

**CYANIDE USAGE HIF AUDIT - 17/06/2003 02:52:40 PM****1. CYANIDE MANAGEMENT SYSTEM**

<b>Point</b>	<b>Standard</b>	<b>Guideline</b>
1.1	A written system is in place which addresses safe management of cyanide on site.	Intent: To verify that a comprehensive system has been developed to comply with provisions of Duties of Employers, Section 9 of MSI Act 1994. Personnel: Senior and line managers. Method: View documentation eg Cyanide Procedures Manual.
1.2	A hazard assessment has been conducted in relation to the use etc of cyanide on the mine site.	Intent: To verify that a hazard assessment has been conducted in relation to the use etc of cyanide on the minesite. Personnel: Senior and line managers. Method: View documentation eg Hazard Identification.
1.3	Risk assessments of the identified hazards have been carried out.	Intent: To verify that a risk assessment has been conducted in relation to the use etc of cyanide on the minesite. Personnel: Senior and line managers. Method: View risk assessment documentation.
1.4	SWP's have been developed from the risk assessment.	Intent: To ensure compliance with Duties of Employers, Section 9 of MSI Act 1994. Personnel: Senior and line managers. Method: View documentation.
1.5	The elements of the cyanide management system are Viewed on a regular basis (at least annually) with employee input to the process.	Intent: To ensure that management system reflects current practices and requirements on site. Personnel: Senior and line managers. Method: View documents.
1.6	An emergency plan covering cyanide scenarios has been formulated and documented.	Intent: To ensure compliance with Reg. 4.30, MSIA Regulations 1995. Personnel: Senior and line managers. Method: View documentation.

**2. REFERENCE DOCUMENTS**

<b>Point</b>	<b>Standard</b>	<b>Guideline</b>
2.1	The following documents are available to personnel on site: Mines Safety and Inspection Act 1994 Mines Safety and Inspection Regulations 1995 Dangerous Goods Regulations 1992 Australian Standard 1715 Material Safety Data Sheet for each type of cyanide stored on site (liquid & solid) Manifest of dangerous goods stored at the premises.	Intent: To ensure that employees have access to the listed documents required for cyanide management. Personnel: Employees and management. Method: Check on availability of each document.

**3. INDUCTION OF EMPLOYEES**

Point	Standard	Guideline
3.1	All persons to be employed in an area on site using cyanide receive an induction containing specific information on avoiding the hazards associated with the storage and use of cyanide including: The site emergency plan Characteristics of cyanide The areas on site where cyanide is used and stored Symptoms and effects of cyanide poisoning Specific first aid requirements Hygiene requirements Personal protective equipment	Intent: To verify that all persons employed or accessing areas where cyanide is present receive an induction covering cyanide management issues. Personnel: Senior and line managers, employees. Method: View induction records and material, and interview personnel.

#### 4. STANDARD WORKING PROCEDURES

Point	Standard	Guideline
4.1	The cyanide management system has documented standard working procedures including: Description of tasks PPE to be used Identifying potential hazards Hazard reporting procedure Hazard control procedures Emergency procedures	Intent: To verify that the SWP's have been developed addressing the listed items where cyanide is involved in the work. Personnel: Senior and line managers. Method: View procedures for activities such as: cyanide storage, mixing, delivery and use in the plant, goldroom, maintenance of associated equipment and disposal.
4.2	Employees (staff and contract) are trained in each relevant working procedure prior to commencement of working in each capacity	Intent: To verify that persons employed on specific tasks have received training. Personnel: Line managers and employees. Method: View training records and interview employees.
4.3	Competency in work procedures is assessed and recorded during training.	Intent: To verify that competency is assessed and training is recorded. Personnel: Training officer and employees. Method: View training records and interview employees.
4.4	Refresher training of all personnel is conducted on a regular basis.	Intent: To verify that on going competency is assessed. Personnel: Training officer and employees. Method: View training records and interview employees.
4.5	Persons in supervisory positions are trained in each working procedure which relates to personnel under their authority.	Intent: To verify training of supervisors. Personnel: Training officer and employees. Method: View training records and interview employees.

#### 5. STORAGE AREA AND PROCESS PLANT

Point	Standard	Guideline
5.1	The site has a cyanide storage licence.	Intent: Compliance with Dangerous Goods Regulations 1992, Reg. 4.51. Personnel: Senior and line managers. Method: View cyanide storage licence.

