

tures, and burns can occur during the manual handling of scrap metals, pig iron, and similar materials

Some of the precautions that can be taken to prevent materials handling accidents include

1. Instructing workers in the safe methods of manual and mechanical handling of material
2. Providing personal protective equipment — eye protection, face shields, leather mitts or gloves, preferably studded with steel (unless hot metal is to be handled), hand pads, aprons, safety shoes, and other items — to be worn as required
3. Planning the sequence and method of handling materials to eliminate unnecessary handling
4. Safeguarding mechanical devices and setting up inspection procedures to assure their proper maintenance
5. Keeping good order at storage piles and bins, and piling materials properly
6. Keeping ground and floor surfaces level so that men handling materials will have good footing
7. Installing side stakes or side boards on tramway or railroad cars to prevent materials from falling off

Many foundries have replaced hand methods with materials handling machinery and thus reduced exposure to manual hazards. However, the machinery usually involves hazards of its own. For instance, lifting magnets are dangerous if swung over areas where men are at work. A break in the magnet circuit could cause the magnet to release its load without warning or pieces dangling from the magnet could be jarred loose. In no case, of course, should suspended loads be carried over workmen's heads.

Handling sand, coal, and coke

Certain hazards in the handling of materials such as sand, coal, and coke can be remedied as follows

1. Falls through hoppers while unloading bottom dump-type railroad cars can be prevented by requiring the use of safety belts

and lifelines. Men should never do this work alone. Observers should always be on the scene and should be prepared to effect rescues in emergencies

2. Using hopper car door safety ratchet wrenches can keep doors from swinging and striking workers
3. Hand and foot injuries can be prevented by using safety car movers instead of ordinary pinch bars to spot cars by hand. (Where a locomotive is available, it should, of course, be used.)
4. By using warning targets, derails, and red lanterns at night, and by locking switches, workers can keep cars they are working on from being moved.
5. Prohibiting the undermining of piles and avoiding overhangs can reduce the danger of cave-ins of loose material
6. Electric shock can be prevented by grounding portable belt conveyor loaders.

Some foundries have eliminated double handling by having the raw materials put directly from the cars, storage piles, or bins into unit charging trays or boxes, which are taken to the point of use and dumped mechanically. Trays or boxes to be carried overhead must be properly trimmed.

Ladles

Ladles for distributing molten metal or reservoir and mixing ladles, which are mounted on stationary supports or trucks or handled by overhead crane or monorail and which have a capacity of not more than 2000 pounds may be of the hand-shank type and should be provided with a manually operated safety lock (Fig 33-2). Shanks should be made from solid material, and shields should be installed on them.

Ladles which have a capacity over 2000 pounds should be of the gear-operated type. Such ladles and those which are mechanically or electrically operated should be equipped with an automatic safety lock or brake to prevent overturning or uncontrolled sway.

Suitable covers should be provided on portable ladles

The rim or lip on hand or bull ladles should be built up above the top of the metal shell