

#7: Explosion – Inspection #317741270

A 23 year old male maintenance employee & associate were installing steel panels between gun powder hoppers. The gun powder was ignited resulting in an explosion. The explosion resulted in one fatality, one critically injured, and two seriously injured employees. Two maintenance employees were installing ¼ inch thick steel panels between gun powder hoppers. The panels were approximately 6 ½ feet long by 2 feet wide and were intended for fire propagation prevention. The victim was using a battery powered drill, not approved for explosive atmospheres, to install bolts and secure the panel. While doing so, gun powder was ignited during the drilling process resulting in a flash fire and explosion. The building was severely damaged from the explosion, large structural pieces and metal siding was observed lying on the ground more than 50 feet from the building. The explosions also cause damage inside of the building, such as destroyed machinery, materials disheveled and internal structural damage. Both maintenance employees and two additional employees who were working inside of the facility were sent to the hospital. The victim died later that day at the hospital as a result of massive internal injuries. One employee lost his left eye and two fingers on his left hand. The two other employees received cuts and lacerations from flying debris and shrapnel.

Citation(s) as Originally Issued

A complete inspection was conducted at the accident scene. Some of the items cited may not directly relate to the fatality.

Citation 1

Item 1 1910.109(c)(1)(iii)	The land surrounding the magazines were not kept clear of brush, dried grass, leaves and other material for a distance of at least 25 feet in that dry leaves had accumulated within 11 feet of the magazine.
Item 2 1910.109(d)(2)(iii)	Each motor vehicle used for transporting explosives were not equipped with a minimum of two extinguishers, each having a rating of at least 10-BC in that the GM pickup truck used to transport the potentially explosive gunpowder was only equipped with one 5 lb. ABC rating fire extinguisher.

#7: Explosion – Inspection #317741270

Item 3a 1910.119(d)(2)(i)	The employer did not complete a compilation of written process safety information before conducting any process hazard analysis required by the standard in accordance with the schedule set forth in paragraph (e)(1) of this section: In that the employer did not complete a compilation of written process safety information to include at least the following information pertaining to the technology of the process: a) A back flow diagram or simplified process flow diagram; b) Maximum intended inventory; c) Safe upper and lower limits for such items as quantities; d) An evaluation of the consequences of deviations, including those affecting the safety and health of employees.
Item 3b 1910.119(d)(3)(i)	The employer did not complete a compilation of written process safety information before conducting any process hazard analysis required by the standard in accordance with the schedule set forth in paragraph (e)(1) of this section: In that the employer did not complete a compilation of written process safety information to include at least the following information pertaining to the equipment in the process: a) Materials of construction; b) Piping and instrument diagrams (P&ID's); c) Electrical classification; d) Relief system design and design basis; e) Ventilation system design; f) Design codes and standards employed; g) Safety systems (e.g. interlocks, detection or suppression systems)
Item 3c 1910.119(e)(1)	The employer did not perform an initial process hazard analysis (hazard evaluation) on processes covered by this standard: In that the employer had conducted no such analysis on the shotgun shells manufacturing processes (PSM covered). Examples of PSM covered processes were: a) Filing the gun powder hoppers; b) Cleaning operations; c) Transporting the gun powder
Item 4a 1910.119(f)(1)(i)(D)	The employer did not develop and implement operating procedures that provided clear instructions for safety conducting activities in each covered process consistent with the process safety information to cover emergency shutdown: In that no such procedure was developed for safely conducting emergency shutdown operations involving the shotgun shells production process (a PSM covered process) for the shot shells loading machines.

#7: Explosion – Inspection #317741270

Item 4b 1910.119(f)(1)(i)(E)	The employer did not develop and implement operating procedures that provided clear instruction for safely conducting activities in each covered process consistent with the process safety information to cover emergency operations: In that no such procedure was developed for emergency operations involving the shot gun shells production process (a PSM covered process) for the shot shells loading machines.
Item 4c 1910.119(f)(1)(iii)(A)	The employer did not develop and implement operating procedures that provided clear instructions for safely conducting activities in each covered process consistent with the process safety information to cover safety and health considerations, such as, properties of and hazards presented by the chemicals used in the process: In that written procedures were not developed and implemented to include safety and health considerations for the properties of and hazards presented by the gun powder used in processes, such as: a) Filling the gun powder hoppers; b) Cleaning operations; c) Transporting the gun powder; d) Quality checks
Item 4d 1910.119(f)(1)(iii)(B)	The employer did not develop and implement operating procedures that provided clear instructions for safely conducting activities in each covered process consistent with the process safety information to cover safety and health considerations, such as, precautions necessary to prevent exposure, including engineering controls, administrative controls and personal protective equipment: In that written procedures were not developed and implemented to include safety and health considerations for the properties of and hazards presented by the gun powder used in processes, such as: a) Filling the gun powder hoppers; b) Cleaning operations; c) Transporting the gun powder; d) Quality checks
Item 4e 1910.119(f)(1)(iii)(D)	The employer did not develop and implement operating procedures that provide clear instruction for safely conducting activities in each covered process consistent with the process safety information to cover safety and health considerations, such as, quality control for raw materials and control of hazardous chemical inventory levels: In that the employer had not developed and implemented a procedure for staging and storing the gun powder on the mezzanine that provided clear instructions for safely conducting this activity and limiting hazardous inventory levels.

