

TÜMAD

MADENCİLİK SANAYİ VE TİCARET A.Ş.



EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS

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**EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN
for LAPSEKİ & İVRİNDİ PROJECTS**

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EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	3/61

TABLE OF CONTENTS

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN	2
REVISION HISTORY	3
TABLE OF CONTENTS	4
LIST OF TABLES	4
LIST OF FIGURES	4
APPENDICES	5
ABBREVIATIONS AND DEFINITIONS	6
1 INTRODUCTION	7
2 PURPOSE	7
3 SCOPE	7
3.1 Overlaps with Other Management Plans	8
4 PROJECT STANDARDS	8
4.1 Applicable Turkish National Standards	9
4.2 Turkish EIA requirements	9
4.3 Other Commitments to and Requirements of Turkish Government Authorities	9
4.4 Applicable International Standards and Guidelines	9
4.5 Applicable TÜMAD Standards, Policies and Procedures	9
5 ROLES AND RESPONSIBILITIES	9
6 Mitigation measures and management controls	11
7 MONITORING	14
7.1 Key Monitoring Activities	14
7.2 Key Performance Indicators	15
8 TRAINING	15
9 AUDIT	16
10 REPORTING	16
APPENDIX 1 – HAZARDOUS CHEMICALS HANDBOOK	17
APPENDIX 2 – LAPSEKİ HAZMATS INVENTORY	58
APPENDIX 3 – LAPSEKİ HAZMATS STORAGE AREA	60

LIST OF TABLES

Table 1: Roles and Responsibilities	10
Table 2: Explosives and Hazardous Materials Monitoring Plan	14
Table 3: Key Performance Indicators	15
Table 4: Chemical Materials Tracking Form	59

LIST OF FIGURES

Figure 1: Lapseki Project Hazardous Materials and Wastes Storage Areas	61
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EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	4/61

APPENDICES

APPENDIX 1 – HAZARDOUS CHEMICALS HAND BOOK

APPENDIX 2 – LAPSEKİ HAZMATS INVENTORY

APPENDIX 3 – LAPSEKİ HAZMATS STORAGE AREA

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	5/61

ABBREVIATIONS AND DEFINITIONS

Project(s)	: Lapseki and İvrindi Gold and Silver Mine and Processing Projects
TÜMAD	: TÜMAD Madencilik San. ve Tic. A.Ş.
ADR	: European Agreement concerning the International Carriage of Dangerous Goods by Road
EBRD	: European Bank for Reconstruction and Development
EIA	: Environmental Impact Assessment
ESMS	: Environmental and Social Management System
HAZMAT	: Hazardous Material
IMS	: Integrated Management System
KPI	: Key Performance Indicator
MoEU	: Ministry of Environment and Urbanization
OHS	: Occupational Health and Safety
OHS	: Occupational Health and Safety
PR(s)	: Performance Requirement(s)
SDS	: Safety Data Sheet
SOP	: Standard Operating Procedure

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	6/61

1 INTRODUCTION

TÜMAD Madencilik San. ve Tic. A.Ş. (TÜMAD) plans to establish the Lapseki Gold and Silver Mine and Processing Project (the Lapseki Project) within the administrative boundaries of the Şahin and Kocabaşlar Villages of the Lapseki District in the Province of Çanakkale. The construction phase of the Lapseki Project has been at completion stage and the operation phase will start in October 2017.

TÜMAD plans to establish the İvrindi Gold and Silver Mine and Processing Project (the İvrindi Project) within the administrative boundaries of Değirmenbaşı and Küçükılca Villages of the İvrindi District of Province of Balıkesir. The İvrindi Project has started with mobilization.

The project is seeking finance and this document is produced as a part of studies conducted to assess the Environmental and Social Impacts of the Project as per the EBRD Performance Requirements (PRs).

This document is the Explosives and Hazardous Materials Management Plan that is prepared for TÜMAD Operations. The Integrated Management System (IMS) document registration number for this Explosives and Hazardous Materials Management Plan is (TMD_ISG_PLN.006). This management plans sets the requirements for the operation phase of the Lapseki Project and for construction and operation phase of the İvrindi Project and is an integral part of the Environmental and Social Management System (ESMS) implemented by TÜMAD for the two mine projects.

This Management Plan is based on the Project(s) ESMS Framework (TMD_EYS_PLN.004) of TÜMAD, which is owned by the TÜMAD General Manager. Any subsequent changes to the TÜMAD ESMS may result in the changes to this document.

This Management Plan will be reviewed on a minimum of a six monthly basis during construction and commissioning. During operation phase, this Plan will be reviewed on an annual basis to determine whether any changes or updates are required to the Management Framework unless a more frequent update is required to reflect changing project design or ESMS requirements and procedures.

Any requests for changes to this Management Plan must be addressed to the owner of this Management Plan and will be subject to appropriate review and approval processes as outlined in the Management of Change Procedure (TMD_EYS_PRD.006).

2 PURPOSE

The purpose of this Explosives and Hazardous Materials Management Plan is to;

- ensure there is a proactive approach to the effective management of hazardous materials in the Lapseki and İvrindi Projects,
- ensure compliance with environmental legislation, environmental contractual requirements and other environmental obligations,
- define the monitoring requirements and the key performance indicators,
- define the Project Standards for the management of explosive and hazardous materials management,
- define the roles and responsibilities for the implementation of the requirements of this plan,
- define the training requirements,
- define the auditing and reporting procedures.

3 SCOPE

This document outlines the methods by which TÜMAD will reduce risks to soils and water quality from the storage and handling of hazardous substances during construction, operation and closure. It will serve to aid the decision-making process on the choice of controls, general site design and operational practice in line with current international industry best practice and guidance.

The plan is a working document with the specific aim of ensuring that:

- Hazardous materials (Hazmats) are considered as part of routine management, operation and inspections;
- The risk of incidents that could result in releases of Hazmats are reduced as much as possible;
- Hazmats are stored and handled following regulations and international best practices.

To achieve these objectives, this Plan is structured to identify the following:

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	7/61

- Acknowledge the level of risk associated with the type and amounts of Hazmats present in the project;

The requirements of all applicable Project(s) Management Plans and Procedures will be applicable to Project(s) contractors. Such requirements will be set out in contracts and contractors will also be obliged to comply directly with these requirements.

This Plan does not give the details of cyanide management. Cyanide management of the projects is covered under Cyanide Management Plan (TMD_CEV_PLN.008). Separate procedures/instructions have been prepared for the cyanide transport, storage, preparation and waste cleaning for the Lapseki Project. Procedures/instructions for the management of cyanide will also be prepared for the İvrindi Project by TÜMAD.

3.1 Overlaps with Other Management Plans

As explained in the ESMS Framework Document, this Management Plan is a part of the general package of Management Plans developed for Lapseki and İvrindi Projects of TÜMAD. All of TÜMAD Policies, Management Plans, Standard Operational Procedures (SOP), Instructions, and Permit requirements will also apply to TÜMAD's contractors. These requirements will be stated in contractor tender packages and in the contracts and contractors will be obliged to fully comply with the Management Plan and Procedures, instructions, and permits, either directly or indirectly.

