

***INTERNATIONAL CYANIDE
MANAGEMENT INSTITUTE***

***Cyanide Code Compliance Audit
Gold Mining Operations***

Summary Audit Report

***Harmony Gold Mines Limited
Central Gold Plant
South Africa***

15th – 19th February 2010



Name of Operation: Central Gold Plant
Name of Operation Owner: Harmony Gold Mines Limited
Name of Operation Operator: Harmony Gold Mines Limited
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Location detail and description of operation:

Central Plant is a Gold Plant located on the northern side of the town of Virginia in the Free State Province of South Africa. The plant was commissioned on the 21st October 1987. The plant process includes milling, thickening, leaching, adsorption, elution, carbon regeneration, and electrowinning. The plant is designed to mill and treat 180,000 tonnes per month and currently treats 160,000 tonnes per month.

The Plant uses two identical Polysius ball mills. Two thickeners are on-line whilst the third thickener is on stand-by. Lime and flocculent are added in the thickener in a solid/liquid separation (clarification) process and lime is added to control the pH at the leaching circuit.

Thickened material from the thickeners is pumped to the leaching vessels for the leaching process to take place. Cyanide and oxygen are added for the dissolution process to take place whilst activated carbon is added, moving counter-current to the pulp, whilst extracting gold from the pulp materials. Six carbon-in-leach vessels are on-line with a capacity of 2,000,000ℓ and seven carbon-in-pulp vessels are also on-line with a capacity of 380,000ℓ. Cyanide consumption is kept at 180 grams/tonne.

Loaded carbon from the leaching/adsorption circuit is pumped to the Elution Plant for acid washing, using Hydrochloric acid and subsequently pumped to the Elution process where gold is recovered into a solution form whilst the eluted carbon is regenerated at approximately 650 - 750° C. The pregnant solution (gold rich solution) is then pumped to the electrowinning process where gold is recovered at the cathodes attached to steel wool. Recovered gold is then dried at the oven at □ 150° C. Cyanide is added in the Elution column at 150kg/elution. Dried gold is then despatched to the Rand Refinery for further purification.

Auditor's Finding

This operation is

- in full compliance
- in substantial compliance *(see below)
- not in compliance

with the International Cyanide Management Code.

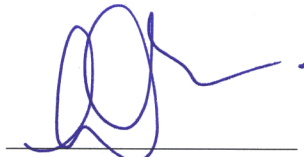
* The Corrective Action Plan to bring an operation in substantial compliance into full compliance must be enclosed with this Summary Audit Report. The plan must be fully implemented within one year of the date of this audit.

Audit Company: Eagle Environmental

Audit Team Leader: Arend Hoogervorst

E-mail: arend@eagleenv.co.za

Names and Signatures of Other Auditors:

Name : Dawid M. L Viljoen Signature  Date: 2/11/2010

Dates of Audit: 15th – 19th February 2010

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

Central Gold Plant

Facility


Signature of Lead Auditor

2/11/2010
Date

Central Gold Plant


Signature of Lead Auditor

2nd October 2010

Auditor's Findings

1. PRODUCTION: Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.

Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 1.1**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

There is a Harmony Group-wide, cyanide supply contract, covering all Harmony Gold Plants, in place with SASOL Polymers, as the sole supplier of liquid Sodium Cyanide, delivered by bulk tanker. This supply contract includes the Central Gold Plant. SASOL Polymers is a signatory to the Cyanide Code and was re-certified as a fully compliant Production Facility with the ICMI Cyanide Code on 2 March 2010.

2. TRANSPORTATION: Protect communities and the environment during cyanide transport.

Standard of Practice 2.1: Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 2.1**

 not in compliance with



Basis for this Finding/Deficiencies Identified:

There is a formal agreement memorandum between SASOL Infrachem SiLog and Central Gold Plant which covers the responsibilities and requirements for safety, security, unloading, emergency response (spills prevention and clean-up), route planning and risk assessments, community liaison, emergency response resource access and availability, training, and communication. SASOL Infrachem SiLog was re-certified on 13 January 2010 as a fully ICMI Code compliant transporter.

Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 2.2**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The agreement memorandum between SASOL Infrachem SiLog and Central Gold Plant requires that transporters be certified under the Code. SASOL Infrachem SiLog was re-certified on 13 January 2010 as a fully ICMI Code compliant transporter.

3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.

Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 3.1**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The plant is equipped with two offloading and storage facilities, as well as a redundant decommissioned and decontaminated flake cyanide storage and make up facility. However, operation uses only liquid cyanide, delivered by bulk tanker, and no mixing takes places on site. Detailed design drawings for the cyanide off-loading and storage area were sighted, along with satisfactory inspection reports by the cyanide manufacturer's technical officer. The structures were designed and located on concrete

and away from people and surface waters and built with materials appropriate for use with cyanide. Leach cyanide unloading takes place on a concrete area, designed to contain seepage and drain to the cyanide storage bund. The elution cyanide storage area is equipped with a concrete pad for offloading, draining to a sump, from which the solution is pumped to the reagent area bund. The Leach offloading and storage area is situated inside a concrete bund and the Elution storage situated over concrete bund area, lined with chemical resistant bricks. The concrete in both of the offloading areas is competent and no cracks were observed. Both storage areas are within the plant security area, which is securely fenced, and with access control at the main gate.

All cyanide storage tanks in both leach and elution are equipped with differential pressure level indicators. High level alarms (sounding at 85%) are installed, alarming at the offloading site and in the control room, as well as being interlocked with the offloading air supply. Procedures are in place for cyanide dilution activities to prevent cyanide freezing in pipes in winter. The dilution feed line is interlocked with the high level alarm, shutting the water valve at the 85% tank level.

Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

X in full compliance with

- The operation is**
- in substantial compliance with **Standard of Practice 3.2**
 - not in compliance with

Basis for this Finding/Deficiencies Identified:

Only liquid cyanide is used and is delivered via bulk tanker to both cyanide storage areas. The offloading procedure is detailed, spelling out PPE requirements, use of a buddy in the process, and clearly sequenced to prevent spillages and accidental releases during off-loading.

4. OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment.

Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment utilizing contingency planning and inspection and preventive maintenance procedures.

- in full compliance with

The operation is in substantial compliance with Standard of Practice 4.1

not in compliance with

Basis for this Finding/Deficiencies Identified:

The site has 92 cyanide specific operational and engineering procedures for normal, abnormal and emergency conditions, supported by TSF contractor safe working procedures for TSF activities and a mandatory Code of Practice covering TSF operation. Routine daily, weekly, monthly and quarterly inspection reports, legal inspections, and checklists were sampled to check the effectiveness of systems and ensure that proactive and reactive management takes place. The plant maintenance and inspection schedule includes preventative maintenance inspections on most cyanide critical equipment.

The plant has a Excel spreadsheet-based PMS (Planned Maintenance System) which was implemented July 2009. However, more operating history is needed to confirm the functioning and sustainability of the system. There are no risks to health, safety and the environment as appropriate inspections are in place. A Corrective Action Plan is in place to generate the necessary additional data and confirm the effectiveness of the system. The plant has shiftly, weekly and monthly inspections and quarterly technical inspections of the TSF facilities are undertaken to ensure integrity and safety. A change management procedure covering health, safety and environment is in place and change management exercises were sighted.

There is a probabilistic water balance in place, and no scenario has been identified where the need has been highlighted to shut down plant to prevent overtopping. Other cyanide-related emergencies which might involve closure are dealt with in terms of the emergency response procedure.

Standard of Practice 4.2: Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

X in full compliance with

The operation is in substantial compliance with Standard of Practice 4.2

not in compliance with

not subject to

Basis for this Finding/Deficiencies Identified:

The plant was designed and built 22 years ago with, at that stage, underground ore as the only feed. Currently, the feed includes underground ore, waste rock dump, and toll treatment sources. Monthly bottle roll tests are conducted and documented on the various feed sources and the results are used to adjust cyanide addition rates. Diagnostic leach (leachable gold) test are conducted monthly.

The plant uses a TAC cyanide measurement and control system, coupled to flow control valves controlling addition rates at the thickener underflow box, feeding the leach. A WAD 1000 analyser is installed and results are used to manually adjust cyanide control settings of the TAC, if the WAD cyanide increases above parameters in tailings

Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 4.3**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

A comprehensive, complex wide, probabilistic water balance is in place, which includes the TSF's used by Harmony's No 1, Central, and Saaiplaas Gold Plants. The output of the water balance is used to establish parameters and procedures to manage the TSF's and return water dams to prevent overtopping to the environment. The water balance assumes a water recovery factor from the TSF of 60%, which includes losses to evaporation, seepage, and interstitial water (at density of 1.44 t/m³). Rainfall is considered in the parameters (local rainfall data goes back to 1926) and the 1:50 year, 2 hour rainfall event is used in the assumptions. Dam freeboard level is calculated using 1:100 year storm event. A probabilistic water balance has also been developed for the plant.

