stairways should be well designed and kept in good condition The storage area should be well-lighted The pattern keeper should be provided with a sound ladder so that he can safely reach the patterns

The pattern keeper, who is likely to be alone in the pattern storage area, should report at regular intervals to the molding floor supervisor

Flammable liquids should be stored in accordance with NFPA Standard No 30, ***Flammable & Combustible Liquids Code***

Slag disposal

Furnaces and pits should be designed to have removable receptacles into which slag and kish (separated graphite) may flow or be dumped Enough of these receptacles should be provided so that slag can solidify before it is dumped, unless it is disposed of in the molten state

To decrease the amount of slag that goes into the slag pits, slag or cinder pots should be used The pots can be set aside and allowed to cool, to eliminate the danger of explosion when they are emptied

Open hearth slag ladles should not be dumped until 20 hr after they have been filled The slag should be dumped where there is absolutely no water or dampness, which might cause an explosion if some of the slag is still molten The slag should then be allowed to stand for several hours before being broken up so that there will be no molten slag in the center

Cupolas

Charging

The dangers in the charging of cupolas are principally confined to the handling of material Barrows or buggies should never be unevenly loaded or overloaded "Tip-up" barrows used for charging coke are sometimes so poorly balanced that they will not stay in the tipped-up position after being emptied, but fall back on the chargers' feet at the slightest touch The preventive measure is to lower the center of gravity

The use of mechanical devices for charging cupolas not only saves labor but also reduces the number of materials handling accidents Most foundry cupolas are now charged by either fully automatic charging machines equipped with crane and cone bottom buckets or by forklift trucks equipped with tilting boxes.

The charging opening on some cupolas is covered by a door or chain curtain, which should be kept closed except for charging

The space underneath cupola charging elevators, machines, lift hoists, skip hoists, and cranes should be railed off or guarded to prevent material from dropping onto workers during charging operations

Occasionally, during idle periods men may rest under the charging platforms, close to the warm chambers and flues This practice should be prohibited because of the danger of objects falling from the platform and the possibility of carbon monoxide escaping from the flues Clothes lockers should not be located under these platforms

Scrap cylinders, tanks, drums, and the like should be broken open before charging to prevent explosion in the cupola

Charging floor

Charging floors should be kept free from loose materials and storage racks should be provided for equipment not in use

Steel floor plates should be substantial enough not to turn up and should be securely riveted in place Steel plate flooring in the immediate vicinity of the furnace becomes extremely hot Therefore brick flooring laid on substantial steel framework is more satisfactory

Standard railings 42 in high and 6-in toeboards should be provided around all floor openings

Since railings on the charging floor are likely to be subjected to considerable abuse, it is usually best to construct them of angle iron, which is more easily repaired than pipe railings At the tapping platforms, hinged gates or chains which may be hooked in place must often be provided

Where cupolas are manually charged a guard rail should be placed across the charging opening

Where cupolas are charged with wheelbarrows or cars, a curb of a height equal to the radius of the wheel of the barrow or car should be provided to prevent the barrow or car from pitching over and falling into the cupola

Carbon monoxide

Carbon monoxide (CO) is generated during some cycles in the operation of a cupola