

BRITANNIA ZINC LIMITED

**WORKS SAFETY AND HYGIENE
REGULATIONS**

Preface

These safety and hygiene regulations have been drawn up by the safety and hygiene department, in consultation with members of management and representatives of the trades unions. The booklet itself forms one of the documents in the series of documents published by the company in connection with the Health and Safety at Work etc. Act. 1974.

The law in matters of health and safety is embodied in Acts such as the Health and Safety at Work etc. Act. 1974, the Factories Act, 1961 and various Regulations. Such legislation places many duties on persons at work, both employer, employee and self employed. In addition, guidance is provided from time to time by the publication of Codes of Practice.

The purpose of this booklet is to bring together the requirements of the law, the recommendations of Codes of Practice and Company Rules designed to promote safe and healthy working. Britannia Zinc Limited employees, and other persons working on the Avonmouth site, are required to observe these regulations.

Company Health, Safety and Environmental Policy

All of us have a right to a healthy and safe workplace and to be able to leave each day without harm

The community has a right to expect that we will manage our environmental performance consistent with community standards

We will achieve these by the effective application of clear standards and supporting systems

All of us have a clear responsibility to support these standards through our actions

Safety & hygiene regulations

Access to plants

1. Persons who go to a plant to carry out installation, maintenance, repair, cleaning or some other work which brings them into contact with the machinery or process materials of the plant must first report to plant supervision, and obtain a Permit-to-Work before starting any work. Plant supervision must be informed of the individual's reason for being on the plant.
2. Plant supervision will give instructions as to safety precautions to be observed, protective clothing or equipment to be worn, etc.
3. Other persons, not in direct contact with the machinery or process materials of the plant, must report to plant supervision on arrival at the plant, and sign the visitor's sheet. Plant supervision may require that such individuals inform them one their work in particular areas is complete.

Guards, etc

4. As a general rule, guards and fences must not be removed until machinery is isolated or made safe in another way. Guards must be replaced as soon as the work is complete. As a general rule, machinery must not be de-isolated until all guards have been replaced and secured.
5. Defective or missing guards on any equipment must be reported to supervision without delay.
6. Persons removing the cover from a manhole or floor opening, must fence or rope off the area and erect warning notices. Unless the area is well lit, warning lights must be used during the hours of darkness.
7. In other areas where danger exists, free access must be prevented by fencing or roping off. Warning notices must be erected, and warning lights must be provided to draw attention to these notices during the hours of darkness.

Electrical circuits

8. Electrical circuits, switches or fittings, including fuse boxes and interlocks, must not be interfered with. Electrical repairs, replacements or adjustments required must be reported to supervision. This work will be carried out by the appropriate persons.
9. Accidental damage to wiring and/or equipment must be reported immediately to supervision.
10. Special procedures apply when working on electricity supply systems operated at 3.3 kV or above.

Acid and alkali hazard

11. Impervious gloves, suitable eye and face protection and the necessary protective clothing as specified by supervision must be worn when working on acid or caustic alkali pipelines and pumps.
12. Before starting work valves must be shut, line blanks should be fitted where possible, pumps must be isolated from the source of power.
13. Danger areas must be roped off, or otherwise marked, and notices erected to warn passers-by.
14. The possibility of pockets of dangerous liquids or residue must be recognised. Before dismantling, pressure must be relieved throughout the system wherever possible. Dismantling must be done by breaking the bottom of the flange away from the body.
15. Blocked pipes must not be inspected by looking up them.
16. The location and readiness for use of emergency showers and eyewash bottles must be checked before starting work in areas where acid or caustic alkali is likely to be present.
17. Running water and hosepipes must be always be available to dilute spills. This must be done carefully and once diluted, the spill must be neutralised with lime, prior to clearing up and washing down. Caustic soda is not a suitable neutralising agent. There is a danger of explosion if large quantities of caustic soda are added to acid spills.

