

ETIOLOGY AND PREVENTION OF AGRO-INDUSTRIAL HAND INJURIES*

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SUMMARY

The present article draws attention to the various etiological factors responsible for the devastating hand injuries resulting from commonly used agro-industrial machines. Simple and effective preventive measures have been proposed to minimise such accidents.

With the rapid development of agro-industries, the incidence of hand injuries has also proportionately increased. Most of these victims are young male earning members of the family. However, there is no age bar. Similar observations were analysed in relation to industrial accidents by Lewin (1959) and Bhattacharya et al. (1979).

In the majority of cases, due to the complex nature of injury, such accidents lead to serious consequences in terms of length of hospitalisation, economic loss, permanent functional disability and psychological trauma. Prevention of such catastrophes deserve special emphasis.

The various machines responsible for such accidents are Thrasher, Chara, Cane Sugar, Cotton, Grinder and oil extracting Kolhu. Most of these accidents are preventable. They occur, on account of either inadequate built-in safety measures or unsupervised faulty handling of these machines or both. We have visited several villages around Varanasi to witness and understand the exact etiological factors.

Field observations

The following mechanical and circumstantial etiological factors were observed:

1. There was absence or inadequate safety mechanism at the entry door of the machines (Fig. 1, 2 & 3).
2. Even if a guard was present, it could be easily removed (Fig. 4).
3. The entry door was wide and short, therefore, the workman's hand reached the moving rollers or blades easily leading to injury (Fig. 5).
4. The dust blowing fan of the thrasher was exposed. The loose garments of the workers have a chance to get entangled in the fan and the hand gets injured while freeing the clothes.
5. Oil extracting Kolhu machine had a wide open container with a centrally rotating piston. The worker used his hand for suffling the seeds leading to hand injuries (Fig. 6).
6. The illumination at the place of work was inadequate.
7. Excessive dust (bhusa) was produced specially if the thrasher was kept in a close poorly ventilated area. This interferes with its smooth working.
8. There was no definite time for the supply of electricity and the workers kept the machine on. During this period they

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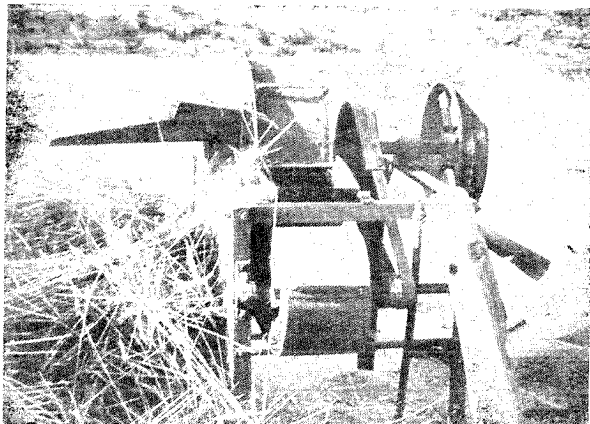


Fig. 1. Thrasher, without safety guards at the entry door and the dust blowing fan. Note that there was no sitting arrangement or a shed.



Fig. 2. Chara machine, with serrated rollers and the large rotating blades on the opposite side (no guard system).

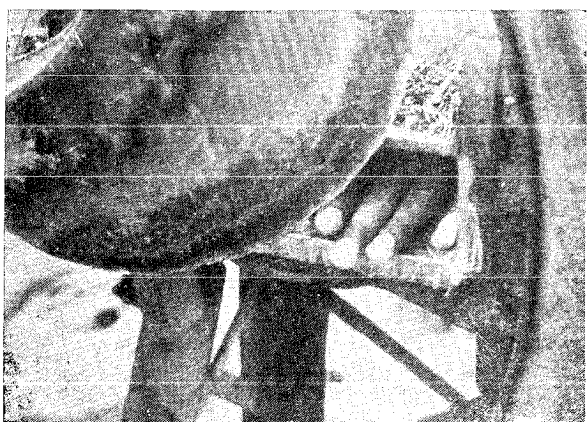


Fig. 3. The hand may be distally amputated by the blade after being crushed by the rollers (Chara machine).



Fig. 4. Cane sugar machine, having inadequate removable safety guard.

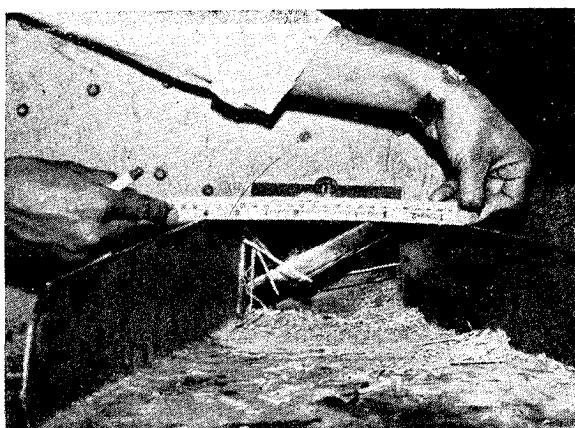


Fig. 5. Close-up view of the wide and short entry door exposing the blades.



Fig. 6. The mechanism of hand injury by an oil extracting Kolhu machine.

clean and grease the machine, or children play near it. Accident results if the machine suddenly gets activated by electricity.

9. Physical exhaustion, climatic vagaries viz. extremes of heat, cold, rains and lack of bare minimum facilities of relaxation was found at most of the places visited by us.
10. Sometimes the over-confident workers smoke with one hand and use the machine with the other, which may prove dangerous.
11. Directions on the machines are inadequate and no guide book was provided at the time of delivery. Moreover, often neighbours borrow the machines without having the basic knowledge of handling them.
12. Indigenously made unregistered machines without any safety mechanism are frequently used.

Discussion

An individual's personality which depends so much on the physical appearance and the capacity to perform, is deeply affected by a severe hand injury, because "The hand is superseded only by the face in portraying one's personality", Beasley (1971).

From the present study, it is evident that lack of know-how, knowledge, skill, guidance and safety measures was the main reason for hand injuries in the agricultural sector. Similar observations were made by Thind et al. (1976). Having known the various etiological factors it is clear that by following simple and practical preventive measures one can avoid most of these accidents.

Suggested Modification in the Machines:

1. A safety guard of proper size must be provided and fixed to the machine.
2. The entry point should be narrower and longer.
3. A metallic cover should be provided over the blowing fan.
4. A metallic/wooden suffler should be provided.
5. Instructions for use in the form of a booklet in local language must be provided with each machine.

Suggested Norms for the Workers:

1. Should have a working knowledge of the machine.
2. Should not smoke and/or let his attention be diverted while at work.
3. Should not do over time work.
4. Should not use sub-standard machines.

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