



Standard 1

1 HAZARDOUS MATERIALS AND DANGEROUS GOODS MANAGEMENT STANDARD

1.1 STANDARD

The purpose of this Standard is to define the requirements to ensure that employee and public risk associated with hazardous materials and dangerous goods is managed and reduced to the lowest practical level; to minimize the occurrences of spills, releases, leaks and uncontrolled overflows of hazardous materials or dangerous goods, and to ensure that any potential or actual adverse environmental impacts of hazardous materials and dangerous goods are avoided or minimized.

This Standard applies to all sites and addresses the requirements of hazardous materials and dangerous goods during the purchase, selection, introduction, transportation, transfer, distribution, storage, use, collection, disposal and training associated with hazardous materials and dangerous goods.

This Standard does not include requirements associated with the management of cyanide, which are defined in the B2Gold Environmental and Biodiversity Standard 2 – Cyanide Management.

1.2 CRITERIA AND REQUIREMENTS

1.2.1 Regulatory Compliance

Each site shall manage hazardous materials and dangerous goods in compliance with all relevant in-country regulatory requirements, licenses and any other applicable requirements.

1.2.2 Material Safety Data Sheets (MSDSs)

Each site shall compile and maintain an up-to-date register of hazardous materials and dangerous goods on the site. The register shall include the types, quantities, location of these products and current Material Safety Data Sheets (MSDSs).

The classification of hazardous materials and dangerous goods shall be based on up to date MSDS information and shall form the basis for site storage, usage and disposal practices, determination of suitable PPE, etc.

MSDSs for hazardous materials and dangerous goods listed on the register shall be current in the language of the host country as well as English, and readily available to personnel in each area where the product is used.

1.2.3 Selection and Purchase

Selection and use of hazardous materials and dangerous goods used at each site shall be approved for purchase by both the site's OHS and Environmental Departments.



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Prior to the purchase of new bulk hazardous materials or dangerous goods, a technical review and risk assessment shall be completed (using a dedicated form/template) including consideration of any relevant emergency response requirements.

1.2.4 Bulk Storage and Transfer

In locations where the bulk storage or handling of hazardous materials or dangerous goods is a "notifiable activity", the responsible manager shall notify the appropriate regulatory authority.

All storage tanks and transfer systems/ distribution piping containing hazardous materials and dangerous goods shall be designed and constructed above ground (i.e., not buried).

If it is necessary to install underground piping (e.g., road crossings), there shall be either a passive system to detect leaks (e.g., leak detection system), the installation of a pipe within a pipe and/or active mechanisms such as visual inspections, periodic integrity testing, etc. for the detection of leaks.

Incompatible bulk hazardous materials and dangerous goods (e.g., acid and cyanide) shall be stored in separate containment areas with appropriate signage.

Hazardous materials and dangerous goods storage facilities (tanks and piping) shall be suitably colour-coded and labelled and shall be provided with systems to monitor inventories, detect leaks and recover product (e.g., visual inspections, active leak detection systems/alarms, periodic integrity testing, etc.).

1.2.5 Secondary Containment

All bulk hazardous materials and dangerous goods storage and transfer installations, including temporary facilities, shall have secondary containment that is capable of safely retaining the maximum credible release and that at a minimum is capable of containing a minimum of 110 percent of the volume of the largest tank in the containment area.

Secondary containment is not required unless uncontained product is able to reach groundwater and/or the receiving environment.

Secondary containment for bulk storage tanks shall have a typical water permeability equivalent to untreated concrete.

Bulk hazardous materials and dangerous goods tanks shall be equipped with engineered overflow/overpressure protection devices.

Hazardous materials and dangerous goods use, transfer, distribution, and storage facilities shall have measures/systems to control the potential effects of rainfall, including suitable drainage within and around containment areas.

The areas around fuel delivery pumps and vehicle refueling points shall be protected against spills and releases utilizing suitable containment and collection systems.

Any activity that requires the use of workshops or service areas shall have suitable collection facilities for waste hydrocarbons and treatment facilities for hydrocarbon contaminated water which meet applicable in-country discharge standards.