This Plan overlaps with the following management plans:

- Emergency Action Plans (TMD_LAP_İSG_PLN.002 & TMD_IVR_İSG_PLN.002), particularly in relation to potential emergencies and incidents.
- Spill Clean Up Plan (TMD_CEV_PLN.009), particularly in relation to control measures in relation to potential spills.
- Cyanide Management Plan (TMD_CEV_PLN.008), particularly in relation to implementation of Cyanide Management Code which will include the transport, storage, use and disposal of cyanide.
- Hazardous Chemicals Hand Book (TMD_İSG_ELK.002), particularly in relation to potential chemicals planned to be used in the Projects.
- Traffic Management Plan (TMD_İSG_PLN.005), particularly in relation to on-site and off-site transportation of hazardous chemicals.
- Noise and Vibration Management Plan (TMD_CEV_PLN.002), particularly in relation to management of noise and dust formation due to blasting works.
- Air Quality Management Plan (TMD_CEV_PLN.006), particularly in relation to management of air quality due to blasting works.
- Community Health, Safety and Security Management Plan (TMD_EYS_PLN.006), particularly in relation to potential impacts to the community from explosives and hazardous materials.
- Health and Safety Management Plan (TMD_İSG_PLN.007), particularly in relation to the potential impacts to the workers from explosives and hazardous materials.
- Waste Management Plan (TMD_CEV_PLN.004), particularly in relation to the management of hazardous wastes.
- Local Procurement Management Plan (TMD_EYS_PLN.005), particularly in relation to the management of suppliers related to explosives and hazardous materials.
- Contractor Management Plan (TMD_İSG_PLN.003), particularly in relation to the management of contractors related to explosives and hazardous materials.

4 PROJECT STANDARDS

Project Standards are defined by;

- applicable Turkish Standards;
- Turkish Environmental Impact Assessment (EIA) requirements;
- other commitments to and requirements of Turkish Government authorities;
- applicable international standards and guidelines;

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_İSG_PLN.006	0	8/61

- applicable TÜMAD standards, policies and procedures;
- Other industry guidelines with which TÜMAD has committed to comply.

4.1 Applicable Turkish National Standards

- 10.24.2013 dated and 28801 numbered, Regulation on Transportation of Hazardous Materials by Road
- 02.04.2015 dated and 29314 numbered, Regulation on Waste Management
- 30.06.2012 dated and 6331 numbered, Health and Safety Law
- 12.08.2013 dated and 28733 numbered, Regulation on Health and Safety Measures in Working with Chemicals
- 19.12.2007 dated and 26735 numbered, Regulation on Fire Protection of Buildings
- 29.09.1987 dated and 87/12028 numbered, Blasting Safety Ordinance issued by the Ministry of Interior

4.2 Turkish EIA requirements

- A list of chemicals allowed to be used in the facility shall be available and entrance of chemicals not given in this list shall be kept under control. This application shall be valid for contractors.
- Chemical substances required during the process is projected to be supplied either domestically or from overseas and transported to the mining site in accordance with procedures stated in material safety data sheets. Provisions of the Regulation on Transportation of Hazardous Wastes by Road no. 28801 entered into force on October 24th 2013 will apply to transportation of hazardous substances on highways.

4.3 Other Commitments to and Requirements of Turkish Government Authorities

Not applicable.

4.4 Applicable International Standards and Guidelines

EBRD PR3 states; “In all activities directly related to the project, the client will avoid or minimise the use of hazardous substances and materials, and consider the use of less hazardous substitutes for such substances and materials so as to protect human health and the environment from their potentially harmful impacts. Where avoidance or substitution is not feasible, the client will apply appropriate risk management measures in order to minimise or control the release of such substances/materials into air, water and/or land resulting from their production, transportation, handling, storage, use and disposal relating to project activities. The client will avoid the manufacture, trade and use of hazardous substances and materials subject to international bans or phase-outs due to their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer.”

4.5 Applicable TÜMAD Standards, Policies and Procedures

List of applicable TÜMAD standards, policies and procedures are given in Section 2.1. Additionally following documents have been prepared for the Lapseki Project,

- Cyanide Transportation Procedure (TMD_LAP_İSG_PRD.009)
- Cyanide Storage Procedure (TMD_LAP_İSG_PRD.010)
- Cyanide Waste Cleaning Procedure (TMD_LAP_İSG_PRD.011)
- Sodium Cyanide Preparation and Storage Procedure (TMD_LAP_İSG_PRD.012)
- Sodium Cyanide Waste Cleaning Instruction (TMD_LAP_İSG_TLM.003)
- Filling of Chemical Consumption Record Form Instruction (TMD_LAP_TES_TLM.013)
- Chemical Storage Area Maintenance and Safety Inspection Instruction (TMD_LAP_TES_TLM.048)

5 ROLES AND RESPONSIBILITIES

It is the responsibility of all management, supervisory staff, contractors and work group personnel to ensure that hazards and safety issues are resolved as quickly as possible and the workplace environment is free from hazards. TÜMAD supervisory staff shall ensure that the plan is implemented and adhered to during all aspects of the project construction.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	9/61

The plan shall be monitored to ensure compliance by all site personnel, TÜMAD supervision shall be responsible for identification, reporting and correction of areas found to be in noncompliance to the plan, and adapt the plan where required, to encompass operational change during the phases of construction.

The Head of Environment and Head of Occupational Health and Safety will have overall responsibility for ensuring the implementation of and compliance with the requirements set out in the plan. This will include ensuring all site personnel are made aware of the scope and contents of the plan. The Operation Manager, or an assigned deputy, will also be responsible for undertaking spot checks on-site to ensure compliance with requirements set out in the plan. The Head of Environment will undertake internal audits to monitor the requirements of the plan and identify any improvements that can be incorporated into the plan, as well as any defined obligations.

Table 1: Roles and Responsibilities

Roles	Responsibility
General Manager	Owner and approver of this Plan. Provide resources for the implementation of this Plan.
Operations Manager	Presiding over the spill drill scenarios, ensuring that the necessary facilities are provided, evaluating the results of the exercise. Ensure all employees including subcontractors have appropriate training. Ensure that all inspections and maintenance checks are conducted.
Head of Occupational Health and Safety	Ensure compliance with the requirements set in this Plan, monitoring, revision and update of this Plan together with the Head of Environment. Prepare, define emergency drill scenarios, implement emergency drills, provide trainings, follow the training and performance of Emergency Response Team and make suggestions Regular monitoring of the implementation of the requirements set in this Plan. Deliver training on this Plan to relevant personnel including contractors.
Head of Environment	Ensure compliance with the requirements set in this Plan, monitoring, revision and update of this Plan together with the Head of OHS. Prepare, define emergency drill scenarios, implement emergency drills, provide trainings, follow the training and performance of Emergency Response Team and make suggestions Regular monitoring of the implementation of the requirements set in this Plan. Deliver training on this Plan to relevant personnel including contractors.
Head of Community Relations	Engage with local stakeholders related to explosives and hazardous materials management, manage and follow up relevant grievances.
Contractors and all staff	Attend relevant training. Implement and follow the control measures listed in this Plan. Report unconformities, accidents/incidents immediately.
Supply Manager	Ensure the plan is followed when purchasing Hazardous and Explosive substances. Explore options of less hazardous alternative.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	10/61

	Purchase from reputable suppliers and obtain relevant SDS for materials purchased.
Security Team	Ensure keeping the inventory of hazardous materials up to date. Record the volume/amount and type of hazardous materials entering the site and report to Head of Health and Safety.
Maintenance and Repair Unit	Conduct inspections and maintenance checks of storage tank system, piping and delivery system in line with the legal requirements and ensure there is no leakage/damage/outage and ensure reparation if there are any.
Training and Documentation Coordinator	Arrange training of employees/ contractors on this Plan.
Open Pit Chief Engineer	Responsible from the blasting activities which will be escorted by the fireman and transporters appointed as per legal law.

