

***INTERNATIONAL CYANIDE
MANAGEMENT INSTITUTE***

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

***Summary Recertification
Audit Report***

***Harmony Gold Mines Limited
Evander Kinross Gold Plant
South Africa***

26th – 30th August 2013



Name of Operation: Evander Gold Mine

Name of Operation Owner: Evander Gold Mining (Pty) Limited, formerly Harmony Gold Mines Limited

Name of Operation Operator: Evander Gold Mining (Pty) Limited, formerly Harmony Gold Mines Limited

Name of Responsible Manager: Thabang Masuku
Metallurgical and Surface Source Manager

Address: Private Bag X1012, Evander, 2280

State/Province Mpumalanga

Country: South Africa

Telephone: +27 (0)17 620 1754

Fax: +27 (0)86 573 2217

E-Mail: Thabang.Masuku@Emines.co.za

Location detail and description of operation:

The Kinross Plant is situated in the town of Evander, in Mpumalanga Province, South Africa, approximately 134 km east of Johannesburg. The plant treats ore from Evander No.7 and Evander No. 8 Shafts, including various surface sources.

There are six SAG mills operating in closed circuit with a hydro cyclone. A portion of the cyclone underflow is directed to Knelson centrifugal concentrators for the recovery of free gold. There is one Knelson Concentrator for every two milling units. Due to the mining output limitation, only three mills are planned to be on line for the current financial year. Gravity concentrate is sent to the smelt house where it is tabled to a concentration of 60% gold sludge as the final gravity product. The milled product is nominally 80% passing 75 microns. The mill section is non-cyanide exposed as it utilises non contaminated underground water for dilution and gland service water.

The cyclone overflow is directed, via linear screens, to five thickeners (of which two are utilised for the current throughput). The thickened pulp is transferred to the leach, CIP/CIL, circuit via a surge tank into which liquid sodium cyanide is added. The leach configuration is based on one surge tank, two leach tanks, four CIL tanks and seven leach tanks. Eight of the fourteen flat bottomed tanks are air agitated and six are mechanically agitated. Oxygen is injected into the first

mechanically agitated leach tank. The tailings from the leach train proceed to the CIP circuit, consisting of six flat bottomed, mechanically agitated, vessels. Virgin and regenerated carbon is added to the last tank of the CIP circuit and is transferred up the train to the first vessel. The reduced throughput from mining output limitation warranted short circuiting the leach tanks to running with four CIL with the tailing proceeding to CIP. The partially loaded carbon is transferred to the last vessel in the CIL train, prior to being moved to the head of the CIL. Loaded carbon is screened and forwarded to ZADRA elution in two columns and associated electro winning cells. Eluted carbon is regenerated via a Rotary Kiln before being acid treated. The cathodes are cleaned and the gold sludge filtered and dried, prior to being transported to Rand Refinery.



Auditor's Finding

This operation is

X in full compliance

in substantial compliance *(see below)

not in compliance

with the International Cyanide Management Code.

This operation has not experienced compliance problems during the previous three year audit cycle.

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: 30/9/2014

Dates of Audit: 26th – 30th August 2013

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.

Evander Gold Mine

Facility


Signature of Lead Auditor


Date

Evander Gold Mine


Signature of Lead Auditor

29th September 2014

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 Evander Kinross 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 and again, on 7th May 2013.

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:

A Group-wide cyanide supply contract covering all Harmony Gold Plants (including Evander Kinross) is in place with Sasol Polymers as the sole supplier of liquid Sodium Cyanide. Sasol Polymers is also responsible for the transport of cyanide solely using

Tanker Services, who started transporting Sasol Polymers-produced cyanide from July 2011. Tanker Services became a certified ICMI transporter on 13 December 2011. A Memorandum of Agreement (MOA) for the offloading of liquid sodium cyanide in terms of SANS 10231:2006 and the South African Road Traffic Act between Tanker Services Specialised Products Division and Harmony Gold Mining Company is in place. The supply contract and MOA cover 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.

