

**Case 404. 57-year-old journeyman maintenance technician died when she was pinned between two parts while troubleshooting a robotic operation.**

A 57-year-old female journeyman maintenance technician died when she was pinned between two parts while troubleshooting a robotic operation. A weld line had a series of robotic cells, the area where the robot(s) performs work. The robot in Cell 1 placed the part to be welded in a fixture in Cell 2. Cell 2, which had 4 robots (2 on each side of the line), welded the part, and the robot in Cell 3 removed the part from Cell 2. Between each cell were safety doors that were interlocked with each other and slid up (closed) and down (open) so the robot could take/place parts between the Cells. Door programming was supposed to ensure that the robot in Cell 1 and the robot in Cell 3 could not be in Cell 2 at the same time. The doors stay up (closed) when the robots do not enter the neighboring Cells. Each robotic cell had an interlocked access gate and a procedure for entry when performing maintenance. To access the robot, the safety gate would be opened, the lockout lock placed, and then robot in the cell could be accessed. The robots in the neighboring cells would have power but be non-functioning. This procedure was described for work to be performed in Cell 2. There was a control box where the robot would be placed in maintenance mode, finish their operation cycle, and then return to home position. On the day of the incident, there was a problem with the robot in Cell 3. The decedent used Cell 3's access gate to enter Cell 3 and took the robot's teach pendant control with her into Cell 2. She did not use Cell 2's safety gate (the gate was closed with interlock in place) to access Cell 2. Additionally, the safety gate for Cell 1 was also closed with interlock in place. The robots in Cell 1 and Cell 3 were not locked out. The safety doors between Cell 1 and Cell 2 and between Cell 2 and Cell 3 were down. To access Cell 2, the decedent apparently stepped over the lowered safety door between Cell 2 and Cell 3. The decedent was standing between two robots in Cell 2 (approximately one foot away from them and 10 feet away from the robots in Cell 1 and Cell 3) while working on the Cell 3's robot. A robot carrying a part from Cell 1 entered into Cell 2's space while Cell 3's robot was in Cell 2 and struck her head, pinning/crushing it between the part being transported and the metal fixture/part into which it was trying to place the transported part.

MIOSHA General Industry Safety and Health Division issued one serious citation at the conclusion of its investigation.

**SERIOUS: THE CONTROL OF HAZARDOUS ENERGY SOURCES  
(LOCKOUT/TAGOUT), GI PART 85, RULE 1910.147(c)(4)(i):**

Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

(Lockout was not utilized when an employee entered the robotic sections of the Weld Cell A, in the Weld Department, to perform minor adjustments, [e.g., proximity switches wearing out, weld adjustments needed, proper placement or pick-up of parts; and bi-

weekly, monthly and annual preventative maintenance].) *MIFACE changed the name of the weld cell.*