Standard of Practice 4.4: Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 4.4**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

Weekly WAD cyanide results for TSF tip point from 21 April 2009 to Jan 2010 show with no exceedances of 50 ppm. The plant's on line WAD 1000 analyser was commissioned in July 2009 and is used to monitor the WAD cyanide levels leaving the plant. These results from July 2009 to 16 February 2010 show most values are below 40 ppm WAD with a maximum value of 55 ppm WAD cyanide on one occasion, due to cyanide control system maintenance. A "High cyanide levels in residue slime" procedure is in place which specifies the maximum WAD cyanide value to be pumped to dams to be 45 ppm. Return dam values show a maximum of 1.4ppm WAD cyanide over the period April 2009 to Jan 2010. Therefore no special measures are needed for the protection of wildlife and livestock.

The daily wildlife mortality inspections by the TSF contractors, inspections by environmental department and the plant staff did not show any bird or other wildlife mortalities, indicating that the 50ppm WAD CN is effective in preventing wildlife mortalities

Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 4.5**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The site has no direct discharges to surface water. The closest stream is 3 km away and no seepage could reach the stream.

Standard of Practice 4.6: Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 4.6**

 not in compliance with

Basis for this Finding/Deficiencies Identified

The TSF is equipped with under and toe drains and paddocks and cut off solution drains are installed. The return water dams are protected by cut off trenches. Lanes of trees are planted around the TSF to assist with dewatering of the area around the TSF. Boreholes are monitored and the mine uses the Department of of Water Affairs standard for groundwater which is 0.5ppm cyanide. No beneficial users of ground water exist, or are designated by the jurisdictional authorities. (The land surrounding the plant and TSF is mine property with no farming activities. Residents use potable water supplied by the local municipality.) Underground backfilling does not form a part of the plant's operations.

Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 4.7**

not in compliance with

Basis for this Finding/Deficiencies Identified:

All tanks are placed inside or over concrete surfaces and bunds. The leach cyanide tanks are placed on ring beams with a solid concrete layer below the ring beams, which serves as an impervious layer. The CIP tanks are placed over a bund, then on concrete bases. Slurry tank bases are rubber lined for protection against erosion due to the draft tubes. The elution primary and secondary tanks are placed on solid concrete bases and inside concrete bunds. In the absence of specific plans, this was verified by interview with an employee present during construction. All bunds are equipped with sumps and spillage pumps, returning spillage to the process. Cyanide tanks and pipelines are manufactured from materials compatible with cyanide and high pH conditions.

All pipes are routed over concrete and spillages are routed to either bunds or return water dams. Tanks are constructed of mild steel, cyanide pipelines are made of mild steel with welded flanges. Slurry lines are mild steel, flanged pipes, rubber lined and concrete lined. The leach feed pipe is constructed from nickel-chrome alloy and all other pipes are rubber lined as a measure to prevent pipe leaks. The cyanide line to the dosing point is equipped with secondary containment draining back to the cyanide storage bund. No pipelines cross streams or present a risk to surface water.

Standard of Practice 4.8: Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

X in full compliance with

The operation is

in substantial compliance with **Standard of Practice 4.8**

not in compliance with

Basis for this Finding/Deficiencies Identified:

No quality control/quality assurance records for the cyanide equipment were available. A plant repair and maintenance investigation report of July 2009 by a professional engineer which also covered structural and civil aspects of the whole plant, including the cyanide facilities concluded that, "...no areas could be identified where the concrete or structural steel are in immediate risk of failure, but if repair works are not done within the next 2 years, the integrity of the structure might become a risk". By the time of the audit, all the appropriate repair work had been completed. Annual TSF engineering audit reports concluded that the dams are generally in good condition with no visible signs of instability.

Standard of Practice 4.9: Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.