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Sites and contractors involved with the use, storage, transportation and delivery of hazardous materials and dangerous goods shall use regulatory compliant labelling and placarding on all new, used and waste product containers and tanks.

1.2.6 Hazardous Materials Transporters

Transporters of hazardous materials and dangerous goods to and from sites shall meet all appropriate regulatory requirements. Sites shall specify contract conditions for contractors involved in hazardous materials and dangerous goods transportation and use which requires compliance to regulatory requirements and relevant Codes of Practice as well as relevant B2Gold HSE Standards.

In addition to meeting relevant regulatory requirements, sites shall specify contract conditions for suppliers and contractors involved in hazardous materials and dangerous goods transportation and use which require compliance to regulatory requirements, Codes of Practice and B2Gold HSE Standards.

Specific contract conditions requiring the responsible management of hazardous materials and dangerous goods including emergency response and spill clean-up shall be incorporated into all applicable supply and transport contracts.

Sites and their suppliers shall only utilize hazardous materials and dangerous goods transporters and waste and/or recycling contractors that are licensed by the appropriate regulatory authorities. Sites shall verify and document supplier and contractor's disposal methods and locations.

Contractors involved with the supply and transportation of bulk hazardous materials and dangerous goods shall complete a documented risk assessment including assessing risks to public safety and route evaluation and selection prior to establishing transportation routes and commencing activities. The risk assessment shall be conducted in conjunction with a representative of B2Gold. These assessments shall be reviewed and approved by the site OHS Manager and Environmental Manager prior to the contract being awarded.

Suppliers and contractors involved with the transportation and delivery of bulk hazardous materials and dangerous goods shall utilize suitable transportation vehicles and storage tanks which are maintained in an adequate condition for proper handling and safety of bulk hazardous materials and dangerous goods.

Bulk hazardous material and dangerous goods transport equipment and vehicles shall be regularly inspected and maintained.

Transport service providers are required to demonstrate the competencies required to transport hazardous materials and dangerous goods based on regulatory and B2Gold requirements.

1.2.7 On-site Bulk Transfer

Bulk transfers of hazardous materials and dangerous goods shall be observed by B2Gold personnel or appointed personnel trained in hazard analysis. B2Gold personnel shall participate in documented observations of hazardous materials and dangerous goods transfers by various suppliers to verify correct processes are followed at all times.

1.2.8 Procedures

Procedures for hazardous materials and dangerous goods transportation, unloading, transfer, storage, handling, use and disposal shall be developed, document controlled, kept current, effectively implemented and all relevant personnel trained. Periodic audits are to be scheduled and completed on higher risk procedures.



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1.2.9 Emergency Preparedness and Response

Information related to hazardous materials or dangerous goods on site shall be provided to local emergency services and relevant interested parties.

Where available and beneficial, mutual aid agreements shall be established between sites and local emergency service providers.

Relevant B2Gold site personnel shall be responsible for reporting any spills or releases during transport, unloading and storage to the regulatory authorities as required.

1.2.10 Environmental Protection

Hydrocarbon/water treatment facilities shall be included on regular maintenance schedules to ensure they are routinely cleaned and maintained in accordance with design and manufacturer's requirements.

Hazardous materials and dangerous goods releases that occur on site, regardless of size or volume, shall be cleaned up, properly disposed of and reported utilizing the site action management system.

Fugitive dust from the transfer and storage of bulk dry chemicals (e.g., sodium hydroxide, lime, etc.) shall be controlled at all times.

1.2.11 Soil Remediation and Contaminated Sites

Sites shall develop and maintain a register which documents the location, scale, characteristics, environmental risks and any regulatory requirements associated with contaminated sites.

Soils heavily contaminated with hydrocarbons shall be characterized, excavated and remediated. Alternatively, these contaminated soils may be disposed of within on-site engineered facilities that are supported by scientifically defensible studies that can demonstrate that planned treatment and disposal practices comply with regulatory requirements and will not have an adverse impact on human health and/or the environment.