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 Group wide cyanide supply contract covering all Harmony Gold Plants (including Evander Kinross) in place with Sasol Polymers as the sole supplier of liquid Sodium Cyanide requires cyanide to be supplied by road tankers and the seller as well as the transporter will be ICMI Compliant over and above national regulations. Offloading is covered by a Memorandum of Agreement (MOA) for the offloading of dangerous goods between Tanker Services Specialised Product Division and Harmony Gold Mines Evander Kinross Gold Plant. The supply contract and MOA cover 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.

Evander Kinross received cyanide transported by Sasol Infrachem, an in-house, fully ICMI transport certified, Sasol chemical transporter, until June 2011, after which Tanker Services took over. Tanker Services was as signatory but only became certified in December 2011.

There was a break in deliveries of cyanide to site by an ICMI certified cyanide transporter between July and December 2011. The auditors deem the break to be acceptable for Mine Code compliance purposes for the following reasons:-

- 1) The change of transporters was beyond the control of the mines,
- 2) There was only one ICMI certified transporter and one ICMI certified liquid cyanide supplier in South Africa and the mines were bound to the producer/transporter conditions,
- 3) Finding a replacement/alternate supplier/transporter in the short term was not feasible because the mines can only handle liquid cyanide on site and do not have the facilities to mix their own cyanide from briquettes,



4) the mines applied pressure upon the supplier to organise ICMI certification for the replacement transporter as soon as possible,

5) The interim cyanide risk was minimal because the new transporter took over all of the transporter resources of ICMI transport certified SiLog (dedicated bulk cyanide liquid tankers, trained and experienced owner-drivers and contract drivers, assessed route risk assessments, cyanide documentation and systems) and was, and still is, covered in terms of Sasol's Product Stewardship and Responsible Care policies by the Sasol cyanide emergency response system (24 hour emergency control room, network of cyanide trained, emergency response spill and medical response service providers), dedicated cyanide tanker storage area and cyanide tanker decontamination facilities.

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 operation uses only liquid cyanide, delivered by bulk tanker, and no mixing takes place on site. The old offloading facility was replaced by a new facility and design drawings for cyanide off-loading and storage 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, away from incompatible materials, and built with materials appropriate for use with cyanide and high pH conditions. The tanker unloading slab is sloped and drains back into the cyanide storage bund area. The cyanide storage tanks, which are located inside concrete bunded areas, have ultrasonic level detectors which alarm on the SCADA control system in the control room at 80% of actual capacity. The cyanide storage is located in a fenced plant area with access control and inside a fenced area with gates locked.

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 which is delivered via bulk tanker to storage tanks. The offloading procedure is detailed, spelling out PPE requirements, use of a buddy in the process, and is 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.

X 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 78 cyanide procedures in place covering plant operational and engineering activities. These are supported by the Evander Mine Tailings Dams Mandatory Code of Practice (COP) for Mine Residue Deposits, and 20 Fraser Alexander Tailings (FAT) procedures for TSF (Tailings Storage Facility) operations and 3 FAT Safety, Health, Environment and Quality (SHEQ) procedures. Routine daily, weekly, monthly, quarterly and annual inspection reports, legal inspections, and checklists were sampled covering the three year certification period 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 cyanide critical equipment using a Planned Maintenance System (PMS) called the DMS 2000 system. The low strength cyanide facilities are covered by a basic maintenance system requiring weekly inspections of pumps and tanks. Quarterly technical inspections with consultants of the TSF facilities are undertaken to ensure integrity and safety in addition to the monthly TSF inspections involving the site staff and TSF contractors. A change management procedure covering health, safety and environment is in place and operational.

There is a probabilistic water balance in place, and no scenario has been identified where the need has been highlighted to shut down the plant to prevent overtopping as the plant

operates in a water deficit situation. There is no need for emergency power to prevent cyanide releases as all solutions and slurries require pumping. Tailings Storage Dams are operated with excessive freeboard to cater for rainstorms, depending on pool level requirements from the stability analyses and Piezometer readings. Thus, similarly, no emergency power is required. All spillages will be contained in bunded areas when power trips occur.