Molten metal hazards

20. Proper protective clothing must be worn when working with molten metal. Such clothing includes aprons, spats, gloves, safety boots and correct whole face protective equipment.
21. When working or observing work in the vicinity of molten metal, appropriate eye protection, ie visor, and suitable clothing must be worn.
22. All gear used for handling molten metal must be examined regularly and defects reported immediately to supervision. Defective eyebolts or chains can cause dangerous spills of molten metal.
23. Dangerous explosions can be caused by molten metal coming into contact with wet or cold moulds, tools or ladles. Moulds must be kept dry. Tools and ladles must be kept warm. Special care should be taken when moulds are brought into use for the first time.
24. Care must be taken that scrap or reject metal being remelted does not have moisture trapped in it.
25. Care must be taken when handling sodium and especially when adding it to molten metal. Sodium supplies must always be kept immersed in oil. Sodium must not be allowed to come into contact with water.

Confined spaces and dangerous areas

26. Great care must be exercised when it is necessary to enter any confined space, such as a vat, tank, pit, sewage pit, culvert or similar vessel or enclosure. Before entry, a test of the atmosphere must be made by a responsible person to check on the presence of harmful gases and the adequacy of the oxygen supply the result being entered on the Atmospheric Test Certificate.
27. Entry into confined spaces may only be made under orders from supervision, after all instructions as to necessary precautions have been carried out, and the Enclosed Space Certificate completed and signed by all persons concerned. If the atmosphere test is satisfactory, entry may be made without an air-supplied breathing apparatus, but only when authorised by supervision.
28. Certain confined spaces may be free of harmful gases, but still be dusty in which case a full-face high efficiency dust respirator, a positive pressure respirator, or an air-supplied breathing apparatus must be used, as directed.

29. Confined spaces must be isolated from other vessels, pipelines, etc. in accordance with the 'Enclosed Space' procedure, before entry is made.
30. Entry into a vessel must be through an appropriately sized manhole viz: not less than 18 inches long and 16 inches wide (or 18 inches in diameter is circular), or, in the case of mobile tanks and plant, not less than 16 inches long and 14 inches wide (or 16 inches in diameter if circular).
31. Unless otherwise instructed, a safety harness with a rope attached must be worn, the free end of the rope to be left with a man outside.
32. If it is necessary to enter for rescue purposes, air-supplied breathing apparatus and a life-line must be worn, and another person must keep watch outside.

Staging and ladders

33. Staging to be used must be safe and provided with secure footholds and handholds. Stagings must not be improvised or altered without authorisation. A safe means of access such as a ladder, must be used.
34. Ladders must be erected against objects that will not move.
35. Ladders must be long enough to give safe hand and footholds at the position required to be reached.
36. Ladders must project at least 3 feet 6 inches above the level to which access is required.
37. Portable ladders must be one foot away from the base of the vertical for each four feet vertical rise.
38. A ladder may only be used if it is securely lashed in position or there is a man at the ladder foot to steady it.
39. Metal ladders must not be used when working on or near electrical equipment.
40. Damaged or defective ladders must not be used. Damage or defects must be reported immediately to supervision. The ladder must be taken out of service.
41. All ladders must be registered, identified and tested at prescribed intervals.

42. A roof ladder must always be used for work on roofs.
43. For work at a place from which it would be possible to fall more than six feet six inches, a secure staging must be used, unless a secure foothold, and where necessary a secure handhold, is available. Alternatively, safety harnesses must be worn.

Cranes, hoists and tackle

44. Before taking control of any crane or hoist (either powered or manually operated), the operator must have been instructed and authorised as competent regarding the safe handling of the unit and in particular any peculiar feature of the lifting operation he is to perform. All controls must be tested before use, and any defects found must be reported to supervision without delay.
45. The standard system of signals must be employed, and such signals must be accepted from an appointed person only.
46. Gantry cranes must not approach within twenty feet of persons working near the wheel tracks, unless such persons are protected by adequate guards, or the structure of the building etc.
47. The Safe Working Load must never be exceeded. The load must be properly slung and must be lifted without snatching. Fouling of fixed structures during lifting must be avoided.
48. Crane drivers are responsible for seeing that the hook is unloaded and in the top position before leaving the crane unattended.
49. Normally loads must be hoisted and lowered vertically. For routine lifting operations, appropriate attachments (i.e. fixed eyebolts, bridles etc.) will be provided. In cases of special difficulty, the work must be carried out by a competent supervisor.
50. All lifting tackle used by Company employees must be approved by the Company.
51. Company owned tackle must be registered at the tackle store.
52. Chains and wire rope slings must be issued by the tackle store only, and must show the Safe Working Load. Unmarked equipment must not be used.

