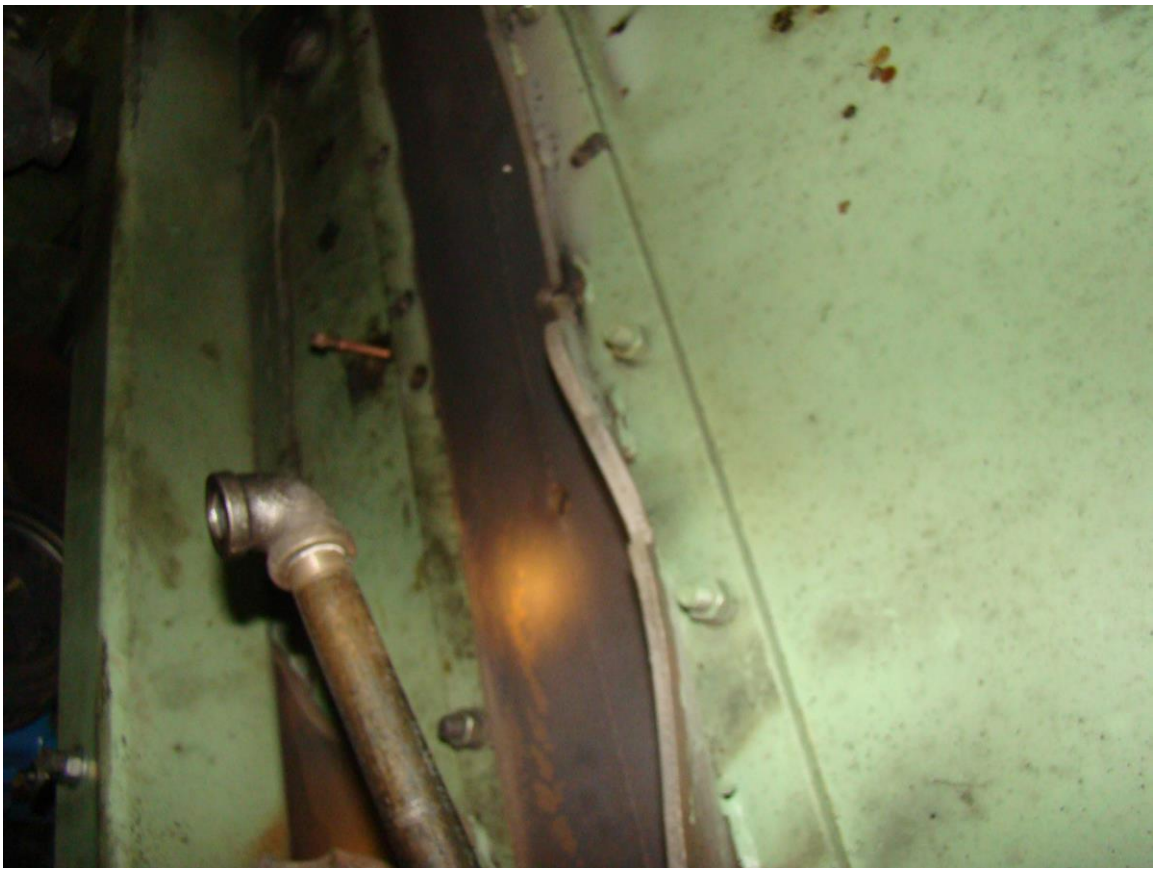
