

TREATMENT OF HAZARDOUS CHEMICALS

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1. INTRODUCTION

Many different chemicals are used in the mining and extraction process. The chemicals used can vary greatly in the degree of hazard they pose to the environment. In particular the potential negative impacts of hazardous chemical use must be anticipated and avoided through appropriate controls, or where feasible, substituting them with low hazard chemicals. In cases however, where no economically viable substitutes are available, hazardous chemicals need to be responsibly and carefully managed, whilst deriving maximum efficiency from their use.

2. OBJECTIVES

The objectives of this document are:

To provide an assessment framework for identifying those chemicals being used at the GNCC Capital, Inc. (“GNCC”) managed sites that can be harmful to the environment.

To set out key elements of a proactive approach to the management of environmentally hazardous chemicals **(1)**, thereby preventing potentially negative impacts on the environment from the use of chemicals.

3. ACCOUNTABILITY AND RESPONSIBILITY

Overall accountability for implementing this standard lies with the Manager **(2)** of the site. Responsibility for its implementation can be delegated to a designated person(s) who should clearly understand their role(s) and responsibilities.

4. SCOPE

This standard defines the GNCC approach to the management of environmentally hazardous chemicals. It relates to the identification, selection, purchase, transportation, handling, storage, use and disposal of such chemicals.

Onsite contractors and subcontractors are required to adopt this standard unless they have an alternative chemicals management standard approved in writing by GNCC Capital, Inc.

Where GNCC has no operational responsibility but a significant equity stake, and an equivalent standard is not in place, this standard must be made available to the operator for application.

1. This term is explained in section 5.3.3.
2. The manager in direct control of the whole site.

Exclusions:

This standard does not apply to radioactive substances.

The management of cyanide at GNCC Capital, Inc. operations will be according to the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold.

5. REQUIREMENTS

5.1 Legislative and Other Requirements

The management of chemicals at GNCC Capital, Inc. sites must be in compliance with applicable international treaties, national laws and regulations, environmental license conditions and any other binding obligations.

5.2 Register of Chemicals

A Chemicals Register must be developed and maintained for the site, which inventories all reactive organic and inorganic chemical substances purchased, stored and used. This Register must include gasses, liquids, gels, emulsions, powders and solid chemicals that are used on the site including by contractors.

For each chemical used at the site, the Chemicals Register should include the following information;

- i. the chemical name or its major constituents, if it is a mixture;
- ii. the UN number, if available;
- iii. the (Dangerous Goods) class to indicate special precautions in its handling;
- iv. whether a Material Safety Data Sheet (MSDS) is available;

- v. the primary areas where each chemical is stored and used;
- vi. typical quantities maintained;

Before a new chemical is introduced at a GNCC Capital, Inc. site, suppliers must be required to provide relevant information on its inherent health, safety and environmental risks, including the MSDS.

5.3 Classification according to Environmental Risk

This standard adopts a risk-based approach to the management of chemicals.

- 5.3.1 The inherent risk posed by each chemical listed on the Chemicals Register must be assessed using a structured methodology, for example HIRA (Hazard Identification and Risk Assessment).
- 5.3.2 Risk evaluation must consider the level of potential exposure resulting from the volumes or concentration used and characteristics such as corrosiveness, explosiveness and the toxicity of the chemical.
- 5.3.3 The risk evaluation must permit those chemicals considered to be hazardous to the environment to be differentiated as Environmentally Hazardous Chemicals (EHCs).

5.4 Risk Avoidance during the Selection and Purchase of EHCs.

- 5.4.1 The risk introduced to the site by the use of EHCs should be avoided at the selection and purchase stage.
- 5.4.2 An approval process must be implemented to oversee and manage the purchase of new EHCs. This process must consider the cost of environmental risk mitigation resulting from the responsible use of the chemical and consider the use of less harmful substitutes (3) as alternatives.

5.5 Mitigating the Risk of Using EHCs

The risk associated with the use of EHCs needs to be mitigated through controls that are flexible and proportionate to the level of risk presented by each substance. This includes controls to be applied whilst transporting, storing, handling and using EHCs, and when disposing of unused or expired EHCs and their packaging.

5.6 Managing EHCs during Decommissioning

The management of EHC inventories during the decommissioning of an entire site or part thereof requires upfront planning to minimize the potentially expensive post closure disposal of EHCs. Equally important is that planning and executing the decontamination of plant and equipment

and the safe disposal of EHC residues is undertaken whilst trained personnel and appropriate resources are still on site.

5.7 Emergency Preparedness and Response

Emergency preparedness and response plans shall be maintained current to ensure that appropriate responses can be taken following incidents involving EHCs that can threaten the safety of people and the environment. Where appropriate, for example with transportation incidents, these plans should be coordinated with local and regional emergency response agencies.

Training and communication of procedures governing the management of EHCs and emergency response plans should be done in simple language that is easily understood by relevant staff.

Sites must ensure that the necessary emergency response equipment and response team skills (4) are maintained.

It is noted that in several cases, no technically and/or economically viable substitutes are available (e.g. sodium cyanide).

5.8 Monitoring and Measurement

Environmental monitoring programs, including inspection programs, must be established and maintained to assess whether EHCs are impacting upon the environment.

5.9 Reporting and Record Keeping

Reporting on EHC incidents and performance against host country and other requirements (5) must be performed as required.

Records of community complaints, enquiries and responses involving EHCs shall be maintained.

5.10 General

Each site should ensure that there is adequate financial and/or infrastructural provision made for the responsible management of Environmentally Hazardous Chemicals (EHCs) as well as their residues and wastes before these chemicals are delivered.

Actual and high potential near miss environmental incidents involving EHCs shall be investigated and preventive measures developed and implemented.

Sites must ensure that EHC risk mitigation controls are included in the scope of their internal audit programs.

6. GLOSSARY

- 6.1 **Operation** refers to a producing mine.
- 6.2 **Project** refers to an exploration project or a new mine expansion.
- 6.3 **Site** is used when referring collectively to gold producing operations and to exploration and expansion projects.

- 4 Skills include competencies such as spillage containment, accident site management, site cleanup and disposal, first aid and emergency medical treatment. Other resources include appropriate vehicles, chemical containment and cleanup ‘spill kits’, communication devices, demarcation and barricading equipment and self-contained breathing apparatus.

- 5 Including GRI environmental indicators.