Contaminated soils that cannot be excavated shall be remediated in-situ utilizing scientifically sound methods.

1.2.12 Training

Sites shall provide employees and relevant contractors with the appropriate training to: manage exposure to workplace hazardous materials and dangerous goods, comply with regulatory requirements and apply proper use and maintenance of PPE.

Hazardous materials training and communication processes shall include:

- bulk hazardous materials inventories (name and location);
- hazard materials awareness training and education;
- requirement for product and container labelling (for all containers housing hazardous materials or dangerous goods, including fixed and portable tanks and pipelines, transfer containers etc.);
- access and use of MSDS documentation;
- requirements for site transportation and hazardous materials and dangerous goods storage practices;
- designated signs and labels for storage/handling, review and assessment of products scheduled to be brought on-site and/or used by contractors; and
- the site's system to control the introduction of new hazardous materials or dangerous goods, including those used by contractors.



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1.2.13 Audits and Inspections

Sites shall conduct or retain qualified third-party auditors to conduct safety and environmental audits of supplier hazardous materials and dangerous goods transportation every three years, or more frequently where there is significant risk.

Areas of bulk hazardous materials and dangerous goods storage, distribution, transfer and use, including on-site contractor facilities, shall be inspected routinely to verify that bulk storage, use, management and disposal conforms to this Standard. Records of inspections shall be retained for a minimum of 12 months.

Treatment facilities used for hydrocarbon contaminated water shall be periodically inspected and records of inspections retained.

1.2.14 Monitoring

Sites shall conduct routine testing of any effluent from hydrocarbon-water treatment facilities if treated effluent is to be directly or indirectly discharged to the receiving environment. Sites that treat hydrocarbon contaminated water shall comply with in-country regulatory requirements and any internal risk-based discharge criteria.

Sites shall develop, implement, and document processes to routinely verify that the off-site disposal of solid and liquid hazardous waste and/or recycling of these products meets regulatory requirements and is protective of human health and the environment.

1.3 TERMS AND DEFINITIONS

Relevant key terms and definitions that relate to B2Gold's Hazardous Materials and Dangerous Goods Management Standard are provided below:

Closure: The process followed when a site has reached the stage in its life cycle where the intended mining use has been permanently concluded. This generally includes issues such as decommissioning activities, reclamation and revegetation of disturbed areas for long-term physical and chemical stabilisation of the site. This also often includes stakeholder consultation regarding post-mining use.

Decommissioning: The process that begins near or at the cessation of mineral processing and ends with the removal of all unwanted infrastructure and services.

Environmental Impact: Any change to the environment whether adverse or beneficial, wholly or partially resulting from a site's activities.

Hazardous Waste: Any waste containing significant quantities of a substance that may present danger to human health and the environment when released into the environment or is improperly managed. Possesses at least one of five characteristics (ignitable, corrosive, reactive, toxic, radioactive), or is listed in-country as a hazardous waste.

Monitoring: The gathering, analysis (especially for trends) and interpretation of information for the assessment of performance.

Examples of monitoring subjects are: occupational health and safety, air, soil and water quality, flora and fauna, reclamation, social aspects including complaints, operational dust, noise, vibration, property damage, community health, community investment, historical and cultural sites.

Monitoring may be continuous, short-term or long term and may be undertaken manually or automated.



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Non-Hazardous Waste: Wastes that do not have any of the following characteristics: ignitability, corrosivity, reactivity, or toxicity, and are not listed in-country on hazardous waste lists.

Reclamation: The return of disturbed land to a physically and chemically stable, self-sustaining condition compatible with future land use objectives.

1.4 REFERENCE MATERIAL

Nil

1.5 DOCUMENT CONTROL

Revision	Approved	Date	Description
Final	Ken Jones	17 th August 2014	Original 2014 issue of the B2Gold Environmental and Biodiversity Performance Standards
Final	Ken Jones	24 th May 2018	2018 revision, update and issue of the original 2014 B2Gold Environmental and Biodiversity Performance Standards