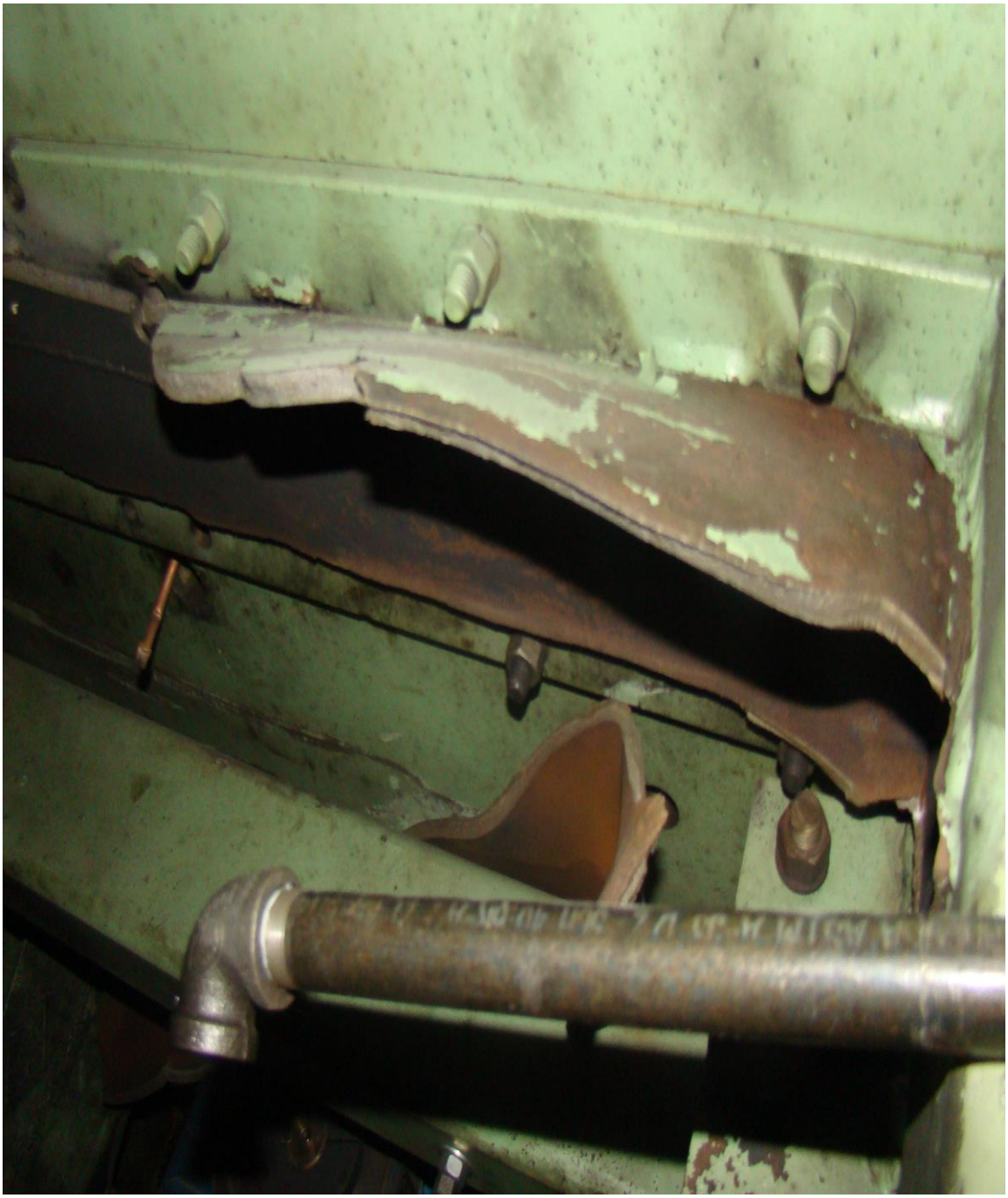
Introduction