6 MITIGATION MEASURES AND MANAGEMENT CONTROLS

Mitigation measures and management controls for the explosives and hazardous materials throughout the Project life cycles are listed below.

- An explosive manufacturer will supply the blasting materials to the Project Sites. Explosives will be safely delivered from the explosives manufacturing plant to the mine site by licensed/approved operators by a designated mobile manufacturing unit (MMU) vehicle. The supplier is chosen as per TÜMAD's supplier assessment form which assesses the supplier's commitment to Health, Safety, Environment and Community and the compliance with legal requirements in line with the Supply Chain Management Plan (TMD_EYS_PLN.005) and Contractor Management Plan (TMD_ISG_PLN.003). It is TÜMAD's policy to always look for less hazardous alternative where possible while choosing the explosives manufacture. For the Lapseki Project, explosives are supplied by Nitromak which is certified firm for ISO9001, ISO14001 and OHSAS18001 for all processes of manufacturing, transportation and storage. It is TÜMAD's policy to ensure that the supplier is committed to zero harm for everyone and caring for the community and the environment. Explosives supplier will also be chosen according to the Supply Chain Management Plan (TMD_EYS_PLN.005) and Contractor Management Plan (TMD_ISG_PLN.003) for the İvrindi Project.
- The blasting works will be fully compliant with the requirements of the Blasting Safety Ordinance issued by the Ministry of Interior. Blasting works will be conducted under the responsibility of the Open Pit Chief Engineer and the blasting works will be escorted and supervised by the firemen and transporters appointed according to the Turkish law (29.09.1987 dated and 87/12028 numbered, Blasting Safety Ordinance issued by the Ministry of Interior) together with the gendarmerie.
- Transportation of explosive and hazardous materials will be fully compliant with the requirements set in the Regulation on Transportation of Hazardous Materials by Road.
- Regular air quality and noise and vibration measurements during blasting works will be conducted in line with the Air Quality Management Plan (TMD_CEV_PLN.002) and Noise and Vibration Management Plan (TMD_CEV_PLN.003). Any non-conformances will be communicated to the Contractor/Contract Manager and the process will be revised to avoid future non-conformance.
- According to the Turkish Regulation on Transportation of Hazardous Materials by Road, drivers carrying hazardous materials on national and international roads are obliged to have Dangerous Good Driving Training Certificate (SRC5)/ADR Driver Training Certificate. Hazardous materials will only be moved or transferred within the Site areas by the suppliers who are qualified, trained vehicle operators, using appropriate industrial forklifts or other vehicles. The trainings for the use of vehicles inside the mine site is provided by OHS Department. TÜMAD has relevant SOPs for unloading and stocking of hazardous materials.
- All hazardous materials will be checked upon receipt and that quantities and material descriptions match associated shipping manifests. TÜMAD will maintain an inventory of all hazardous materials purchased, delivered, stored and used on sites. Uncontrolled storage of hazardous materials will be avoided. The

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	11/61

inventory list will be kept at the entrance to the sites and handed to the Emergency Response services such as fire brigade, upon their arrival on site, so they know what they are dealing with and what the risks are. The hazardous materials inventory list and the estimated quantities of the Lapseki Project are given in Appendix 2 of this Plan.

- TÜMAD will ensure that the chemical substances that are classified as hazardous, whether as individual substances or as ingredients in mixtures, are stored in accordance with the Project requirements. A risk assessment of hazardous substances and mixtures will be carried out by TÜMAD in order to comply with Turkish regulations and Project Standards. This risk assessment has been completed for Lapseki. Hazardous materials storage areas for the Lapseki Project is given in Appendix 3 of this Plan. Following control measures will be implemented for the storage of hazmats:
 - Restrict access to the chemical store.
 - Provide a store with sufficient space, well organised, well lit, well ventilated and fire prevented.
 - The store should have an impervious floor that is resistant to the chemicals used and is easy to clean.
 - Store incompatible materials safely. Define the areas and put up clear signs.
 - Keep tanks and containers in defined, banded areas.
 - Label tanks, containers and line clearly.
 - Provide bulk storage with dust filtration or air cleaning for the displaced air.
 - Provide explosion relief where necessary.
 - Vent air displaced from bulk liquids to a safe place.
 - Eliminate or control ignition sources.
 - Separate substances that should not be kept together in accordance with SDS.
 - Suitable spill clean-up materials must be kept close to the storage area and readily available.
 - Access roads and pathways to the storage area must be free of obstacles.
 - All storage areas must be provided with fire extinguishers according to the Emergency Preparedness and Response Plan. Location of fire extinguishers, first aid kits and clean-up materials must be clearly identified.
 - Access to storage areas to be restricted to authorized and qualified personnel.
 - Signs must be posted advising the type of hazardous materials stored in.
- Safety Data Sheets (SDS) of all stored materials will be available in the hazardous materials storage locations and major usage points. Handling, storage on site and use of them will be carried in accordance with the provisions stated in these data sheets.
- Inspections and maintenance checks of storage tank system, piping and delivery system will be ensured in line with the legal requirements by the Maintenance and Repair Unit under the responsibility of Operations Manager.
- Secure storage and labelling substances in line with manufacturer's recommendations will be ensured and measures will be taken to prevent contact with untrained personnel, birds, animals or fish.
- Secondary containment will be designed and managed to ensure rainwater does not reduce the minimum capacity requirements
- Secondary containment for storage of hazmats must provide minimum 110% containment of the largest tank or 125% of the total volume of a tank farm.
- Location of equipment, containers and distribution lines, containing hazmats will be above ground with provision of appropriate containment.
- Any installation of hazmats below ground will require risk assessment and Project approval.
- Storages areas and LNG stations will be situated at a safe distance from distance from sensitive areas including mitigation based on risk assessment.
- Risk assessment will be conducted for the activities including the transportation, storage and handling of hazardous materials for the construction and operation periods for the Projects in line with the Turkish

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	12/61

Regulation on Occupational Health and Safety Risk Assessment. Risk assessment form the basis of the monitoring programme, relevant written process safety parameters, standard operation procedures and compliance audit procedures. Hazardous chemicals risk assessment has been completed for Lapseki Project's construction and operation phases. Similar studies will be conducted for the İvrindi Project.