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:

A Report entitled, "Optimization of cyanide consumption at Kinross gold plant" dated 16 October 2012 is in place and being utilised and covers the use of oxygen and the impact of the new TAC 1000 cyanide addition control system. The conclusions in the reports include that, "...The project has achieved its aim of reducing cyanide consumption as the results show low cyanide consumption and low WAD analyser results. The cyanide consumption improved by 20% while WAD analyser results improved by 11%..."

Bottle roll test files for 2011, 2012 and 2013 were reviewed covering the two sources: underground and surface. Cyanide and lime consumption is recorded as well as recoveries. Bottle roll tests are conducted every week on composites monitoring the characteristics of the two sources. Further studies on controlling metallurgical parameters for optimum gold leaching at Kinross plant, using supervised students to conduct the tests are underway as part of the optimisation program.

Cyanide control strategies considered include on line cyanide control to leach, and split cyanide addition to the leach. However, tests were conducted and no significant benefit was found. Replacement of the outdated TAC 2000 with a TAC 1000 was considered to improve control. The TAC1000 free cyanide addition controller, as well as WAD 1000 on line WAD cyanide analyser is in place and used for cyanide control and WAD cyanide monitoring.

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 spreadsheet-based probabilistic water balance (PWB) for the TSF and for the plant is in place. Information is included on rainfall, storm events, and solution deposition. Rainfall data is collected daily on the TSF. An evaporation database from 1988 to 2013 from the South African Weather Bureau is used in the PWB model. The phreatic levels are used to determine the dam stability and together with the evaluation of the precipitation events, pool level and freeboard management and parameters are set. TSF inspections are done monthly and include measurement of pool levels and freeboard. Return water dams, plant surge and toe dams are inspected weekly by the environmental department.

In a scenario of power outages, the design rainfall can be contained in the TSF pool by increasing penstock rings. The toe dam is equipped with emergency power to maintain the required freeboard, and toe dam pumps are a stock item in the store.

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:

The plant measures for WAD cyanide in the residue tank at the plant, using an on-line WAD 1000 analyser. Results for the three years since certification showed no value exceeded 50 mg/l WAD cyanide. As the compliance point for the WAD cyanide is the tailings tank, it logically follows that the open waters, consisting of the TSF supernatant pool and the return dam, should be less than 50 mg/l WAD cyanide. Thus no special measures are needed for the protection of wildlife and livestock. Daily wildlife mortality inspections are conducted on the TSF and no dead birds have been recorded since certification.

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:

No licensed discharge of mine water to surface water is permitted. There is no mixing zone as no discharge to surface water from any cyanide facility occurs. The Mine, however, samples the adjacent Groot Spruit (stream) up and down stream of mine operation. No samples exceeded 0.022mg/l free cyanide during a review of the data base for 2011, 2012, 2013, with data all showing less than 0.01 mg/l free cyanide.

No cyanide containing seepage from the Kariba dam to Groot Spruit was detected and French drains and boreholes are in place to detect any seepage that might occur. Results have not showed any presence of WAD cyanide above the limit of detection of 0.02 mg/l for the last three years since certification. Monitoring of the surface water stream has not shown any cyanide levels above detection limits.

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

No beneficial uses of groundwater were identified and no borehole water is used on mining property. Boreholes are in place below the TSF. The Kinross TSF is situated on a clay layer and the dam is equipped with under drains collecting the water to the return water dams. Seepage from the return water dams occurs at the Kariba facility and weirs and French drains are installed to return any seepage water to the Kariba dam.

No jurisdictional standard exists for cyanide in groundwater, and no beneficial use compliance points have been established. Monitoring boreholes around the TSF are in place and monitored for WAD cyanide and all results show <0.01 ppm WAD cyanide since certification.

