



## Safety Bulletin 97

### Safety alert – molten metal explosions

This safety alert is for the attention of firms working with molten metal, and has been issued by the HSE after discussions with HM Coroner following the inquest into the death of a worker from molten metal burns.

#### What is the risk?

A 24 year old Polish worker died from multiple organ failure after suffering 80% burns caused by a molten metal explosion which occurred at an induction furnace melting ferro-titanium. Water contamination of any molten metals can give rise to such explosions.

#### When can the risk arise?

Molten metal explosions of this type are a well known hazard. The inquest jury found that on this occasion the explosion was probably caused by water ingress into the furnace as a result of contaminated scrap held in a drum. All appropriate measures had not been taken to ensure that water, or other contamination which could cause an explosion, could not enter the furnace, in particular:

- ✚ scrap drums had not been punched with holes to allow liquid to drain from them
- ✚ visual checks for contamination were not effective
- ✚ there were no written safe working procedures

In addition, the deceased had not been wearing suitable molten metal protective equipment (PPE) which, the inquest jury concluded, significantly impaired his chances of survival. A number of witnesses stated that they, and others, did not wear the full PPE provided for those working at the furnace.

#### Recommended action

Employers should review their own arrangements to ensure that:

- ✚ suitable work practices have been drawn up and supervision is adequate to ensure that they are followed including the need to prevent water, or other liquids, from entering furnaces
- ✚ employees are given appropriate information, instruction and training on the dangers from working with molten metal, the dangers from liquid contamination entering the furnace, and the need to follow safe working practices including correct use of PPE
- ✚ PPE including clothing suitable for use in molten metal environments is provided and used

Employees should:

- ✚ co-operate with their employer in following safe working practices and correct use of PPE



This bulletin is also available as a Polish version, on request.

**If you require any further information, clarification or assistance with the above, then please do not hesitate to contact us;**

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**Source – Health and Safety Executive**  
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