5.2	An assessment of separation distances between bulk cyanide storage and other areas (including storage of other reagents) has been recorded and is up to date with the current storage situation.	Intent: Compliance with Dangerous Goods Regulations 1992, Reg. 4.51. Personnel: Senior and line managers. Method: View cyanide storage area and documentation.
5.3	Bulk storage areas are capable of retaining all spillage of cyanide within the premises.	Intent: Compliance with Dangerous Goods Regulations 1992, Reg. 4.50. Personnel: N/A. Method: View storage area.
5.4	A separation distance of at least 30 metres is maintained between bulk cyanide storage areas and acid/water and CO2 fire extinguishing equipment.	Intent: Compliance with DGR 1992, Reg. 4.52. Personnel: N/A. Method: Measure distances if required.
5.5	Bunded areas around bulk cyanide storage areas are constructed with an impervious material.	Intent: Compliance with DGR 1992 Reg. 4.53. Personnel: N/A. Method: Observation.
5.6	The area surrounding each bulk solid cyanide storage area is suitably sloped and drained to prevent the accumulation of water in the storage area.	Intent: Compliance with DGR 1992 Reg. 4.53. Personnel: N/A Method: Observation.
5.7	Each bulk cyanide storage area is located above ground level.	Intent: Compliance with DGR 1992 Reg. 4.53. Personnel: N/A Method: Observation.
5.8	All bulk cyanide storage areas are provided with adequate security in the form of lockable buildings (may be freight containers) and security fences, and all entrances are kept locked when not attended	Intent: Compliance with DGR 1992 Reg. 4.54. Personnel: N/A Method: Observation.
5.9	If a bulk solid cyanide storage area is within one kilometre of a town site, it has a roofed cover.	Intent: Compliance with DGR 1992 Reg. 4.55. Personnel: N/A Method: Check distance if necessary.
5.10	Where a building, or part of a building is used for the bulk storage of cyanide, the building is constructed of fire resistant materials with a fire rating of one hour.	Intent: Compliance with DGR 1992 Reg. 4.56. Personnel: Line manager. Method: Check building and plans if necessary. Seaintainers do comply.
5.11	Where a building, or part of a building is used for the bulk storage of cyanide, the openings in the building storage area are limited to access doorways and ventilation openings.	Intent: Compliance with DGR 1992 Reg. 4.56. Personnel: Line manager. Method: Check building and plans if necessary. Ensure there are no windows.
5.12	Each bulk liquid cyanide container has a free vent pipe which has the following attributes: It extends to the height of at least 4 metres above ground level Discharges at least 4 metres from any work access areas	Intent: Compliance with DGR 1992 Reg. 4.57. Personnel: Line manager. Method: Check tanks and measure if necessary.
5.13	Each bulk liquid cyanide container is fitted with an overflow pipe positioned 300mm below the top of the container which discharges at ground level and within the tank bund.	Intent: Compliance with DGR 1992 Reg. 4.58. Personnel: Line manager. Method: Check tanks and measure if necessary.
5.14	Each bulk liquid cyanide container has all discharge pipes connected to pump suction fitted with 2 valves in series and a bleed valve intervening the 2 valves and is located between the container and the pump.	Intent: Compliance with DGR 1992 Reg. 4.58. Personnel: Line manager. Method: Check valve arrangement.
5.15	Each bulk liquid cyanide container has a liquid level gauge which is clearly visible to the operator and is not in the form of a sight glass.	Intent: Compliance with DGR 1992 Reg. 4.58. Personnel: Line manager, employees. Method: Check each bulk container/tank. Check with employees.

5.16	Each outlet from a drain valve on each bulk liquid cyanide container is fitted with a blank flange.	Intent: Compliance with DGR 1992 Reg. 4.59. Personnel: Line manager. Method: Check each bulk container/tank.
5.17	Where bulk liquid cyanide containers are connected to the processing plant, a non-return valve is fitted to the discharge line to prevent any other liquids from entering the container.	Intent: Compliance with DGR 1992 Reg. 4.62. Personnel: Line manager. Method: Check each discharge line.
5.18	At each loading position for bulk cyanide containers the ground is graded so that any spillage from the delivery vehicle drains into a sump or containment area having the capacity at least equal to the capacity of the largest tank on the delivery vehicle.(Usually 20 tonne)	Intent: Compliance with DGR 1992 Reg. 4.63. Personnel: Line manager. Method: View assessment documentation, measure and calculate volume if necessary.
5.19	At each loading position for bulk cyanide containers written instructions as to the procedure to be adopted for transferring liquid cyanides are prominently and displayed and maintained in a legible state.	Intent: Compliance with DGR 1992 Reg. 4.64. Personnel: Line manager. Method: Check signage in delivery area.
5.20	Process pipes throughout the plant are identified with appropriate clear labelling.	Intent: Compliance with MSIA Regulations 1995, Reg. 7.26. Personnel: Line manager. Method: A visual inspection of pipe work is necessary.
5.21	Pipes carrying cyanide solutions are routed to maintain separation from incompatible materials and personnel work areas and travelling ways	Intent: Compliance with Section 9 of MSI Act 1994. Personnel: Line manager. Method: A visual inspection of pipe work is necessary.
5.22	Underground pipe work is installed with secondary containment.	Intent: Compliance with Section 9 of MSI Act 1994. Personnel: Line manager. Method: A visual inspection of pipe work is necessary.
5.23	Safety showers and eyewashes are installed in chemical delivery, storage, addition and mixing areas with attention to the following aspects: Proximity to areas where hazard exists Ease of access Sufficient volume of water Temperature of water delivered Identification light for night time and impaired vision Security of water supply (eg. cleanliness, continuity) A written checking and maintenance schedule.	Intent: Compliance with Section 9 of MSI Act 1994 and Reg. 4.24, MSIA Regulations 1995. Personnel: Line manager. Method: Examine each station.