- Storage facilities and pipelines carrying hazardous material will have spill detection systems installed.
- Transfer points will have secondary containment.
- Installations of oil and water separators and grease traps at fixed refuelling facilities, workshops, washing bays, parking areas and fuel storage areas.
- Use of drip trays and other temporary measures during servicing or fuelling of vehicles and equipment on site will be ensured.
- All spent solvents, liquid wastes and spent fuels/ lubricants will be stored in lined, bunded areas, and transported off-site for safe disposal using accredited sub-contractors.
- Vehicle re-fuelling, washing and maintenance will only take place within designated areas.
- All vehicles, plant and equipment will be regularly checked and maintained to minimise the risk of fuel or lubricants leakage
- Spill kits and other necessary equipment will be readily available on site at the hazardous materials are storage areas and the major usage points.
- Eye-wash, showers and first aid kits will be available for emergency situations.
- Site staff will be trained in safe storage and handling practices for hazardous materials and in the use of spill kits (TMD_LAP_ISG_PLN.009).
- Hazardous substances will be used by the authorized and trained personnel and personal protective equipment such as dust mask, gloves and goggles will be used depending on the type of the materials used.
- Checks for damage and leaks at least once a day. Any cracks and holes will be repaired. All non-conformances will be recorded.
- Repackaging and labelling, or disposal of the contents of leaking containers will be ensured as soon as possible.
- Residues, containers and packages of chemicals will be disposed in accordance with the Regulation on Waste Management.
- Cyanide Management Plan will be prepared to set out the principles for the implementation of International Cyanide Management Code which will include the transport, storage, use and disposal of cyanide.
- Regardless of the scale of the hazardous material incident/spill, plant shift supervisor will be informed immediately and the Emergency Action Plan (TMD_ISG_PLN.002) and Spill Clean Up Plan (TMD_CEV_PLN.008) will be implemented depending on the type of the incident. Department Head (Incident Controller) is responsible to define actions to protect the environment in emergency and liaise with the Head of Environment and advise on the type of clean-up operations and the best suitable disposal route.

TÜMAD has prepared a Hazardous Chemicals Hand Book including the definition of chemical categories, symbols and the following information of the chemicals planned to be used in the Lapseki and İvrindi Projects;

- Type of supply
- Place and purpose of usage at mine site
- Hazards
- Fire Hazards
- Handling and storage
- Personal protection

Hazardous Chemicals Hand Book is given in Appendix 1 of this Plan.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	13/61

7 MONITORING

7.1 Key Monitoring Activities

In the following table monitoring requirements, timeline and related responsibility for implementing the monitoring activity are given.

Table 2: Explosives and Hazardous Materials Monitoring Plan

No	Aspect	Monitoring Requirement/ Key Performance Indicator	Target	Timeline	Responsible
EHM-01	Inventory of Hazardous Materials	Inventory of Hazardous Materials, Volumes of Hazardous Materials	All hazardous materials are recorded.	Continuously	Security
EHM-02	Daily check of storage areas	<ul style="list-style-type: none"> Evidences of past/current spills (major staining, sign of stressed vegetation, pool of liquids, shining on water surfaces) SDS available for chemicals Proper and adequate firefighting equipment Restricted access Safety signs in place Sufficient ventilation Suitable spill clean-up materials in place All containers (tanks, drums, etc.) properly closed and adequately stable to avoid liquid overflow Gas cylinders stored in a dedicated ventilated area, vertically, attached, protected from any risk of fall, repaired from direct sunlight and heat sources. Each type of gas cylinders stored in separated groups, according to their content. Fuel and combustible gas cylinders must be stored in separate locations. Condition of the secondary containments. 	No spills, all conditions are met	Daily	Appointed personnel from Environmental/OHS Department
EHM-03	Record of all incidents/accidents i.e. spills	Incident Reports/Investigation Reports	Minimize with a target zero per year	When happens	OHS and Environment Departments
EHM-04	Explosives, blasting, vibration, and noise	Monitoring Reports	Legal limits are not exceeded	Daily, Weekly, Monthly and Annual Reports	Head of Environment and OHS
EHM-05	Grievances	Number of grievances received from workers, subcontractors and community members regarding the management of explosives and hazardous materials	Minimize with a target zero per year	Continuously	Head of Environment Head of OHS Head of Community Relations

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	14/61

7.2 Key Performance Indicators

The table below shows key performance indicators related to the Explosives and Hazardous Materials Management Plan.

Table 3: Key Performance Indicators

No	Key Performance Indicator	Target	Monitoring and Measurement
EHM-KPI-01	Inventory of Hazardous Materials	All hazardous materials are recorded.	Inventory of Hazardous Materials, Volumes of Hazardous Materials
EHM-KPI-02	Daily check of storage areas	No spills, all conditions are met	Audit/Check Reports
EHM-KPI-03	Record of all incidents/accidents i.e. Spills	Minimize with a target zero per year	Incident Reports/Investigation Reports
EHM-KPI-04	Explosives, blasting, vibration, and noise	Legal limits are not exceeded	Monitoring Reports
EHM-KPI-05	Grievances	Minimize with a target zero per year	Number of grievances received from workers, subcontractors and community members regarding the management of explosives and hazardous materials

The risk assessment forms the basis to describe relevant written process safety parameters, standard operation procedures such as chemical handling and storage, cleaning, maintenance and compliance audit procedures. This risk assessment for the Lapseki Project has been completed. The results of this risk assessment have been considered in preparation of the standard operation procedures for Lapseki including;

- Sodium Cyanide Waste Cleaning Instruction TMD_LAP_İSG_TLM.003
- Waste Storage and Shipment Instruction TMD_LAP_CEV_TLM.002
- Control of Fireless Explosives and Non-Fire Blasting Holes Instruction TMD_LAP_AO_TLM.001
- High Wad Cyanide Waste Discharge Instruction TMD_LAP_TES_TLM.002
- HCL Transportation Instruction TMD_LAP_TES_TLM.041
- Chemical Storage Area Maintenance and Safety Inspection Instruction TMD_LAP_TES_TLM.048
- Instruction on the use of Chemical Consumption Record Form (TMD_LAP_TES_TLM.013), has been prepared for the Lapseki Project.

8 TRAINING

The overall training process to be implemented for the TÜMAD Project activities will address the identification of training requirements by job description and will provide basic procedures for conducting and documenting training activities.

All TÜMAD employees and subcontractors will receive induction training which will consist of the spill response and emergency response plans. Workers having access to or handling of Hazmats will receive training in the procedures

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	15/61

to be followed if a release is discovered, including notification of the appropriate site personnel, ensuring co-worker and public safety, and taking direct action to control or contain the release wherever possible.

Site personnel who may be called upon to respond to workplace releases will be trained in this, as well as in the first aid procedures noted in the Emergency Preparedness and Response Plan.

All employees who will work with the hazardous materials will be subject to routine training on the safe storage and handling of the hazardous materials. All relevant personnel will be trained in the use and maintenance of protective equipment. All employees receiving Hazmats worker training will be required to pass a written test to ensure their understanding of the subject matter covered. Refresher training will also be conducted for all Hazmats workers on at least an annual basis.

Training will include recognition of the Hazmats or Hazmats-bearing materials that may be present at the site.