X in full compliance with

- The operation is** in substantial compliance with **Standard of Practice 4.9**
- not in compliance with

Basis for this Finding/Deficiencies Identified:

Procedures for environmental monitoring (including sample preservation and chain of custody procedures) of surface water and borehole water, developed by a competent person, were sighted and checked. There are no discharges to surface water but boreholes are in place up and down stream of the plant. Surface and borehole sampling is done bi-weekly and wildlife is monitored daily on the TSF for any mortalities and the Mine Environmental Department monitors for wildlife mortalities on a weekly basis.

5. DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities

Standard of Practice 5.1: Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

X in full compliance with

- The operation is** in substantial compliance with **Standard of Practice 5.1**
- not in compliance with

Basis for this Finding/Deficiencies Identified:

A Decommissioning procedure and decommissioning plan for Harmony Central Plant, including the sequence and the scheduling of decommissioning, is in place. The decommissioning plan is reviewed annually.

Standard of Practice 5.2: Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

X in full compliance with

- The operation is** in substantial compliance with **Standard of Practice 5.2**
- not in compliance with



Basis for this Finding/Deficiencies Identified:

The mine closure costs include specific line item funds for cyanide decommissioning. Closure cost estimates are updated on an annual basis as per legal requirement. A rust Fund guarantee, in terms of legal requirements, to cover closure costs (including cyanide decommissioning), is in place and the currency thereof was verified.

6. WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.

Standard of Practice 6.1: Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce or control them.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 6.1**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The site has 92 cyanide specific operational and engineering procedures for normal, abnormal and emergency conditions, supported by TSF contractor safe working procedures for TSF activities and a mandatory Code of Practice covering TSF operation. Routine daily, weekly, monthly and quarterly inspection reports, legal inspections, and checklists were sampled to check the effectiveness of systems and ensure that proactive and reactive management takes place. The plant maintenance and inspection schedule includes preventative maintenance inspections on most cyanide critical equipment. The plant has shiftly, weekly and monthly inspections and quarterly technical inspections of the TSF facilities are undertaken to ensure integrity and safety. A change management procedure covering health, safety and environment is in place and change management exercises were sighted.

Risk assessment workshops include all people involved in the specific job as well as the workplace Safety Representative. Planned Task Observations allow for comments by the person being observed. Monthly health and safety meetings held where issues are discussed and daily and weekly cyanide and safety meetings contain an agenda item for general safety.

Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 6.2**



not in compliance with

Basis for this Finding/Deficiencies Identified:

Current pH settings control at 10.5 which is the standard pH used for non-saline Witwatersrand ores. Presently, pH is controlled by lime addition to the thickener distribution tower. Lime addition is controlled via pH measurement in the TAC at no 1 Leach tank. Low pH alarms on the SCADA. Lime addition to increase the pH is done manually in the case of low level alarms. Manual pH readings are taken every shift to check automatic meter readings. A low pH level response Procedure is in place with an emergency trigger at 9.8.

The plant uses 7 PAC 7000 personal HCN gas monitors and fixed monitors are used at the elution area (2), the cyanide dosing point, and leach tank 1. Fixed monitor calibration records were sighted but the portable units are new and not yet due for calibration.

On-going inspections and checks are also used to monitor and check facilities and emergency response equipment functioning. Safety equipment such as safety showers, low pressure eye wash stations, and fire extinguishers are numerous and adequately signposted.

The plant uses pipe colour coding and stickers are used to identify cyanide lines and direction flow, including slurry lines containing cyanide. Eating and drinking is only allowed in dedicated areas and this is trained and reinforced during annual induction of contractors and plant staff. Formal employee interviews were used to check awareness and sensitivity to health and safety measures and the response from employees and contractors alike, was found to be appropriate and acceptable. Accident and incident reporting and investigation procedures, based upon the site safety reporting requirements, were found to be in place and effective.

Standard of Practice 6.3: Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 6.3**

not in compliance with

Basis for this Finding/Deficiencies Identified:

Cyanide antidote is kept in fridges at the cyanide main storage, first aid room, and elution storage (oxygen and Tripac). Alarms and UPSs are installed on fridges to ensure the Tripacs are stored as per manufacturers directions. The elution offloading is area equipped with an emergency container with cyanide emergency equipment. A cyanide emergency trailer is fully equipped and available for in and out of the plant. Communication is by radio and telephone to communicate emergencies.

Plant employees working with cyanide receive the basic cyanide first aid training and the staff working closest to the alarm reacts to the alarm. An Emergency Response Team

responds to cyanide emergencies. Emergency exercises are conducted 6 monthly from plant to the hospital.