## 6. EMERGENCY PROCEDURES

Point	Standard	Guideline
6.1	A regularly maintained oxyviva or equivalent resuscitator is available for the resuscitation of persons affected by cyanide	Intent: Compliance with Reg. 4.25, MSIA Regulations 1995. Personnel: Line manager. Method: Examine equipment at each location and check maintenance records and spare oxygen cylinder.
6.2	There is an emergency kit for treatment of cyanide poisoning.	Intent: Compliance with Cyanide Management guidelines DME publication. Personnel: Line manager. Method: Check emergency kit on site.

6.3	Emergency spillage procedures include: PPE required Persons to be informed of incident Clean up process, spillage containment and isolation of spill area Location of first aid supplies and emergency respiratory equipment.	Intent: To verify the content of the emergency procedure in the event of a cyanide spill. Personnel: Line managers and employees. Method: View documentation and interview personnel.
6.4	Competent emergency personnel are available at all times to effect emergency measures in the case of a cyanide spill or the generation of HCN gas.	Intent: Compliance with MSIA Regulations 1995, Reg. 4.30 (2) (c). Personnel: Line manager and emergency personnel. Method: View training records and personnel roster. Confirm by interview of emergency response personnel.
6.5	Competent first aid person is available at the mine at all times to administer first aid.	Intent: Compliance with MSIA Regulations 1995, Reg. 4.26. Personnel: Line manager and employees. Method: View records and interview personnel.
6.6	Emergency drills covering cyanide scenarios are held periodically according to a set scheme.	Intent: Best practice to ensure compliance with provisions of MSIA Regulation 1995, Reg. 4.30. Personnel: Line manager. Method: View documentation and interview personnel.

## 7. PERSONAL PROTECTIVE EQUIPMENT

Point	Standard	Guideline
7.1	Work procedures identify the required personal protective equipment.	Intent: To verify that PPE is specified in the procedures. Personnel: Line managers and employees. Method: View procedures. Examine storage areas and interview personnel.
7.2	B Class or equivalent respirators are available to personnel for use in areas likely to contain <100 ppm concentrations of HCN.	Intent: To verify compliance with AS 1715. Personnel: Line manager and employees. Method: Check type of respirator and filter type to ensure compatibility. Check filter type with table in AS1715.
7.3	Respirators issued to personnel are maintained and stored correctly.	Intent: To verify compliance with AS 1715. Personnel: Line manager and employees. Method: Examine storage areas and maintenance procedures, compare to standards set in AS1715, 7.6 & 7.8.
7.4	Filter replacement and condition of respirators in fixed locations is checked and recorded according to a written schedule.	Intent: To verify compliance with AS 1715. Personnel: Line manager and employees. Method: View records and procedures. Examine storage locations to ensure compliance with AS1715, 7.6.3.

## 8. HCN MONITORING

Point	Standard	Guideline
8.1	Calibrated HCN monitoring equipment is available on site at all times.	Intent: Compliance with Section 9 of MSI Act 1994. Personnel: Line manager. Method: Check operating conditions of monitoring equipment and calibration records. Refer to operating instructions for calibration schedule, or, check with supplier if in doubt.

8.2	HCN monitoring and recording procedures take into account the layout of the plant, the work duties of personnel and the risk of exposure to personnel.	Intent: Compliance with Section 9 of MSI Act 1994. Personnel: Line manager. Method: View procedures and interview personnel. Ensure that all areas of potential HCN exposure to employees are covered in monitoring procedures such as cyanide mixing area, delivery points, vibrating screens, aeration and agitation points, leach tanks, storage tanks, tails discharge hoppers, gold room, carbon regeneration, and the tailings dam.
8.3	Recording of HCN monitoring is done in a dedicated ventilation log book which is available to operators.	Intent: Compliance with MSIA Regulations 1995, Reg. 9.7. Personnel: Line manager and Ventilation Officer. Method: View Log Book.
8.4	HCN monitoring records are up to date and legible.	Intent: Compliance with MSIA Regulations 1995, Reg. 9.7. Personnel: Line manager and Ventilation Officer. Method: View Log Book.
8.5	Monitoring results exceeding exposure standards are reported to the Registered Manager.	Intent: Compliance with MSIA Regulations 1995, Regs. 9.5 & 9.6. Personnel: Registered manager, Ventilation Officer and employees. Method: Check records and interview personnel.