53. Tackle must be examined before use, and damaged tackle taken out of service immediately and returned to the tackle store. Recognisable danger signs include stretched links, undue wear, fraying, corrosion and pitting.
54. Slings and chains must never be shortened by the tying of knots, or by wrapping them around hooks.
55. All lifting tackle available for use by Company employees, must be presented for inspection by tackle store personnel at the required intervals. This equipment includes eyebolts, shackles, etc.
56. Standing directly under suspended loads is prohibited.

Lifting, pushing and handling

57. The utmost care must be taken to avoid strains when lifting, pushing and handling. Weights likely to be beyond the individual's capacity must not be moved. Assistance may be obtained if necessary.
58. The following are essential points in any lifting job:
 - a) Obtain a firm foothold, a proper hold, and a firm grip.
 - b) Keep the back straight.
 - c) Keep the chin in.
 - d) Keep the feet apart to give balance.
 - e) Keep the arms in to the body as far as possible.
 - f) Bend the legs and make use of the body weight.

These points apply to all operations involving bending or stooping. Backstrain is more often caused by poor muscular co-ordination than by the actual weight of the object to be handled.

59. Safety gloves must be worn to give protection from sharp edges, corners, splinters etc.
60. It is important to face the direction of travel and to look for obstructions and uneven surfaces.

Rail track and rolling stock

61. No material of any kind nor any obstruction may be placed within three feet of a railway track. When it is necessary to encroach beyond this limit temporarily for special reasons, including access for maintenance or other work near the track or on rolling stock, clear warning must be given using red flags by day and red signal lamps by night. These warning devices must be positioned on the tracks on both sides of the encroachment at least 30 yards away.
62. No persons other than the train crew may ride on locomotives or rolling stock except for locomotive maintenance purposes. Riding on coupling poles or buffers is forbidden to all persons.
63. The rail track must not be crossed between wagons unless there is a gap of at least 15 feet, and never between wagons in motion or to which an engine, capstan rope or other source of power is attached. Do not walk along rail tracks, unless the job requires it.
64. Extreme caution must be used when approaching and passing over level crossings - rail traffic has precedence at such crossings. When one wagon or more is being pushed, the shunter must precede it - his signals or instructions, or those of other members of the crew must be obeyed.
65. Drivers of locomotives and rail cranes must be over 18 years of age and holders of a Company license, issued by the superintendent, yard and services after training and testing as necessary.
66. Standard gauge rail cranes may only be worked by regular crane operators or other authorised persons appointed by the superintendent, yard and services.
67. Detailed rules for safe operation of locomotives and cranes and shunting wagons are provided to train crews in a separate handbook.

Vehicles

68. The term 'vehicle' applies to all mechanically propelled vehicles and mechanically drawn trailers.
69. Vehicles may be driven and operated only by persons over 18 years of age. Such persons must be trained and competent, and bearers of the appropriate Company driving certificate for the group of vehicle on Company business.

70. All loads must be secure, lashed if necessary, to avoid interference with the safe driving and operation of the vehicle. Projecting loads, with greater than 2 feet overhang, must carry a warning flag.
71. Riding in an insecure position on a vehicle is forbidden. The seats provided must be used and the authorised number of persons for a vehicle must not be exceeded.
72. Persons must not remain on a vehicle while it is being loaded or unloaded by a grab, mechanical shovel, or similar appliance if they are thereby endangered.
73. With the exception of certain authorised vehicles operating in well-lit plant areas and remaining within those areas, vehicles and bicycles must display appropriate lights and reflectors during the hours of darkness.
74. The works speed limit is 15 miles per hour.
75. Cautionary and mandatory road signs must be strictly observed.
76. Vehicles used on site must be in good operating order with respect to brakes, steering, lights, etc. It is the driver's responsibility to examine his vehicle before use and to report defects to supervision.
76. Only authorised vehicles may travel on public roads.
78. Vehicles must be used only for the job, and within the area, prescribed and not as a means of personal transport.
79. The tip buckets of dumpers must be securely fastened.