Training on this Plan will be delivered by the Head of OHS as a competent personnel and experienced in effective communication techniques.

TÜMAD Training and Documentation Coordinator shall be responsible for the implementation of this Component.

Records documenting all levels of training related to the use of Hazmats in the workplace will be retained in accordance with OHS Training Procedures (TMD_LAP_ISG_PRD.001) and Training Management Plan (TMD_LAP_ISG_PLN.001). Training records will include the names of the employee and the trainer, the date of training, the topics covered, and employee proficiency test results, where required.

9 AUDIT

All incident and non-conformities will be reported as per the requirements of the Incident Reporting Procedures (TMD_ISG_PRD.007). Any incident identified during these inspection will be reported by OHS team, daily inspection will be carried out by operational area supervision covering a broad range of operational aspects.

Implementation of the TÜMAD's management system will be monitored monthly, 6 monthly and annually according to the Audit Program. This system will be used to assess the broad compatibility of environmental management system requirements.

The schedule, the frequency, the scope and objectives of the audit as well as the responsible internal inspectors will be indicated in the Audit Program to be developed by the OHS Department.

Documents to be reviewed especially during the audits by the auditors:

- Accident/incident and investigation reports
- Training records
- SDS of hazardous materials
- Inventory of Hazardous Materials
- Grievance records regarding explosive and hazardous materials

10 REPORTING

Evidences of the implementation of the mitigation actions/measures and related results are collected through inspection and auditing activities will be reported in line with the Internal Audit Procedure (TMD_KAL_PRD.001).

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	16/61

APPENDIX 1 – HAZARDOUS CHEMICALS HANDBOOK

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	17/61

HAZARDOUS CHEMICAL SUBSTANCES**Definitions:**

Hazardous Chemicals are substances which has one or more of explosive, oxidizing, extremely flammable, highly flammable, flammable, toxic, highly toxic, harmful, corrosive, irritating, allergic, carcinogenic, mutagenic, toxic for reproduction and dangerous for the environment properties; and can create risk in terms of the health and safety of workers for the reason of occupational exposure limit that is set, chemical, physico-chemical or toxicological properties and the use of or presence of chemical agents in the workplace

Explosive(E): Solid, liquid, pasty, gelatinous substances which may react exothermically even without the presence of air oxygen, whereby a gas is generated quickly, and/or which can under specific test conditions explode and burn up rapidly, or which can explode when warmed, if placed in a partially closed container,



Oxidizing Substances(O): Substances which initiate a highly exothermic reaction in contact with other substances, in particular flammable substances,



Extremely flammable(F+): Substances which in their liquid state have a flash point below 0°C and the boiling point below 35°C, or which are in their gaseous state in flammable in contact with the air at a normal (room) temperature and at normal (atmospheric) pressure,

**Highly Flammable Substance(F):**

Substances which:

May warm up by themselves and then ignite in contact with the air at normal (room) temperature and without any supplied energy,

May in their solid state easily in. Flame after a short contact with a source of ignition, and which then continue to burn even if the source of ignition has been removed,

In their liquid state have the flash point below 21°C ,

When in contact with water or a humid air release highly flammable gases in dangerous quantity,



Flammable Substance(F): Substances which have their flash point between 21°C and 55°C



EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	18/61

Highly Toxic Substance (T+): substances which after inhalation, ingestion, or skin penetration, even in a very small quantity, may cause acute or chronic harm to human health, or even death,



Toxic Substance(Xn): Substances which after inhalation, ingestion, or skin penetration, even in a small quantity, may cause acute or chronic harm to human health, or even death,



Corrosive substances (C): substances which after contact with living tissue may cause its destruction



Irritating (Xi): Substances which do not have caustic properties yet they may cause a tissue inflammation after instant, long-term, or repeated contact with the skin or mucous membrane,



Carcinogenic:Substances which after inhalation, ingestion, or skin penetration may cause or increase the occurrence frequency of cancer,



Category 1 Known Human Carcinogenes

Category 2 Presumed to have carcinogenic potential for humans.

Category 3 Having carcinogenic potential for humans supported with insufficient data.



Mutagenic Substance: Substances which after inhalation, ingestion, or skin penetration may cause or increase the occurrence frequency of genetic impairment,

Category 1 Known human mutagen

Category 2 Presumed to have mutagenic potential for humans

Category 3 Substances affecting human reproduction



Reproductive toxicant: Substances which after inhalation, ingestion, or skin penetration may cause or increase the occurrence frequency of non-hereditary impairment of descendants, impair reproduction functions or the ability of a man or woman to reproduce,

Category 1 Known Human Reproductive Toxicant

Category 2 Presumed to have reproductive toxicant.

Category 3 Substances affecting human reproduction



Dangerous for the environment (N) Substances which after dispersion in one or more elements of the environment represent or may represent an immediate or delayed danger.



EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	20/61

Dangerous goods are classified as per transport classes stated below:

Class 1	Explosives
Class 2	Gases
Class 3	Flammable Liquids
Class 4.1	Flammable solids self-reactive substances and desensitized solid explosives.
Class 4.2	Substances liable to spontaneous combustion
Class 4.3	Substances which, in contact with water, emit flammable gases
Class 5.1	Oxidizing materials
Class 5.2	Organic peroxides
Class 6.1	Toxic Substances
Class 6.2	Infection substances
Class 7	Radioactive Materials
Class 8	Corrosives
Class 9	Miscellaneous Dangerous Goods

SODIUM CYANIDE

Cas No: 143-33-9

TYPE OF SUPPLY

It is packaged in a polypropylene bag that is encased in a wooden box of one ton and transported to Mine Site in a 20-tons container. It is stored in the indoor area.

PLACE AND PURPOSE OF USE AT MINE SITE

Sodium cyanide is used to recover gold in the leaching process and to strip gold and silver from the carbon in the gold strip circuit. It is transported to Mine Site in form of briquettes and in the bags that are encased in wooden boxes. One ton of cyanide is mixed with 5 m³ of water (%20) in the cyanide preparation tank and then transferred to be stored to the cyanide storage tank. A pre-determined dosage and quantity of cyanide is pumped to the leach tank and pre-soak tank.

HAZARDS

INHALATION: Extremely poisonous and corrosive to the respiratory system, prevents cellular respiration. It affects the central nervous system. It causes headache, vertigo and loss of consciousness. It can cause a coma. Carry patient to fresh air. In case of difficult breathing give oxygen. Call immediately the doctor.

INGESTION: Extremely poisonous. It causes abdominal burns and pain, and nausea. It causes loss of consciousness. Excessive doses cause loss of consciousness. Not to induce vomiting. Call immediately the doctor.

SKIN CONTACT: It causes corrosive effect and burns. Flush the affected area with plenty of water and soap for at least 15 minutes. Do not use contaminated clothes again.

In case of the continuation of the effects call immediately the doctor.



EYE CONTACT: It may cause eye burns. Hold eyelids open and flush with plenty of cold water for at least 15 minutes. Call immediately the doctor.