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:

The plant's leach, CIP, and residue tanks are placed inside bunds. Based upon knowledge of engineering and construction practice when the plant was built 40 years ago, it can be

concluded that the tank bases are all solid concrete. Ring beams were not used in South Africa during this time. The new reagent strength cyanide tanks are placed on a solid concrete foundation inside a concrete bund.

Bunds for cyanide unloading, storage, mixing and process tanks sized to hold a volume greater than that of the largest tank within the containment and any piping draining back to the tank, and with additional capacity for the design storm event.

Leach areas are linked to a holding tank which is equipped with a pump returning the spillage to leach tanks. Residue and CIP bund areas are equipped with spindle pumps returning spillage back to the process. Drains will take any overflow of the bund area to the emergency spillage dam outside the fence from where spillage can be returned to the plant via the linear screen. The new cyanide facility is equipped with a bund, sump and pump system with spillage currently pumped to the leach, only in the case of storm water. A line to enable pumping the bund spillage back to the cyanide storage tank is in place.

Plant pipes are installed over bunds, concrete and tar surfaces, linked to spillage containment dams. The tailings lines in the plant are placed inside a trench. Reagent strength cyanide dosing pipes are equipped with secondary containment. The Kinross tailings pipeline is close to the TSF and placed inside a spillage trench where it runs along the public road. There are no areas where cyanide pipelines present a risk to surface water or have special protection needs. The ring main pipe is placed inside the dam paddocks to contain spillages. The TSF pipe lines are inspected daily. Cyanide tanks and pipelines are manufactured from materials compatible with cyanide and high pH conditions.

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:

In the original certification audit, no Quality Control/Quality Assurance documentation was available as the plant was 40 years old. A Professional Engineer's visual inspection of the cyanide facilities, including the reagent strength cyanide storage, confirmed "Fit for Purpose", provided regular inspections were undertaken and the new cyanide plant erected as soon as possible. A new cyanide facility was constructed and commissioned during February 2012. Quality Control and Quality Assurance was done on all the steel work including the tanks and pipes. A cyanide storage visual inspection report by a professional engineer concluded that the facility was built to be fit for purpose.

Thickness testing on CIL and CIP tanks was conducted and frequency will be refined using historical data. Operational inspections include monthly inspections and the Safety Department inspections are also conducted monthly.

A visual structural inspection by a structural engineer produced a report including findings and recommendations for action which classified and prioritised work required to be done in 1 month, 3 months, 1 year, 3 years and as necessary based on risk assessments. All work under the priority one and three month category has been completed. Longer term plans and budgets are being developed to provide for funding to complete the required maintenance as in the report. An action plan is in place to implement recommendations.

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 developed by a competent person for environmental monitoring (including sample preservation and chain of custody procedures) of surface water and borehole water, were sighted and checked. Sampling conditions (e.g. weather, livestock, /wildlife activity, anthropogenic influences, etc.) are documented in the sample sheet. There are no discharges to surface water but boreholes are in place up and down stream of the plant and located on a sample location map to monitor water quality. Borehole sampling is done six monthly, Groot Spruit (stream) sampling is done monthly, water dams are sampled monthly, and wildlife is monitored daily on the TSF for any mortalities, and the Environmental Department also monitors wildlife independently on a daily basis. No cyanide related mortalities have been recorded. Considering the consistency of the historical downstream borehole results coupled with the slow movement of ground water, sampling frequencies were deemed adequate to characterise the medium monitored.

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 for Kinross Evander plant is in place which includes an implementation schedule for decommissioning activities. The decommissioning procedure 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 closure cost assessment for Harmony Gold Mining Company Kinross Plant dated 2 June 2013 was reviewed and a cost estimate for cyanide decontamination of R600 000 noted as a line item in the closure cost assessment. The decommissioning plan procedure including costing requires annual review and a review following significant operational changes. In addition, a review by external consultants is conducted every 2 years. The Harmony Gold Environmental Trust Fund financial statement for the year ending 30 June 2011 and the Pan African Resources - Evander Gold Mines Financial Provision Review August 2013 were sighted. These instruments are established by legal requirement in terms of the Minerals and Petroleum Resources Development Act.