General

80. Equipment provided for accident prevention, or for first aid to the injured, must not be misused.
81. Unsafe conditions, dangerous practices or defective equipment must be reported to supervision without delay.
82. All accidents and injuries must be reported to supervision immediately.
83. Immediate treatment for all injuries, however slight, must be obtained at the first aid room or medical centre.

84. A qualified nurse and qualified first-aiders are on site at all times. In the case of serious injury, no attempt must be made to move the person until a first-aid man has examined him, unless the person's situation is dangerous.
85. Approved safety footwear, eye protection and safety helmet must be worn to protect against blows, falling objects and eye injury.
86. Ear muffs must be worn as a protection against noise in the blower house, when operating drilling rigs, and as directed by supervision.
87. Fire exits must be kept clear of obstructions at all times.
88. Whenever fire extinguishers are used, the matter must be reported to supervision, who will arrange for their replenishment.
89. Liquids or solids must not be stored in unlabelled, or wrongly labelled, containers.
90. An enclosure where are welding is in progress must not be entered unless the appropriate eye protection is worn. An exposed arc must not be looked at without such protection.
91. Main thoroughfares and clearly defined paths must be used, not short cuts.
92. Certain special rules apply to specific work presenting unusual potential hazards. Supervision is responsible for ensuring awareness of the dangers and for precise instructions designed to minimise these.
93. Young persons may possibly take risks through inexperience. They should be helped, sympathetically and tactfully.
94. Nothing must be done willfully and without reasonable cause that is likely to endanger any individual

Tidiness and cleanliness of place of work

95. A high standard of housekeeping must be maintained to ensure a high standard of health and safe working.
96. Spilt materials must be cleaned up immediately.
97. Storage bins and litter bins must be used.

98. Duties must be performed in a methodical and tidy manner. Where possible, cleaning up must be done as the work progresses, rather than leaving the total cleaning task to the end of the job or shift.
99. When cleaning up, and removing dust from walls, ledges, floors and machines, a method must be used which will not raise the dust so that it gets into the atmosphere. Possible methods include wet-sweeping, vacuum cleaning or hosing down.
100. All stairways, gangways and platforms must be kept clear of obstructions.
101. Maximum use must be made of all existing facilities to prevent the escape of dust and fume.
102. Defects in machinery or equipment giving rise to spillage, dust emissions, etc. must be reported to supervision immediately.

Personal tidiness and cleanliness

103. A high standard of personal tidiness and cleanliness is expected of all employees. The various facilities provided on site must be fully utilised.
104. Loose clothing, loose ties, unbuttoned sleeves etc. must not be worn because of the accident risk. Jewellery, particularly rings, should be removed before commencing work.
105. Overalls and other garments must not be worn unbuttoned because of the possibility of contaminating undergarments.
106. Clothes baskets and lockers must be kept clean and tidy and free from rubbish and old or contaminated or infected clothing.
107. Finger nails must be kept short and clean. Nail biting should be avoided.
108. Hair must be washed regularly. It should preferably be kept reasonably short, but if worn long must be styled and whilst at work worn in a net or snood to prevent accidents or the possibility of contamination.
109. Beards are not permitted. Moustaches must be tidily trimmed and may not extend beyond the corners of the mouth. Sideboards must be trimmed so as not to interfere with the respirator seal.

