#22: Struck by – Inspection #1081105

A **35 year old male** employee was removing a high pressure hydraulic hose from an aluminum die-casting machine accumulator, when it fatality struck the employee in the neck & chest. The 3,000 ton die cast machine had developed a leak within the accumulator bottle. The accumulator bottle contains a piston that pressurizes and moves hydraulic fluid into the die cast machine using the force of nitrogen gas. Pressures in the accumulator can range from 1,500-4,5000 psi. Before the accumulator bottle can be serviced, the nitrogen gas must be removed or isolated. On the day of the accident, the victim was attempting to service the leaking accumulator bottle, and proceeded to lock out the nitrogen. Both the accumulator and nitrogen bottle were purged of pressure. However, the hose connecting the nitrogen bottle and accumulated was not purged and maintained approximately 1,500 psi of pressure. The victim then used a scissor lift to position himself to remove the 4-foot hose from the accumulator bottle. While removing the hose from the accumulator bottle, the victim was struck twice in the neck and chest with the hose, resulting in fatal injuries. A co-worker climbed onto the lift to lower it, and perform CPR on the victim while another employee called 911. While reviewing the company's lockout/tagout program and specific procedures for each of the die cast machines, it was determined that there were no specific procedures for isolating the energy. There was also no procedure in place to ensure that the energy had been released without exposing employees to the hazard.

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 1a

1910.147(c)(4)(ii)(B)	Specific procedural steps for shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy were not implemented. In that the employer's energy control procedure for the #80 die cast machine did not include and implement specific steps to control the potential hazardous energy when removing the nitrogen gas and accumulator bottles.

#22: Struck by – Inspection #1081105

Citation 1 Item 1b

29 CFR 1910. 147(d)(5)(i)	Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy was not relieved, disconnected, restrained, and otherwise rendered safe. In that the employer did not ensure a method was in place to ensure pressure was released from the nitrogen gas and accumulator bottles located on the #80 die cast machine before removing the connecting hose.

Citation 2 Item 1

29 CFR 1910.157(c)(1)	The employer provided portable fire extinguishers, but did not mount, locate, and identify them so that they were readily accessible to employees without subjecting the employees to possible injury. In that the employer did not ensure the portable fire extinguishers located near the battery charging station and shipping areas were mounted and identifiable.

#22: Struck by – Inspection #1081105

Photo 1 of 4 – Photo shows the #80 die cast machine. The nitrogen gas bottle is shown in the blue outline and the accumulator bottle is in the green outline. The red circle indicates the end of the hose that struck the victim.

#22: Struck by – Inspection #1081105

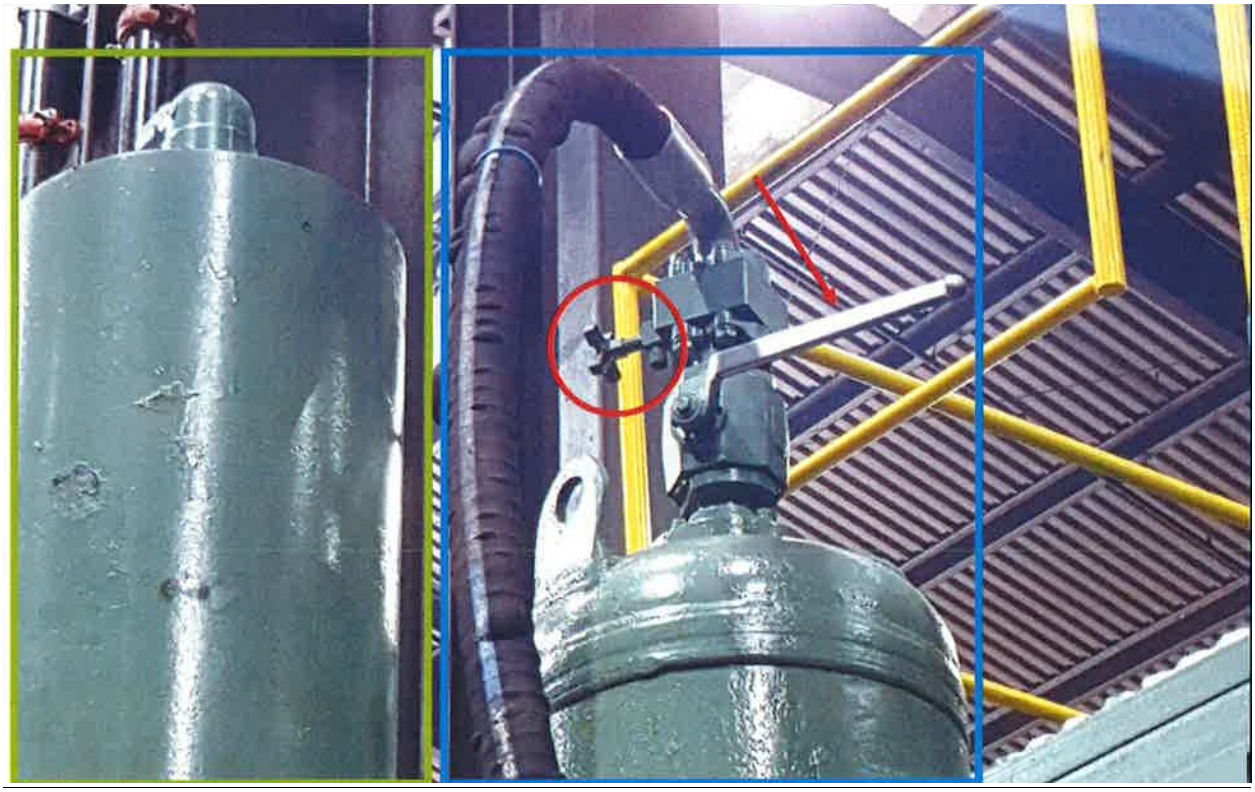

Photo 2 of 4 – Photo shows the nitrogen gas bottle in the blue outline and the accumulator bottle in the green outline. The ¼" valve (red circle) is used to release the nitrogen gas pressure form the accumulator bottle, and the 2" valve (red arrow) holds the pressure inside the nitrogen bottle

#22: Struck by – Inspection #1081105

Photo 3 of 4 – Photo shows the drain valves near the bottom of the nitrogen bottle on the #80 die cast machine.

#22: Struck by – Inspection #1081105

Photo 4 of 4 – Photo shows the scissor lift used to lift the victim to release the pressure at the top of the nitrogen bottle on the #80 die cast machine and remove the 4 foot hose