The Harmony Ernest Oppenheimer Mine Hospital was confirmed to be able to treat cyanide emergencies and Hospital staff is given cyanide awareness training by the Harmony No 1 Plant training department annually. Netcare 911 is the contracted ambulance undertaking patient transport.

7. EMERGENCY RESPONSE *Protect communities and the environment through the development of emergency response strategies and capabilities.*

Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 7.1**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The plant has used a risk assessment to develop site-specific emergency scenarios and responses for its emergency response plan. The emergency preparedness plan combines existing procedural responses and emergency provisions to deal with the various scenarios and includes and identifies the emergency response team and coordinators who are on all shifts. These preparations are regularly reviewed in the light of changes, mock drill learning points and employee feedback.

Standard of Practice 7.2: Involve site personnel and stakeholders in the planning process.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 7.2**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

The Workforce is involved using safety meetings, training, mock drills, and through risk assessments, where workplace safety representatives are involved. This involvement was confirmed during employee interviews. The community is not directly involved in the Plan but is informed on its contents during dialogue sessions. Drills are used to involve hospital and ambulance staff in planning processes.

Standard of Practice 7.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 7.3**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The Emergency Preparedness Plan details clear duties, roles and responsibilities for the various emergency scenarios. The emergency equipment inventory was checked and site inspections confirmed availability and readiness. The Plan includes contact references (telephone, cell phone, etc) of internal and external resources for the various scenarios, particularly with detail where external resources and skills might be needed. Periodic drills involving internal and external stakeholders ensure that roles and responsibilities are understood and clearly implemented.

Standard of Practice 7.4: Develop procedures for internal and external emergency notification and reporting.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 7.4**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The Emergency Preparedness Plan includes details for appropriate emergency notification and reporting (internal and external) and the call-out procedure and contact information lists which are updated regularly. Media communication is dealt with in the Plan.

Standard of Practice 7.5: Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 7.5**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

The Emergency Preparedness Plan cross-references to detailed and specialised procedures which cover clean-up and remediation relating to releases, pipeline failures and spills, as appropriate to the site-specific identified scenarios. Use of neutralization processes and materials is clearly covered, as is disposal of contaminated materials and the use of treatment chemicals such as ferrous sulphate in surface water is prohibited.

Standard of Practice 7.6: Periodically evaluate response procedures and capabilities and revise them as needed.

X in full compliance with

- The operation is**
- in substantial compliance with **Standard of Practice 7.6**
 - not in compliance with

Basis for this Finding/Deficiencies Identified:

The Plan is required to be reviewed annually, following incidents and emergency drills or when new information regarding cyanide becomes available. The report of a drill which included a cyanide spill and cyanide related injury was sighted. Evidence was sighted of learning points emerging from the various cyanide man-down drills.

8. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.

X in full compliance with

- The operation is**
- in substantial compliance with **Standard of Practice 8.1**
 - not in compliance with

Basis for this Finding/Deficiencies Identified:

All plant personnel inside the plant fence (including security) are trained in basic cyanide awareness. Modules include cyanide basic training using a 15 minute supportive video. This was confirmed during interviews with staff. Refresher training is done annually, based on schedules using training shift system (also used for routine update training), and the use of a matrix with a flagging system to ensure all staff is covered. Written tests are conducted. Selected employees were checked in interviews on their understanding of cyanide hazards, first aid and emergency response and this was further verified through checking of their training records.

Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

in full compliance with

The operation is in substantial compliance with Standard of Practice 8.2

not in compliance with

Basis for this Finding/Deficiencies Identified:

The whole training system within the Harmony Group was changed from a historically less formal training structure to a formally structured well planned system, referencing to national unit standards relating to Metallurgy. The new training system was implemented and is in the process of training the staff on the revised standards and procedures, which are ICMI code compliant. Implementation is in the early stages and training on critical cyanide related tasks need to be verified for full compliance. There is no immediate risk to health, safety or environment as the existing on the job training ensures cyanide competency. A corrective action plan has been developed to achieve the above within 8 months. All Trainers are trained and registered as Assessors and the Harmony Metallurgy training establishment is formally ISO 9001 accredited. A Plant specific Planned Task Observation (PTO) system is in place. Records are retained for 40 years on plant, after which the records are sent to a central archive.