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 78 cyanide procedures in place covering plant operational and engineering activities. These are supported by the Evander Mine Tailings Dams Mandatory Code of Practice (COP) for Mine Residue Deposits, and 20 Fraser Alexander Tailings (FAT) procedures for TSF (Tailings Storage Facility) operations and 3 FAT Safety, Health, Environment and Quality (SHEQ) procedures. FAT involve their personnel in the development of safety and health procedures during safety and communications meetings

as well as during training. Routine daily, weekly, monthly, quarterly and annual inspection reports, legal inspections, and checklists were sampled covering the three year certification period to check the effectiveness of systems and ensure that proactive and reactive management takes place. All procedures include specific requirements for PPE and procedure-specific, pre-work inspections, where appropriate. A change management procedure covering health, safety and environment is in place and operational and is signed off by safety and environmental officials.

Plant personnel are involved in site risk assessments. The Standard Operating Procedures were revised and included input from the Chemical Off-loader on the Cyanide Offloading procedure. Weekly Safety meetings are held on Thursdays and include discussions on safety and health procedure as well as cyanide items. Daily safety meetings provide the opportunity for workers to give input regarding health and safety procedures.

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:

The plant pH is controlled in the thickener at 10.5, in the leach between 10.7 (head) and 10.4 (tails), CIP 10.4 (head) and 10.2 (Tail) and documented in the parameter sheet in the control room. A procedure called “Response To Low pH Level”, details pH parameters and response actions are described. Witwatersrand ores are normally treated for gold leaching at pH of 10.5 minimum, to prevent HCN formation.

In the plant, two portable personal monitors are used and one fixed monitor is located at the cyanide storage area and one at leach tank no 1. A hot spot survey indicates no additional need for fixed monitors. The TSF team leader is issued with one cyanide gas personal monitor. Calibration records for all fixed and portable gas monitors were sighted.

The plant uses colour coding and direction flow for reagent strength cyanide lines and other lines and labelling was observed. TSF lines are labelled “poisonous water” at strategic positions. Colour coding is displayed in the plant. Eating and drinking is only allowed in designated areas. MSDSs were sighted in the plant during the site inspection.

Safety showers are located at appropriate places throughout the plant and inspected regularly. The use of dry powder fire extinguishers was confirmed during site inspections. Safety inspection records were sighted for 2011, 2012, and 2013.

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:

The plant is equipped with an emergency room containing medical oxygen, face masks, Breathing Apparatus sets, a stretcher, telephone, PPE, and a TriPac cyanide antidote stored in a fridge according to manufacturer's recommendations. An Emergency alarm is located at the cyanide storage area. Radios and cell phones are used for communication. An additional TriPac cyanide antidote is kept in the unit leader's office. The TSF is close to the plant and uses the plant emergency procedure and cyanide emergency equipment. FAT staff communicate with the plant control room via radio and cell phone. The cyanide equipment is regularly checked and tested and mock drills are held regularly on site.

All the treatment shift staff are trained as cyanide emergency responders with back up from the mill shift team. A cyanide emergency room is available on the plant. Furthermore, all plant staff are trained in cyanide first aid.

The nearby Highveld Medi-clinic treats all cyanide emergency cases. ER24 (private ambulance service provider) and the clinic is included in the full cycle emergency drill confirming training and readiness. Hospital staff are trained to handle cyanide emergencies. Contracts are in place covering the clinic and the private ambulance service provider.

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 developed 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 in the Emergency Response Plan process through safety meetings, shift meetings, training and emergency drills. 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 control room operator is the primary response coordinator, authorised to call ambulance, security, and plant management. 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 are updated regularly. Media communication and communication with affected communities 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 environmental monitoring of surface water, liquid cyanide spillage, and use of ferrous sulphate procedures 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 which is prohibited. All drinking water locally is supplied via a reticulated system and the provision of an alternate drinking water supply is not anticipated. In the case of spills, emergency monitoring is covered in the monitoring procedure.