In March 2011 an explosion occurred in an operating bay at an Army ammunition production facility. The explosion involved an undetermined amount of propellant The explosion caused significant damage to the bay including displacement of a temporary firewall that was in place to protect personnel in the bay from an accident in an adjoining bay that was actively producing small arms ammunition.





Discussion

The accident occurred when a subcontractor employee drilled a hole in a piece of steel tubing that formed part of the framework for the platform that supported cartridge filling and bullet crimping equipment for the purpose of hanging brackets to support new electrical conduit. When the drill bit penetrated the tubing wall, the hot drill bit contacted propellant powder that had become lodged in the tubing, most likely during regular cleaning that occurred as part of the production process. Changes in the configuration of the production equipment over time resulted in blind holes in the platform framework that previously went undetected, allowing propellant powder to become lodged inside the framework.

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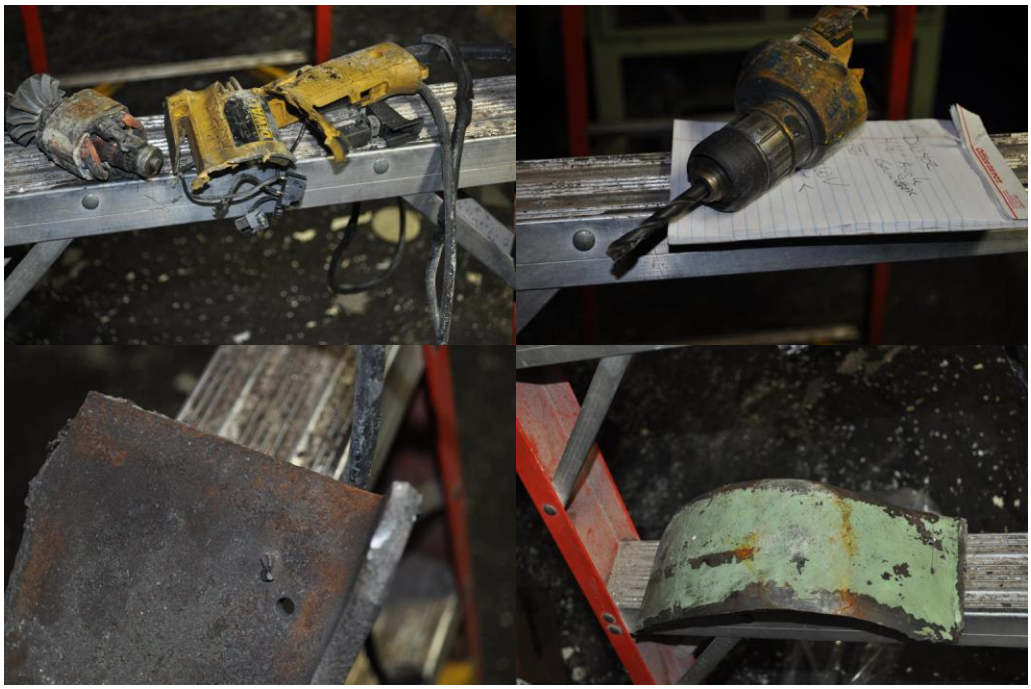

