# Foundry Worker Safety Meeting Kit


## What’s At Stake

**FOUNDRY WORK BROKEN DOWN**

The foundry operations that have been studied include handling of raw material such as scrap metal and sand; preparing sand; making mold and cores; reclaiming sand and other material used in core and mold production rough cleaning of castings; melting and alloying metals; pouring; removing cores and shaking out castings; maintaining and cleaning all the equipment’s regularly and periodically.

Founding, or casting, as it is commonly involves in pouring of molten metal into a mold that made in to an external shape of the article to be cast. The mold may contain a core which determines the dimensions of any internal cavity or hollow.

## What’s the Danger

**HEALTH HAZARDS OF FOUNDRY WORK:** The production of metal castings is a complex process that has long been associated with worker injuries and illnesses that are related to exposure to chemical and physical agents generated or used in the casting process. Foundry workers may be exposed to numerous health hazards, including fumes, dust, gases, heat, noise, vibration and nonionizing radiation. The continuous exposure to some of these hazards may result in irreversible respiratory diseases such as silicosis and it increases the risk of lung cancer and other diseases. The foundry workers may also be exposed to safety hazards that can result in injuries including strain, burns, eye damage, loss of limb, and death. The major categories of adverse health effects include: Respiratory diseases; ergonomic injuries due to falling or moving objects, lifting and carrying, etc; heat induced illnesses and injuries; vibration induced disorders; noise induced hearing loss; and eye injuries.

## HOW TO PROTECT YOURSELF

**Reduce impurities in metal.** Any impurities on the surface of the molten metal may increase the risk of breathing problems. Impurities increase a worker’s exposure to harmful substances.

**Know what you’re melting.** Learn about the metal being used before work begins. Alloy elements like lead, zinc, mercury, or beryllium are especially dangerous. It’s better to know the health risks associated with handling these elements before exposure happens.

**Inspection before use.** It is critical that an employee check the condition of equipment they are operating, including the condition of furnace walls, fuel lines,

burners, and pouring equipment.

**Plan an emergency exit route.** Foundry staff must be trained on their company's evacuation plan and how to react in other emergency situations.

**No water.** Water or moisture that gets below the surface of liquid metal in the mold is a ticking time bomb.

**Watch for leaks.** That strange aroma you smell could be the melt that just leaked from the back of the flask trickling along the floor and now eating away at the soles of your boots.

**Keep dry sand.** Have a DRY pile of sand and a shovel ready to put out fires or to control metal spills.

**First aid.** Basic first aid may need to be administered before help arrives.

**Training.** The commitment of management, effective communication, and timely training is important to ensure the safety and health of all employees, the community, and the protection of the environment.

**BEST FOUNDRY HOT WORK SAFETY PRACTICES**

Personal Protective Equipment – Clothing covering all skin, purpose built or made of natural materials like leather, heavy wool or heavy cotton. No Polyester or nylons. Boots to be Class 1 safety. Full face shield and leather gauntlets.

1. Tidy foundry area – Pouring area to be free from all items not involved in pouring process.
2. Clamp or Weight Flasks – Hydrostatic pressure of liquid metal can lift a lot of weight.
3. Use Dry Clean Metal – Impurities on the surface of the melt metal may become an airborne breathing hazard.
4. Preheat all metal and furnace tools.
5. Move the melt slowly & a short distance furnace to flask – It is said that liquid metal is runnier than water and splashes further – minimise the possibility of spills and splashes.
6. Know what you melt – knowing melting temperature of metal is good to know before you start.
7. Inspections before use – knowing the condition of the crucible the furnace walls the fuel lines burners and pouring tools is critical. Failure of any of these items during a melt or pour can be extremely undesirable.
8. Watch for a bubbling sprue – low permeability sand or excess moisture in the mould can result in a steam build up or blow back out the sprue.
9. Plan emergency exit route – Identify before you start to pour what your escape routes are.
10. Be Alert – Working in the foundry tired, sick, drugged, stoned or drunk is just plain dumb!
11. Zn & Mg Fluxing – These metals and others evaporate and ignite easily at relatively low temperatures.
12. No Water – Water or moisture that manages to get below the surface of liquid metal in the furnace or mould will become a bomb within milliseconds
13. Watch for leaks – That strange aroma is the melt that has leaked out of the back of the flask trickled around under the drag along the floor and is now consuming the soles of your boots.
14. First Aid – Be prepared for the worst, A roll of cling rap plastic for large burns. a working phone for emergency services, and a car for the quick trip to the surgery.

## FINAL WORD

Typical foundry processes involving molten metal are conducted at high temperatures, may emit noxious fumes, produces excess noise, and presents other hazardous conditions. These conditions make it a dangerous line of work for foundry workers.