Personal protection

110. Protective clothing and equipment is provided by the Company to safeguard the safety and health of its employees. Such clothing and equipment must be worn.
111. All employees are provided with protective clothing and safety footwear. Such clothing must be put on after removal of personal clothing.
112. Personal clothing must be stored apart from protective clothing. Separate areas of the changeooms are designated for this purpose.
113. Protective clothing and footwear must be removed before going home and before going to the canteen. In the latter case, the overalls and slippers provided for wearing in the canteen must be worn.
114. Protective clothing must be washed weekly. It must be changed more frequently if its condition requires it.
115. In addition to protective clothing, special safety clothing (gloves, spats, armlets, aprons, etc.) is provided for specific jobs (slaggers, tappers etc.) and must be worn.
116. At the appropriate time of year, a warm coat is provided for wear over normal overalls. This coat must not be worn over personal clothing or canteen overalls. Personal clothing must not be worn outside protective clothing.
117. Respirators for protection against dust are provided to employees on a personal basis. Instructions on the correct method of wear are given at the time of first issue.
118. In all lead process areas, the respirator must be carried round the neck. Respirators must be worn on the face when dust or fume is observed in the working area, or when instructions to wear them are given by supervision or where special notices require it.
119. Dust respirators must be handed in at the end of the shift for cleaning and maintenance. Employees must make a habit of checking the condition of their own respirators.
120. Special respirators may be provided for work in particularly dusty conditions.
121. Dust respirators do not provide protection against toxic gases.

122. For work where toxic gas (e.g. carbon monoxide) may be present, air supplied respirators must be used. Arrangements for the supply of these will be made by supervision.

Washing and showering

123. Washing and showering facilities are provided in the changerooms.
124. Face, hands and arms must be washed before going to the canteen to eat.
125. All persons must wash face, neck, hands and arms before going home. Process and maintenance personnel working in lead risk areas should shower.

Eating, drinking and smoking

126. Eating or storage of food is not permitted in lead risk areas.
127. All food must be eaten in the canteen. Facilities are available in the canteen for storage.
128. Protective clothing and footwear must be removed, face and hands washed and canteen overalls and slippers worn before partaking of food.
129. Water is available from drinking fountains. Hot drinks are available from vending machines.
130. Personal supplies of drink are not permitted to be stored, prepared or drunk in recognised lead risk areas.
131. Hand washing facilities provided must be used before partaking of drink.
132. Smoking is not permitted anywhere on site except in the Smoking Room situated near the entrance to the canteen.

Ventilation of equipment and work areas

133. Ventilation equipment is provided at many places throughout the plant, workshops, etc. Unless shutdown for maintenance or cleaning purposes this equipment must be kept running whenever the working area is in use.

134. Good ventilation depends on all doors, covers, etc being closed or put back immediately the job for which they were opened or removed has been completed.
135. Defects in ventilation equipment must be reported to supervision immediately.
136. Certain work areas (control rooms, changerooms, etc) are supplied with filtered air as part of their overall ventilation system. The effectiveness of such systems depends on doors, air locks, etc being kept closed at all times, other than for access.
137. Only authorised personnel are permitted to enter control rooms, to minimise the ingress of dust and dirt.

Misuse of materials and equipment

138. Process chemicals (sodium carbonate, ammonium chloride, sodium etc) and solvents (paraffin, white spirit, etc) must be used only for those purposes for which they are supplied.
139. Only recognised cleaning compounds may be used for cleaning purposes.
140. Hands must be cleaned only with those soaps and compounds supplied for the purpose.
141. Containers supplied for use in process operations must not be used for drinking purposes.
142. Drinking water must only be taken from recognised drinking fountains or vending machines.
143. Town's water must be used for washing. TTE water must not be used for drinking or washing.
144. There must be no willful interference with equipment provided for removal of dust, fumes, gas or vapour.
145. Scrap material must be placed in waste bins provided. Disposal elsewhere could result in it getting into plant systems and causing considerable disruption to the process.

Medical aspects

146. Employees working on lead processes, or with cadmium or mercury, must undergo periodic medical examinations, including blood and urine tests. It is the employee's responsibility to attend such examinations at the required time.
147. These tests are carried out under the direction of the medical advisor in his capacity as appointed doctor under Regulations. He uses the results to regulate the employment of lead or cadmium process workers. The employee is advised of the results of his tests.
148. The medical adviser is available, by appointment, for consultation on other medical matters.

JA/LJR/Revision date 10 July 1995