#7: Explosion – Inspection #317741270

Item 5 1910.119(g)(1)(i)	Each employee presently involved in operating a process and each employee before being involved in operating a newly assigned process was not trained in an overview of the process and in the operating procedures as specified in paragraph (f) of this section: In that the employer did not ensure that employees involved in PSM related processes were adequately trained in an overview of the process and in the operating procedures.
Item 6 1910.119(j)(4)(iv)	The employer did not document each inspection and test that was performed on process equipment: In that the employer was not maintain documentation for inspections and tests performed on the shot shells loading machines and associated process equipment.
Item 7 1910.119(k)(1)	The employer did not issue a hot work permit for hot work operations conducted on or near a covered process: In that no such permit was issued for the grinding/drilling (hot work) operations near the gun powder hoppers.
Item 8 1910.119(l)(1)	The employer did not establish and implement written procedures to manage changes (except for “replacements in kind”) to process chemicals, technology, equipment and procedures; and changes to facilities that affect a covered process: In that the employer did not establish and implement written procedures for the management of change of process equipment. No procedure was in place for the installation of the steel panels between the gun powder hoppers.
Item 9 1910.119(n)	The employer did not establish and implement an emergency action plan for the entire plant in accordance with the provisions of 29 CFR 1910.38(c), (d), (e) & (f).

#7: Explosion – Inspection #317741270

Item 10a 1910.132(a)	Protective equipment including personal protective equipment for eyes, face, head and extremities, protective clothing, respiratory devices and protective shields and barriers, were not provided, used and maintained in a sanitary and reliable condition wherever it was necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact: In that 2 instances the employer did not ensure that employees were provided an/or used personal protective equipment: a) The employer did not ensure that employees always wore the necessary PPE, such as safety glasses and gloves, when filling the lead and powder hoppers and when performing cleaning operations; b) The employer did not ensure that antistatic safety shoes were provided and worn by employees as directed by the SDS for the gun powder.
Item 10b 1910.132(d)(2)	The employer did not verify that the required workplace hazard assessment had been performed through a written certification that identified the workplace evaluated; the person certifying that the evaluation had been performed; the date(s) of the hazard assessment and which identified the document as a certification of the hazard assessment: In that no such certification had been completed by the employer.
Item 10c 1910.132(f)(1)(v)	Each employee was not trained to know the proper care, maintenance, useful life and disposal of the PPE: In that no such training was provided to employees on their Flame-Resistant (FR) clothing.
Item 11a 1910.147(c)(7)(i)(A)	Each authorized employee did not receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace and the methods and means necessary for energy isolation and control: In that the employer did not ensure that authorized employees had received adequate training. These employees were not knowledgeable of the lockout/tagout requirements nor the proper means and methods necessary for energy isolation and control.

#7: Explosion – Inspection #317741270

Item 11b 1910.147(d)(3)	All energy isolating devices that were needed to control the energy to the machine or equipment were not physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s): In that the employer did not ensure employees were locating and locking out the energy source(s) to the shot shells loading machines during servicing and maintenance activities, such as cleaning and the servicing and maintenance work involving the replacement of machine parts, such as, cylinders, gear boxes and motors.
Item 12 1910.151(b)	In the absence of an infirmary, clinic or hospital in near proximity to the workplace which was used for the treatment of all injured employees, persons were not adequately trained to render first aid: In that the employer did not ensure that a person trained to render first aid was available on all three shifts. The closest clinic was over 20 minutes.
Item 13 1910.252(a)(2)(vii)	Where practicable, all combustibles were not located at least 35 feet (10.7m) from the work site: In that the combustibles (paper towels) in the trash can in the maintenance area were not located at least 35 feet away from welding operations. In March of 2014 sparks from welding operations ignited these paper towels resulting in a small fire.
Item 14 1910.307(c)	Equipment, wiring methods and installations of equipment in hazardous (classified) locations were not intrinsically safe, approved for the hazardous (classified) location or safest for the hazardous (classified) location: In that the employer did not ensure that the cordless drill used in the installation of the steel panels between the powder hoppers was intrinsically safe, approved for hazardous location or safe for the hazardous location.
Item 15a 1910.1200(e)(1)	The employer did not develop, implement and maintain at each workplace a written hazard communication program which at least described how the criteria specified in paragraphs (f), (g) and (h) of this section for labels and other forms of warning, safety data sheets and employee information and training would be met: In that no such program was developed for employees exposed to hazardous chemicals, such as lead and gun powder.

#7: Explosion – Inspection #317741270

Item 15b 1910.1200(h)(1)	The employer did not provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment and whenever a new chemical hazard the employees had not previously trained about was introduced into their work area: In that effective information and training was not provided to employees on hazardous chemicals in their work environments, such as lead and gun powder.
--------------------------	--

Citation 2

Item 1 1910.132(d)(1)(i)	When the employer had assessed the workplace hazard(s) and determined that hazard(s) were present, the employer did not select and/or use the types of personal protective equipment that would protect the affected employee from the hazard(s) identified: In that the employer did not ensure that temporary employees working in the same hazardous environments as permanent employees were provided with the used Flame-Resistant (FR) clothing to protect them from identified fire hazards.
--------------------------	---

Citation 3

Item 1 TDWLD Rule 0800-01-03-.03(27)(b)1	The log of all recordable work-related injuries and illnesses (OSHA 300 form) was not completed in the detail as required by the rule: In that the OSHA 300 logs for 2011, 2012 and 2013 did not fully describe the injury in Column (F).
Item 2 TDWLD Rule 0800-01-03-.04(3)(b)2	The summary of work-related injuries and illnesses (OSHA 300A form) was not completed in the detail as required by the rule: In that 2011, 2012 and 2013 summaries were not completed at the time of request on April 17 th , 2014

#7: Explosion – Inspection #317741270



Photo 1 of 1: Gun powder was ignited resulting in an explosion