

Fatal 5 – Operator was struck in face by tool that fractured his cheek whilst he was clearing material in pre-heater tower

WHAT HAPPENED

Cement Plants typically incorporate a preheater tower (PHT) which raises the temperature of the raw material mix, using heat produced by combusting fuel or from hot gases fed from the kiln exhaust. This pre-heating drives off carbon dioxide and water in the raw mix before it enters the kiln.

Due to chemical influences, material build-up occurs in the tower ducts. This build up is an inherent part of the process. To counter this, almost 200 air cannons are used at this particular cement plant to clear build-up in a controlled and automated manner. This reduces to the minimum the need for lancing. Water jetting (lancing) is a task that is undertaken multiple times per shift and is critical to the safe operation of the kiln system. These lances discharge water at 1,500 bar pressure.

An experienced preheater tower operative (employee) was undertaking his normal duties to clear a preheater door of build-up to allow for the safe execution of water jetting activities within the preheater tower.

Whilst clearing the door with the specifically designed tool, a lump of build-up fell within the PHT duct and hit the bar, causing the end that the injured person (IP) was holding to deflect towards his face, resulting in a fracture to the cheek bone.



KEY FINDINGS

Safe Systems - A thorough Safe System of Work and Risk Assessment were in place for the task. Investigations confirm full compliance with procedures.

Isolation - The required equipment (air blasters) were isolated, and the section of ducting above had been cleared to minimise the risk of material falls within the pre-heater tower. This is as per procedure.

Competency - Pre-heater tower cleaning requires specialised training. The IP is trained and competent in the task and he has been carrying out these activities for over 5 years.

Tools & Equipment - The IP was using the specifically designed rodding equipment for the task. The tools were in good condition.

PPE - The IP was wearing the correct PPE for the task, including face visor. This ultimately reduced the severity of the injuries sustained.

Housekeeping - Housekeeping in the area was excellent, which eliminated additional risks from slips, trips and falls during the incident.

LEARNING POINTS / ACTIONS TAKEN

HOW COULD THIS HAVE BEEN AVOIDED

- No specific action has been identified to reduce the likelihood of this occurrence. The preheater process was operating in steady state. The cleaning activity was completed as per procedure.
- Remote or robotic equipment that would reduce the need for human interaction in this task would eliminate the risks associated. Whilst technology is advancing rapidly, there is currently no remote or robotic solution available on the market that would work in the high temperature environment of the pre-heater ducting.
- Due to the fundamental design of this preheater tower (2 stage with twin double deflectors), plus 80% + alternative fuel usage, it is acknowledged this increases the risk for buildup and material falls in the PHT.

KEY REVIEW POINTS

- **Safe Systems** - Are all Safe Systems of Work followed and all specified PPE worn? Adhering to processes, procedures and PPE requirements can reduce the severity of any injuries, as this incident has shown.
- **Competency** – Do you and your team have the necessary training for the specialised activities you undertake?
- **Tools / Equipment** – Are only approved and authorised tools used for tasks?
- **Housekeeping** – Is housekeeping a priority in your workplace? A clean work area is imperative for safe working. Apply 5S methodology.

LOCATION: CEMENT PLANT
ACTIVITY: MAINTENANCE & HOUSEKEEPING
SUB ACTIVITY: KILNS

ALERT STATUS: Normal
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