Fatal 1 - Potential hazard associated with safety light curtain muting

WHAT HAPPENED

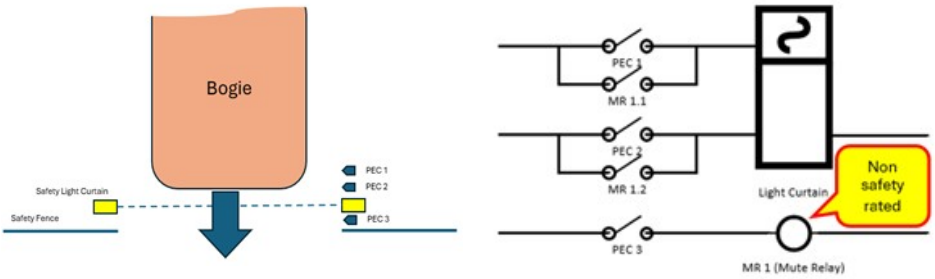
An incident occurred at a concrete products site, where an operator was able to gain access to a safety cell, by walking through a light curtain, without the safety circuit activating and stopping the equipment in a safe condition.

The equipment in the safety cell had paused in operation due to a Bogie (cart / trolley) being out of position, preventing the crane loading it. The operator entered the area via the light curtain, corrected the position of the Bogie and exited the safety cell. Once outside the safety cell the operator went to reset the light curtain and restart the equipment. They then realised that the crane had resumed operation without having to be reset. The operator raised a near hit for the incident.

As part of the investigation, CCTV footage of the area was reviewed. It was seen, that as the operator approached the light curtain to the safety cell, the mute lamp flashed, as he passed through the light curtain. This indicates that the light curtain was disabled by the mute circuit allowing the operator to access the safety cell in a dangerous state.

The muting function is part of the normal operation of the equipment, which allows Bogies carrying blocks to exit the safety cell, without activating the safety circuit. However, it should only be possible for the muting function to be activated from within the safety cell.

Further investigation revealed that a standard relay had been used in part of the mute circuit, which would very occasionally simulate a valid mute activation. This was discovered by repeatedly activating the mute switches. Around 1 in 50 operations of the mute switch would enable the mute function incorrectly.



Mute Circuit Wiring (illustration)

As part of the investigation in was noted that operators were accessing the crane area safety cell via the light curtain and not using the machine safety interlock key and access gate. Review of training records revealed, no recorded training, that specifically covered correct access to safety cells/areas and not to use light curtain protected entry points unless they are designed for specifically for operator access as detailed in the Standard Operating Procedure.

LEARNING POINTS / ACTIONS TAKEN

Detailed below are the actions that the company required all sites to take to both identify safety circuits with mute functionality, ensure that they functioned as required, to ensure access provisions to safety cells are appropriate and that operators understand what they should do.

- Establish which safety circuits have mute functionality
- Ensure mute circuit functions as expected / designed
- Ensure components in the safety circuit are specified correctly
- Force guided contact relays should be used in muting circuits
- Upgrade safety circuits if necessary
- Review access provisions to safety cells and hazardous areas to ensure correct / safe access methods are in place
- Ensure that operators understand the appropriate access and egress points when entering machine safety cells and these are documented in the Standard Operating Procedures with recorded training.
- Ensure that all access into safety cells is via a ‘authorised’ route and this access is a ‘controlled entry’

Additional Information

Specific Light Curtain details = Omron F3S-TGR-CL4A –K4-900

LOCATION:	**CONCRETE PRODUCTS PLANT**	**ALERT STATUS:**	**Normal**
ACTIVITY:	**GUARDING AND ISOLATION**	**DATE ISSUED:**	**23/09/2025 19:33:32**
SUB ACTIVITY:	**NO SUB ACTIVITY AVAILABLE**	**INCIDENT No:**	**04933**