CHRONIC EFFECTS: May cause damage to the central nervous system (CNS)

HAZARD OF FIRE

It is not flammable. But In case of decomposition or contact with acids, toxic and flammable hydrogen cyanide gas are formed. Use dry chemical powder, dry sand and plenty of water. Do not use carbon dioxide as it may form hydrogen cyanide. Use water to cool the containers.

HANDLING AND STORAGE

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	22/61



It should be stored in cool, dry and ventilated environments. Keep away from acids, carbon dioxide, humidity and oxidising agents. Protective material must be used while working. In the working environments, keep cyanide first-aid chemicals of amyl nitrite, sodium nitrite and sodium thiosulfate which must be controlled on a yearly basis. Attention should be paid to reuse the storage areas.

PERSONAL PROTECTION

Non-permeable protective clothing, rubber boots, gloves resistant to chemicals and laboratory aprons should be used. Safety goggles and all face shields should be used. In addition, working environments should have a fixed or portable face and eye wash showers.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	23/61

SODIUM METABISULPHITE

Cas No: 7681 - 57-4

TYPE OF SUPPLY

Transported to Site with 20 tons of tankers and pumped to the storage tank.

PLACE AND PURPOSE OF USAGE AT MINE SITE Sodium metabisulphite is used in the INCO (SO₂, Air) chemical decomposition unit to oxidize the cyanide.

HAZARDS

INHALATION: When inhaled, there is a risk to cause serious damages. Carry patient to fresh air and get medical attention. When acids are in contact with water and/or ice, gas of sulphure dioxide which may be hazardous and even fatal when inhaled, is released. It may cause serious or fatal allergic reactions to certain asthmatics and the sulphite-sensitive individuals. Inhalation of dust or particles may disturb the respiratory system. Some of the signs and symptoms of allergic reactions are bronchial pressure, sweating, redness, allergy, tachycardia, hypotension and hypersensitivity.

INGESTION: It irrigates the respiratory system. If large quantities of this material are swallowed, it may cause death, severe pain, loss of feelings and depression. It may cause serious or fatal allergic reactions to certain asthmatics and the sulphite-sensitive individuals. If the conscious is open, give him/her immediately two glasses of water and induce vomiting as directed by the medical personnel. Call immediately the doctor. Do not give anything by mouth to the unconscious patient. Call immediately the doctor.

CONTACT WITH SKIN: Repeating or prolonged contact may cause itching. Contact with the solution is irritant. Wash with water and soap.



EYE CONTACT: Dust or particles irritate and burn the eyes. The solution irritates or burns. Hold eyelids open and flush with plenty of water for at least 15 minutes and get medical attention.

CHRONIC EFFECTS:: Worsening of medical condition with prolonged exposure may cause serious or fatal allergic reactions to certain asthmatics and the sulphite-sensitive individuals when inhaled.

HAZARD OF FIRE



Sodium metabisulfite is not flammable, but in the event of fire, poisonous sulfur dioxide is exposed and decomposed. Sodium sulphure, a decomposition product, has a hazardous fire risk. Use foam and water as fire extinguishers. Avoid used water to penetrate in wastewater channel or with other waterways. If this substance is exposed to fire, wear respiratory equipment approved by NIOSH and full protective equipment including eye and face shields.



HANDLING AND STORAGE: Avoid contact with eye, skin and clothing. Avoid breathing dusts and particles. Ensure good hygiene and workplace for the personnel. Store in a dry and well ventilated area keeping away from heat, water, ice, acids and oxidizing agents. In the presence of dust and particles in the storage area, local ventilation is required.

Sulfur dioxide gas is released slowly at room temperature. It should not be kept in places where there is no ventilation.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No TMD_ISG_PLN.006	Rev. 0	Page 24/61
---	--------------------------------	-----------	---------------

PERSONAL PROTECTION: Wear chemical resistant hat and safety goggles. Do not wear contact lenses. Wear work clothes including cotton gloves, long sleeved shirt and trousers while using dry substance. In case of contact with the solution wear rubber or PVC gloves and boots.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	25/61

HYDROCHLORIC ACID

CAS No: 7647-01-0

TYPE OF SUPPLY

Hydrochloric acid is transported to Mine Site with %32 HCl solution within a tanker and transferred to the storage tank. Hydrochloric acid used in the laboratory is delivered to the warehouse at Mine Site within a 25 L plastic container.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Hydrochloric acid is used as a cleaner in carbon rinsing column and if necessary is used in lowering the pH value in chemical degradation.

Hydrochloric acid is used for the analysis of the determination of gold at laboratory. Hydrochloric acid is used as %32 at Laboratory.

HAZARDS



INHALATION: It causes a soar pain, coughing, shortness of breath, various respiratory difficulties. It irritates the respiratory tract. It can cause pulmonary edema. The effects occur over time. Carry the affected individual to fresh air as soon as possible. If breathing is difficult, give artificial respiration and even oxygen. Call immediately the doctor.

INGESTION: It is irritant. If it is swallowed, it causes a throat pain, an abdominal pain, vomiting, tissue damage in the alimentary canal and digestive tract and can be fatal. Flush immediately the mouth with plenty of water and rinse. Not to induce vomiting. If the conscious is open, give water or milk. Call immediately the doctor.



SKIN CONTACT: May cause irritation, burns and redness. Flush the affected area with plenty of water and soap for at least 15 minutes. Remove absolutely contaminated clothing and shoes. Call immediately the doctor.

EYE CONTACT: Redness and pain in the eyes; may cause blurred vision. Hold upper and lower eyelids open and flush with plenty of water for at least 15 minutes. Do not let the affected individual to rub his/her eyes and to keep them closed. Call the doctor.

CHRONIC EFFECTS: Causes damage to teeth, gum and nose.

HAZARD OF FIRE

It is not flammable. But the reaction with metals may form explosive hydrogen gas. In small fires, use dust, alcohol-resistant foam and water spray or carbon dioxide. Wear full protective clothing including positive pressure, respiratory equipment. Do not use with formaldehyde, sulphite, sulphate and cyanates.

HANDLING AND STORAGE

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	26/61

Avoid from sources of heat, open flames and sparks. Store in cool, well-ventilated areas with an acid-resistant floor and good drainage systems. Polymerization may occur in low temperatures. Keep away from acids, reducing agents, oxidizers and bases. Do never use hot water and never add acid to water. Tanks must be sheltered to avoid physical damage.

PERSONAL PROTECTION

The working environment must have a general or local ventilation system as well as a fixed or portable face and eye wash showers. Non-permeable, rubber or neoprene coated clothes, boots, rubber gloves, laboratory aprons should be used.

SODIUM HYDROXIDE

CAS No: 1310-73-2

TYPE OF SUPPLY

Sodium hydroxide (Caustic) is brought as solution strength of %50 by a road tanker and pumped to a 30m³ storage tank.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Sodium Hydroxide (Caustic) is used for chemical degradation and pH control in stripping and electrolysis circuits. Sodium hydroxide is used at acid tower, ICP and cyanide analyses to adjust pH.

