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**The advice provided in this pamphlet is basic safety and health information. Ensure you are familiar with your site procedures and, if uncertain, discuss this information with your supervisor and safety and health representative.**

## Mine safety matters

# Working in hot processes



## THE HAZARDS

Treatment plants and refineries commonly use processes involving heat when treating ores and concentrates.

Hot processes are associated with:

- smelters and direct reduction plants
- kilns
- furnaces

- roasters
- autoclaves
- elution columns.

Hot processes generally involve hot liquids, solids or gases, commonly at high pressure.

Exposure to hot and often corrosive material can occur:

- through failure of plant or inadequate isolation procedures during maintenance or other work
- during transfer of hot material, such as metal pours.

There is the potential for explosions if hot molten metal comes in contact with a wet surface.

## WHAT CAN HAPPEN

Serious injury or death can result from contact with hot equipment or uncontrolled releases of hot gases, liquids and solids.

Radiated and convected heat can also cause heat strain, heat stress, burns and death, and its effect can be exacerbated when wearing unsuitable personal protective equipment (PPE) and clothing.

## SAFE WORK PRACTICES

- Understand the process you are working with. A job safety analysis should identify potential hazards such as heat, noise and fumes. Resultant safe work procedures should include controls, permits and any PPE required to eliminate or control risk of injury
- A material safety data sheet (MSDS) will provide information on the properties of any hazardous substance used or generated during the hot work process
- Ensure equipment is dry and free from moisture or dampness
- Be aware of and report any unusual or changing conditions in the plant, such as odours, smoke or flames
- Heat acclimatisation is very important. It may take several days for a person to adequately acclimatise to working in the heat generated by hot processes. A formal

acclimatisation program is required for new employees, or those returning from extended leave or absence, and should be well documented for each individual

- Wear clothing that breathes and allows efficient moisture transfer when sweating. Long sleeves and trousers reduce the risk of contact or radiant burns. All cotton clothing breathes and is safer than nylon or other synthetic materials, which can melt on contact with exposed hot surfaces and adhere to the skin
- When required, wear appropriate PPE, which may include aprons, gloves, face and respiratory protection. For certain activities, air or ice cooled vests may also be required
- Wear personal monitors and alarms in designated areas
- Use engineering controls such as ventilation and shielding to minimise heat exposure, particularly if also working in confined spaces
- Take regular rest breaks during adverse conditions. Job rotation will allow more frequent rest breaks and reduce exposure
- Be familiar with the early signs of heat strain, such as fatigue, lethargy and reduced coordination and motor skills
- Drink plenty of water. Dehydration will occur if water is not drunk to replace sweat. A supply of cold water should be readily available whenever working in hot processes
- Participate in any site health or medical protocols, such as end-of-shift dehydration testing
- Do not work alone in hot areas.

# Working in hot processes