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. A cyanide spill drill at the cyanide storage dated 17 July 2013 was undertaken and a report was reviewed which included observations and recommendations. A video of a full cycle man down drill at the cyanide facility involving a gas exposure, was viewed, as well as hand written reports

detailing the observations and issues identified. Post mortem actions to be implemented were included in an action plan.

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 and Fraser Alexander tailings (FAT) TSF contractors) are trained in basic cyanide awareness. Refresher training is done annually and the plant training matrix includes a flagging system to timeously indicate need for training and refreshers. This was confirmed during interviews with staff when 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. Records are retained for 40 years on the Plant, after which the records are sent to the central Harmony archive.

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.

X 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 Evander Kinross Plant Training matrix and training schedule includes all cyanide first aid training and task training requirements and individuals' completion dates. The Plant Training Officer is trained and registered as an Assessor and Moderator. The Harmony Metallurgy Training Establishment is formally ISO 9001 accredited. All employees are trained before being allowed to work on a cyanide section. A person is only allowed to perform a job following an assessment using Planned Task Observations (PTO's) and Standard Task Procedures (STP's). Written tests for modules are conducted,

and PTO's are used for on-the-job competency evaluation as per schedule. 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:

All shift employees and engineering employees are trained as emergency responders as first, second, third and fourth responders for emergencies, including response to cyanide releases. All staff receive emergency first aid training which includes medical oxygen application. The 1st to 4th responder protocol training on video and the training presentation were reviewed. The Emergency responders are involved in mock drills, and training is given to the Highveld Medi-clinic and ER24 ambulance and Paramedic staff by the plant training officer. There are no community members in the area of the Mine and therefore they are not involved in the Emergency Response Plan. Periodic mock drills are undertaken and training personnel attend these drills and formally evaluate response and performance. Records are retained for 40 years on plant, after which the records are sent to a central archive.

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:

Dialogue meetings are two-way dialogue sessions involving both dissemination of information and the answering of questions on cyanide. The quarterly Waterval Forum (representing water users) meetings, in terms of the Water Act, take place and cyanide is discussed at appropriate opportunities. Meeting minutes in 2013, 2012, and 2011 were sampled. The Govan Mbeki Municipality LDMAF (Local Disaster Management Advisory Forum) Meeting - 14 Feb 2013 included communication to the community regarding emergencies and disaster management.

Community meetings with Amandla tavern community (Zakhele community) were held in 2012 and meeting evidence and an attendance register was reviewed. (This is an informal settlement illegally located on land located across the road from the NW corner of the TSF no 3 compartment.) It was noted that stakeholders have contacted the Environmental Manager in the past regarding issues, including cyanide.

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:

Dialogue meetings are two-way dialogue sessions involving both dissemination of information and the answering of questions on cyanide. The quarterly Waterval Forum (representing water users) meetings, in terms of the Water Act, take place and cyanide is discussed at appropriate opportunities. Meeting minutes in 2013, 2012, and 2011 were sampled. The Govan Mbeki Municipality LDMAF (Local Disaster Management Advisory Forum) Meeting - 14 Feb 2013 included communication to the community regarding emergencies and disaster management.

Community meetings with Amandla tavern community (Zakhele community) were held in 2012 and meeting evidence and an attendance register was reviewed. (This is an informal settlement illegally located on land located across the road from the NW corner of the TSF no 3 compartment.) It was noted that stakeholders have contacted the Environmental Manager in the past regarding issues, including cyanide.

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 are reported by Sasol Polymers and the transporter, Tanker Services, through their own reporting mechanisms.

The Harmony Group communication policy is followed. Cyanide incident response would need to be prepared by the Corporate Communications Department. The Harmony website contains an item, "Harmony and the Cyanide Code". The Cyanide Code is mentioned in the Sustainable Development Report, p124 (2012). Information on significant cyanide exposures and releases would be made available, after appropriate investigations, on the company website (www.harmony.co.za) and via the annual Sustainable Development Report.