HAZARDS



INHALATION: Upper respiratory tract irritates. The symptoms are throat sore, nasal discharge, and sneeze. Excessive effects cause pulmonary edema. Carry the affected individual absolutely to fresh air. If breathing is difficult artificial respiration should be done, even oxygen should be given. Contact doctor immediately

INGESTION: It is very harmful and causes serious injury in the stomach, throat and mouth. Vomiting, diarrhea, hypotension are among the symptoms. The effects occur over time. Definitely, do not induce vomiting. If the conscious is open, give as much water as possible. Call immediately the doctor.

CONTACT WITH SKIN: Causes irritation and redness. Flush the affected area with plenty of water and soap for at least 15 minutes. Do not use the contaminated clothing again. If the complaints continue, consult doctor immediately.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	27/61



EYE CONTACT: Causes redness, pain and irritation. Excessive contact may cause blurred vision, serious visual impairments, even blindness. Hold upper and lower eyelids open and flush with plenty of cold water for at least 15 minutes. Call immediately the doctor.

CHRONIC EFFECTS: Causes adverse effects on the mucosa, upper respiratory tract, eyes and skin.

HAZARD OF FIRE



It is not flammable. In case of fire, use foam, carbon dioxide and dry chemicals. Use water to cool the storage areas.

HANDLING AND STORAGE

It should be stored in a cool, dry and ventilated area. Be cautious about static electricity. It should be stored away from sources of sunlight and fire. Contact with metals should be prevented. Acids and organic substances should not be mixed. Water should not be added. Especially reacts very strongly with trichloroethylene.

PERSONAL PROTECTION

Non-permeable protective clothing, boots, gloves, laboratory aprons should be used. Safety goggles or full face shields should be used. In addition, working environments should have a fixed or portable face and eye wash showers.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	28/61

COPPER SULPHATE

Cas No: 7758-98-7(Dry), 7758-99-8(Pentahydrate)

TYPE OF SUPPLY

Copper sulphate is delivered in 25 kg bags. Copper sulphate solution is prepared by mixing with water in the preparation of copper sulphate. It is dissolved %15 in water. Copper sulphate used in the laboratory is delivered to the warehouse in liquid form in 1 kg boxes.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Copper sulphate is used to accelerate the cyanide decomposition reaction in the chemical decomposition cycle and to precipitate the insoluble salts of ferric cyanide compounds.

The copper sulphate solution is prepared in cyanide distillation and is used as 10 ml.

HAZARDS



INHALATION: Causes irritation in the respiratory tract, the symptoms are coughing, throat pain and shortness of breath. Causes ulceration and perforation in the respiratory tract. When heated, it may emit copper fume, this may cause general flu-like symptoms such as chills and nasal congestion. Carry the affected individual to fresh air. In case of difficult breathing artificial respiration should be done and even oxygen should be given. Call the doctor.

INGESTION: May cause burns in the stomach, alimentary canal and mouth. May cause gastrointestinal tract bleeding, nausea, vomiting, abdominal pain, metallic taste and diarrhea. The affected individual should be vomited in direction of medical personnel. If the conscious is closed, do not give anything by mouth. If vomiting does not occur immediately, systemic copper poisoning may occur. Symptoms may include capillary damage, headache, cold sweating, kidney and liver damage, CNS depression, jaundice, tremor, blood effects, paralysis and coma. Death can occur with shock and renal failure.

SKIN CONTACT: May cause irritation and itching. In case of contact remove excess material from the skin and flush with plenty of water for at least 15 minutes. Remove contaminated clothes and shoes. Wash clothing before reuse. Call the doctor.



EYE CONTACT: Dust can cause irritation. Contact may cause conjunctivitis, ulceration and turbidity of the cornea. Hold upper and lower eyelids open and flush with plenty of water for at least 15 minutes. Call immediately the doctor.

CHRONIC EFFECTS: Prolonged or repeated skin contact can cause skin inflammation. Prolonged or repeated exposure to dust of copper salts can lead to skin or hair spotting, blood and liver disorders, ulceration and perforation in the nasal cavity, nasal discharge, metallic taste, mucous membrane irritation and weight loss.

HAZARD OF FIRE

There is no danger of fire. Any way can be used to extinguish the surrounding fire. Water spray can be used to cool containers exposed to fire.

HANDLING AND STORAGE

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	29/61

Keep container tightly closed. Keep container in a cool, dry and ventilated area. Protect against physical damage. Keep away from incompatibles. The substance ignites the hydroxylamines. Solutions are acidic and can react with magnesium to evolve flammable hydrogen gas. It can enter in a reaction with acetylene, causing dangerous acetylide to evolve. Their solution has a soft steel corrosive characteristic. Containers of this product may be hazardous even when they are empty due to residues.

PERSONAL PROTECTION

Use semi filtered gas masks (NIOSH type N95 or better filter). In emergency situations where exposure levels are not known, use full-protective positive-pressure gas masks. Use protective gloves and clothes that surround your clean body. Safety goggles should be used and an emergency eye shower should be available on the workplace.

LIQUID OXYGEN

Cas No: 7782-44 -7

TYPE OF SUPPLY

Liquid oxygen is delivered by road transport and brought to the site with storage medium. The storage tank runs at 5-7 bar pressure. Liquid oxygen is withdrawn from the tank via evaporator, which turns the liquid into gas; this gas is kept at about 5-6 bars. There are oxygen addition points to the leach 1 and 2 and the first four adsorption tanks. The oxygen is discharged to each of these tanks which are then mixed with the slurry creating small bubbles with tank mixer shafts. The flow of oxygen to the mixer shafts is arranged by flow tubes.

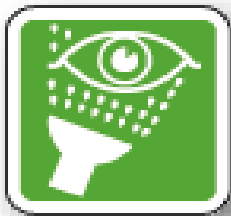
PLACE AND PURPOSE OF USAGE AT MINE SITE

Liquid oxygen is used to accelerate the leaching of precious metals (gold, silver) when cyanide is added in the leach and adsorption tanks in the gold-silver mine of the CIP tanks.

HAZARDS

INHALATION: High-purity oxygen is not toxic in the atmosphere pressure, provided that the exposure to high concentrations is not for long periods of time. Long-term inhalation over 75% can affect coordination, attention, causing fatigue and irritation of the respiratory tract. The patient should be removed to fresh air. The patient should then be taken to a health facility and the health personnel should be informed that the patient is likely to have hyperoxia.

INGESTION: Under normal conditions swallowing is unlikely. The patient should be taken to the doctor promptly if the contact with the product causes frozen tissues.



SKIN CONTACT: In contact with skin or in case of burns similar to frostbite; liquid contaminated clothing should be removed and the affected areas should be washed with warm water for at least 15 minutes. Hot water should not be used. The burned area should not be rubbed or massaged. In case of intense freezing of the tissues, frostbite or blister on the skin surface, the patient should be immediately taken to a health facility.,

EYE CONTACT: In contact with eyes, the evaporation of the liquid product should be accelerated by opening the eyelids as far as possible. Eye area should be washed with warm water for at least 15 minutes. If the patient is unable to look at the light, the eyes should be closed with a light band and he should be immediately taken to a health facility.

