



HAZARD ALERT

Maintenance Worker Suffers Arm Amputation

Preliminary Report

A production supervisor and a maintenance worker were called to investigate why a pneumatic slide gate would not open on a “u-trough screw (auger) conveyor.” The screw conveyor system is located on a dedicated floor and above similar conveyors. They are often close to overhead obstructions and the ceiling where workers navigate catwalks and ladders. When the two individuals arrived at the auger, they found the covers (or guards) were missing on the top side of the u-trough. The u-trough was empty of raw material and the auger was not rotating. After making a visual assessment, they determined that a lock-nut/bolt had started to loosen and that was causing operational issues with the auger. The supervisor left to assist an inexperienced tower operator with handling an auger quarantine procedure. It’s believed when the maintenance worker was leaving the area, he hit his head and/or had tripped and inadvertently fell into the unguarded screw conveyor. At this same time, the supervisor released the quarantine procedure which allowed the screw conveyor system to start. His arm was immediately amputated at the shoulder.



Recommendations to Prevent Recurrence:

- A screw conveyor housing must completely enclose the moving elements (screw mechanism, power transmission apparatus) of the conveyor, except for the loading and discharge points. Permanently affixed grids (covers/guards) or clear view polycarbonate can be installed for visibility purposes to allow the operator to inspect the operation. The affixed grids must require the use of tools to be removed. Alternatively, the trough side walls should be high enough to prevent workers from reaching over and falling into the trough. Open troughs can be used if covers are not feasible, but workers need to be protected by secondary safeguarding methods, such as a compliant railing or fence.
- Feeding, loading and discharge points can usually be guarded by providing enclosures, screening, grating, or some other interruption across the openings which will allow the passage of the material without allowing the entry of a part of the worker's body into the moving parts.
- Hierarchy of Controls and the USW’s Systems of Safety must be applied to overhead hazards and walking/working surfaces.
- Workplace inspections must be conducted to find and fix covers/guards popped-off due to jam-ups and damaged fasteners (including tension clamps that are sprung open).
- Operating screw conveyors without machine guards cannot become normalized. They must be removed from service immediately and repaired accordingly.
- A preventative, periodic and predictive maintenance program must be developed and implemented.
- OSHA’s §1910 Subpart O - Machine Guarding, ANSI/CEMA 300, 350 and 352 on Screw Conveyors must be part of a machine guarding program and process.
- OSHA’s §1910.147 Control of Hazardous Energy must be complied with when the decision is made to begin servicing or maintenance.
- Sufficient maintenance and production staffing levels must be provided and maintained.
- Effective written training and procedures must be provided to employees.

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The information provided in this alert is based on preliminary data only and does not represent final determinations pertaining to the nature of the incident or conclusions regarding the cause of this event.