March 1999

Accident Involving a COMPAC Fruit Grading Machine

What happened

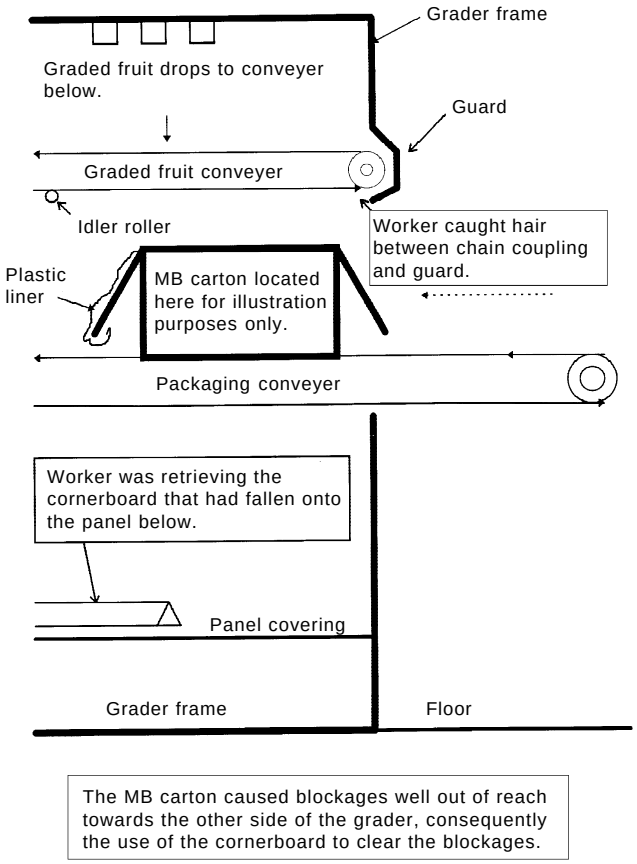
A 17-year-old female employee received injuries to her head and hand after she reached under the grader in an attempt to retrieve a ‘cornerboard’ to clear a blockage of materials on the packaging conveyor. Because the location of the blockage was well out of reach, a length of ‘cornerboard’ was used.

The machine is manufactured in New Zealand by Horticultural Automation (Auckland) principally for the kiwifruit industry.

A rotating shaft drives the graded fruit belt conveyors to the packing side of the grader. The shaft is covered by a U-shaped metal panel preventing direct contact to the shaft and chain couplings. Because of the panel covering the shaft, its presence is not an obvious hazard.

The graded fruit conveyor is situated directly above the packaging conveyor.

With her head past the panel, the open side exposed her bunched hair to the rotating shaft and coupling. Her hair caught in the nip area created between the guard and a chain coupling. Fortunately, no meshing of chain and sprockets existed, otherwise scalping may have occurred.



COMPAC Grader (side view)

Investigation

An investigation by OSH revealed:

- It was common practice to reach under the conveyors to clear blockages that occurred on the packaging conveyors;
- Clearing of blockages was carried out while the machinery was in operation;
- A small clearance between the top of the MB boxes and the conveyor belt above;
- Human error contributed to the blockages in that:
  a) Inadequate placement of plastic liners over the lid edges may allow the lids to rise, pushing a preceding or following box out of alignment and causing it to jam against the conveyor sides; or
  b) The plastic liner rises up getting trapped by the return belt and idler rollers of the conveyor above, again causing a blockage.

- No means were readily available to stop the machine from the packaging side;
- Verbal communication was difficult (due to grader noise) when a request was made to stop the machine between workers on either side of the grading machine;
- The inrunning nips created between the guard and the chain couplings are not visible during the normal work activities. The nip points are created where the chain couplings are located; and
- A random check of a number of fruit grading machines indicated the matter of blockages was addressed by handling the belt edges and "whipping the belt". This could not be achieved in all cases due to variation in the tension of the belts or design.

Recommendations

Packhouse operators are advised to review their:

1. System of addressing blockages occurring on the packaging conveyor; and
2. Guarding standards on these machines and where appropriate:
    - Provide additional guarding to panel guards driving the graded fruit belt conveyors.
    - Install an emergency stop mechanism on the packaging side of the grader.
    - Seek assistance from the manufacturer/ agent to remedy the problem of packaging causing blockages on the conveyor.