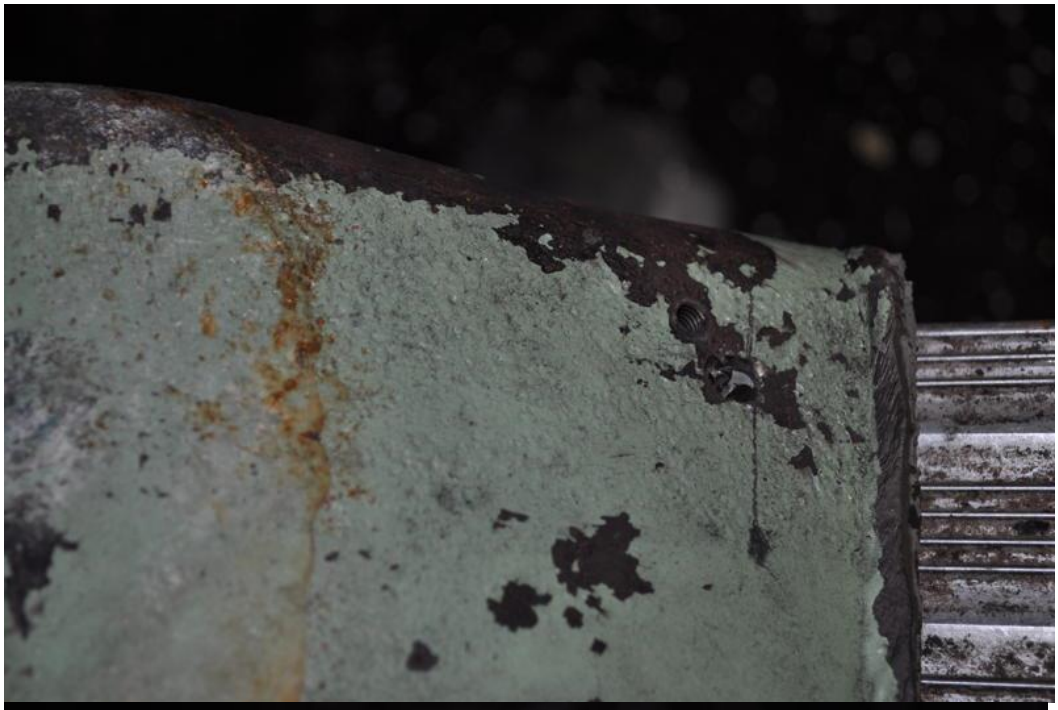

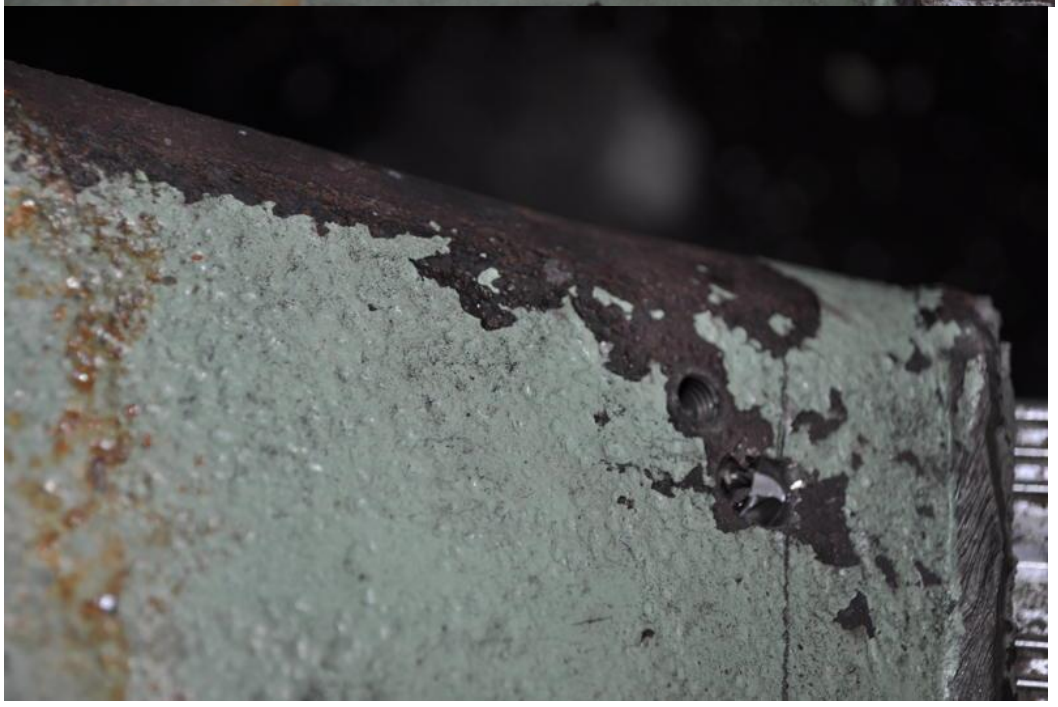

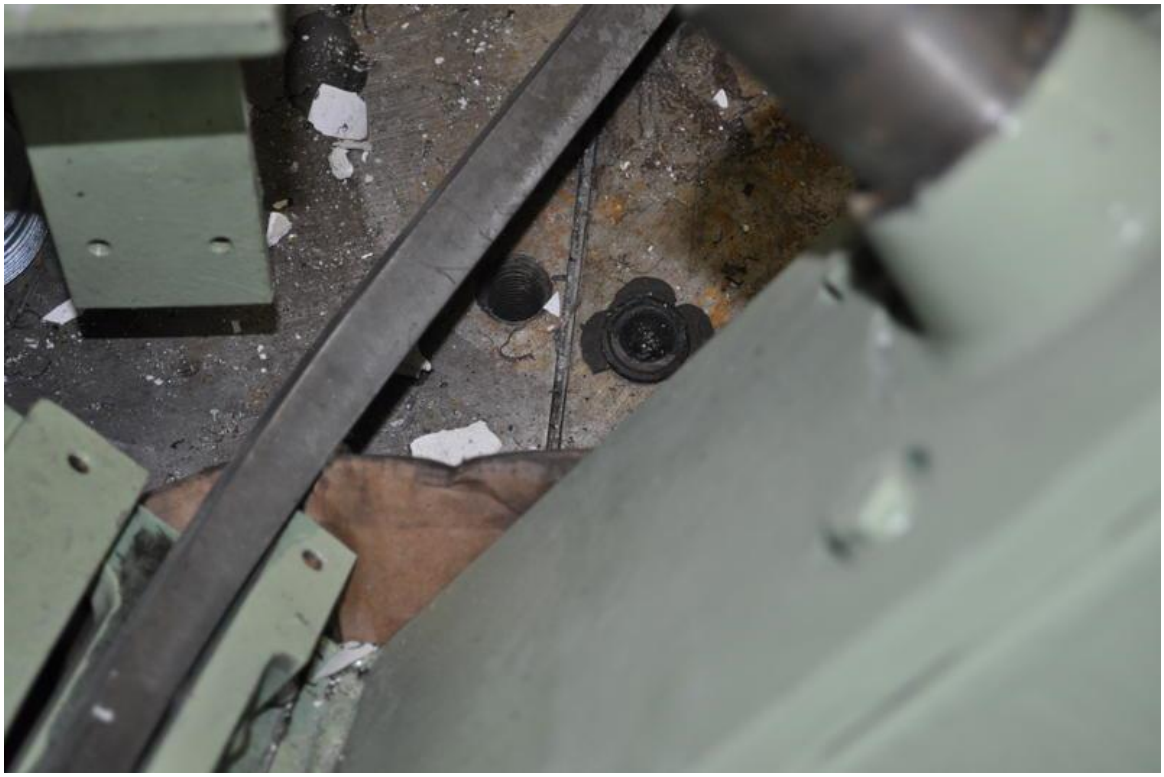

Lessons learned from this accident include:

1. 1. Identify all potential hazards – Thorough hazards analyses are essential. In this case, the potential for explosives contamination inside hidden cavities in the table framework was not recognized.

2. Follow Contractual Requirements – Contractor personnel released contaminated equipment outside government control in violation of contractual requirements..

3. Report all accidents and incidents – Another incident resulting from inadequate decontamination of another area occurred less than 30 days prior to this accident. Proper reporting might have prevented this accident.

4. Proper training, knowledge, and skills – Ensure individuals responsible for writing, reviewing, approving procedures (including Letters of Instruction (LOI)) have the required training, knowledge, and skills. In this case, an LOI was developed, approved, and implemented (after a near miss incident) that required subcontractor personnel to perform decontamination of equipment without the required training or experience).

5. Ensure personnel have the necessary “hot work” permits – In this case, subcontractor personnel were operating power tools without the required “hot work” permit.

6. Equipment designs should avoid hidden spaces where contamination might not be evident. In this case, use of steel tubing rather than channel/angle/I-beam resulted in opportunities for hidden contamination.