Standard of Practice 8.3: Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

X in full compliance with

The operation is in substantial compliance with Standard of Practice 8.3

not in compliance with

Basis for this Finding/Deficiencies Identified:

The Training matrix specifies training for the emergency response team, unloading, production, and maintenance personnel in the procedure to follow if cyanide is released. The plant has a dedicated emergency response team per shift, and the shift workers are trained in the response in case of any cyanide release / spillage. Cyanide section staff are currently trained in cyanide releases using emergency drills.

The whole training system within the Harmony Group was changed from a historically less formal training structure to a formally structured well planned system, referencing to national unit standards relating to Metallurgy. The new training system was implemented and is in the process of training the staff on the revised standards and procedures, which are ICMI code compliant. Implementation is in the early stages and training on critical

cyanide related tasks need to be verified for full compliance. A corrective action plan has been developed to achieve the above within 8 months. Periodic mock drills are undertaken and training personnel attend these drills and formally evaluate response and performance.

9. DIALOGUE: Engage in public consultation and disclosure.

Standard of Practice 9.1: Provide stakeholders the opportunity to communicate issues of concern.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 9.1**
 not in compliance with

Basis for this Finding/Deficiencies Identified:

A Harmony common community communication file (with both Harmony common and site specific contents) forms the basis of communications at meetings. Evaluation forms to measure the response to the meeting are used and indicate a positive response. Meetings have been held with cattle owners, council members, at the local village, and at local schools. The opportunity to raise concerns was given during the meetings and questions from the presentations included topics such as “Voelpan”(the colloquial name for a water body), waste dump cyanide contents, and dust blowing. Schools requested presentations after the general meetings which were given. General meeting materials of June 2009 (presented to local authorities, emergency services, councillors, farmers, and co-operatives) and August 2009 follow up meetings were sighted. SASOL, the cyanide producer, was also present at the meetings. Issues raised include:- “cyanide in return water dams”, “availability of cyanide information on website”, and “Is cyanide pumped into reservoir?”. Appreciation by attendees was expressed on the information presented and a request for regular meetings was made. A communication register is placed in the plant control room to record feedback and complaints. Key Plant Contact numbers were distributed during all stakeholder meetings.

Standard of Practice 9.2: Initiate dialogue describing cyanide management procedures and responsively address identified concerns.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 9.2**
 not in compliance with



Basis for this Finding/Deficiencies Identified:

A Harmony common community communication file (with both Harmony common and site specific contents) forms the basis of communications at meetings. Evaluation forms to measure the response to the meeting are used and indicate a positive response. Meetings have been held with cattle owners, council members, at the local village, and at local schools. The opportunity to raise concerns was given during the meetings and questions from the presentations included topics such as “Voelpan”(the colloquial name for a water body), waste dump cyanide contents, and dust blowing. Schools requested presentations after the general meetings which were given. General meeting materials of June 2009 (presented to local authorities, emergency services, councillors, farmers, and co-operatives) and August 2009 follow up meetings were sighted. SASOL, the cyanide producer, was also present at the meetings. Issues raised include cyanide in return water dams, availability of cyanide information on website, and Is cyanide pumped into reservoir. Appreciation by attendees was expressed on the information presented and a request for regular meetings was made. A communication register is placed in the plant control room to record feedback and complaints. Key Plant Contact numbers were distributed during all stakeholder meetings.

Standard of Practice 9.3: Make appropriate operational and environmental information regarding cyanide available to stakeholders.

X in full compliance with

The operation is in substantial compliance with **Standard of Practice 9.3**

 not in compliance with

Basis for this Finding/Deficiencies Identified:

Posters are used to communicate cyanide issues and fliers have also been developed which explain cyanide and its uses. Owing to literacy problems, most of the cyanide presentations have to be given verbally in the predominant local languages of Sotho and Xhosa. Copies of presentations were made available to stakeholders who requested them. Reporting on incidents has not been done because there have been no incidents. Injuries must be reported to the Department of Minerals Resources who do not necessarily make the information publically available. Similarly, spills and releases must be reported to the Department of Water Affairs and Environment. Transport related incidents and reported by Sasol Infrachem, the transporter, through their own reporting mechanisms. Annual reports do not include details on cyanide incidents. However, in a letter from the executive: environmental management of the Harmony Gold Mining Company to the ICMI Lead Auditor, it was stated that the Harmony Group communication on cyanide-related significant incidents will be included in its public website, as well as the annual report, should they occur.