CHRONIC EFFECTS: High-purity oxygen is not toxic in the atmosphere pressure, provided that the exposure to high concentrations is not for long periods of time. Exposure to higher pressure than atmospheric pressure for 2-3 hours of pure oxygen can cause dizziness, irritation of the respiratory system, loss of consciousness.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No TMD_ISG_PLN.006	Rev. 0	Page 30/61
---	--------------------------------	-----------	---------------

HAZARD OF FIRE



The high oxygen concentration strongly accelerates the ignition. If possible, the diffusion of oxygen, which will allow the fire to continue, must be stopped. The storage tank exposed to fire should be cooled with water from a safe distance during and after the fire.

In the storage tank, water should not be kept at the gas leak areas in order to prevent the gas entrapment. Carbon dioxide, dry chemicals or evaporated liquid, fire extinguishers should be used.

HANDLING AND STORAGE

Constructed tanks must not be repaired, adjusted or modified in any way. To avoid excessive gas condensation, cryogenic liquids should always be used in very well ventilated areas. Unauthorized and unattended personnel / visitors should not be allowed to enter closed and open areas where cryogenic liquid is used. Storage of cryogenic liquids is provided by, the vacuum-insulated double wall tanks that are especially designed for these liquids, or special tubing called "LC" portable vacuum-insulated double wall tanks. Cryogenic liquid containers / tanks must be equipped and protected with valves (cryogenic valves) and / or various safety devices (Mechanical safety - safety relief valves) that allow the gas to escape at certain pressure values (on top of the operating pressure). At the liquid oxygen storage areas smoking should not be allowed. Ensure that there is no flame at areas where liquid oxygen is stored, consumed, discharged or filled.

PERSONAL PROTECTION

Oxygen at high concentration should not be inhaled for a long period of time. Gloves that are resistant to cryogenic liquids should be used. In case of any spill or splash, do not forget that the gloves must be loose and that the cold equipment can only be held for a short time even with gloves. Greased gloves should not be worn. Face shield or eye mask should be used. To avoid damage from cryogenic liquid sprays; pocketless and overhanging overalls, apron or similar types of clothes should be worn, the trousers should be hanged out of the boots or shoes. Do not work with wet clothes. Oxygenated saturated clothes should be ventilated. All equipment, tools and clothes should be free of grease.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	31/61

LNG(Liquid Natural Gas)

Cas No: 74-82-8

TYPE OF SUPPLY

LNG is delivered by road transport by means of storage medium in a liquid state.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used in the stripping cycle and carbon activation process at Process Plant.

HAZARDS

INHALATION: If the gas is leaked in the closed environment, it will try to replace the oxygen in the environment because it is light from the air. If the environment is not ventilated, it may be a slight anaesthetic and / or suffocating effect due to oxygen depletion. In addition, because the gas is too cold, it irritates human skin, eyes and respiratory tracts and lungs. Take the person exposed to LNG breathing to the open air and send it to the hospital urgently. The lungs may be irritated by cold gas. If there is difficulty in breathing, call for medical assistance. If not breathing, do artificial respiration, give oxygen, call for medical help. Hold it in a hot environment.

INGESTION: Under normal conditions swallowing is unlikely.



SKIN CONTACT It can cause frostbite in case of eye or skin contact. It can cause rapid suffocation at high concentrations. Immediately wash the exposed parts with clean warm water. Remove gas contaminated clothing immediately. Remove items like clock, ring, bracelet etc. if they are not stuck. Leave it as if they were stuck. Do not reheat the liquid contacting area quickly. On the contrary the heating process must be done slowly. In important cases, take the patient to a nearby medical center.

EYE CONTACT: It can cause frostbite in case of eye and skin contact. Immediately flush with clean warm water for 15 minutes. Cover the eye with a sterile compress. Contact an ophthalmologist. .

CHRONIC EFFECTS: At strong concentrations, slight(Headache, Dizziness, Drowsiness, etc.) or severe (loss of consciousness due to reduced oxygen concentration in the atmosphere) on the central nervous system may have a narcotic effect and may require immediate medical attention.

HAZARD OF FIRE

Use dry chemical powder fire extinguishers at both closed and atmospherically open places both fire fighting and smothering first. Pressurized water or foam (solid or pulverized lances, with sprinklers) LNG tanks / tanks may be extinguished by cooling to an effective temperature. In closed areas the fire is only extinguished with dry chemical powder fire extinguisher. It may be dangerous to extinguish the flame if precautions are not taken immediately to prevent the leakage. While the LNG tank / tank exposed to fire is being cooled, it is dangerous to interfere to the other surrounding tanks and tankers. They should be chilled.

HANDLING AND STORAGE

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	32/61

Before any operation is performed on the LNG tank / tanker, the gas discharge process (gas free) must be performed. Never perform any welded operation on LNG tank / tanker. There must be warning signs around or on the storage tank. Areas of use should be well ventilated. Inspection, cleaning and maintenance work should be done only with the permission of authorized company and persons.

The gas phase of LNG is light and liquefied by air. Therefore, LNG accumulation should be prevented in case of a possible leakage. The gas accumulation points should be designed to prevent LNG accumulation. No tanks, tankers and LNG pipes with LNG in them should be heated with bare flames. Investigations of leaks should be made with soapy water or special leak control foams. Never use open flame. Special methane gas detectors can be used. Devices using LNG should be suitable for use design of LNG. A device designed for the use of gas phase should never be used in liquid phase, a device designed for liquid phase in gas phase. Equipment should only be made of stainless steel, nickel, aluminium alloys, suitable for LNG and durable materials, such as natural rubber, which can be decomposed in LNG, should be avoided and LNG valves should be closed at the end of use. Due to the storage in a very cold state of LNG, special double-walled storage tanks are used. Pressure is controlled by regulator and economizer. Electrical and charged materials used in storage operations must be explosion-proof (Ex-Proof). No welding should be done on the LNG tank after installation. It may be sudden expansion when compared to the inner tank ambient temperature in a potentially hazardous situation. This causes an increase in pressure. There should be no flammable, combustible or explosive materials near the LNG tank / tanker to ignite. There should not be dried weeds, energy lines, pits beside the tanks within safety distance. LNG is stored in special containers at atmospheric pressures. Avoid contact with strong oxidizing materials of LNG tank / tank. Static electricity should be avoided. Static grounding of the installation and the tank should be done. LNG gas should not come into contact with hot water. Only cryogenic containers designed and manufactured according to -150 OC suitable for storage and transport of LNG should be used. The LNG storage tank consists of two insulated internal tanks.

PERSONAL PROTECTION

Clothing, gloves, safety goggles and anti-static boots should be used with full face shield, respiratory support, head and neck protectors against risks that may arise. The materials of these garments must be resistant to temperature and fire. A full-face respiratory mask should be used, as it may leave the environment anaerobic in possible escapes.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	33/61

BORAX

CAS No: 1330-43-4

TYPE OF SUPPLY

Borax is transported to Mine Site in powder state and in a 50 kg sacks.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used to catch oxidized metals in the gold room in the process plant.

HAZARDS



INHALATION: Causes the symptoms as irritation in the respiratory tract. Carry the affected individual to the fresh air. If the affected individual feels bad call the doctor

INGESTION: After absorption, nausea, vomiting, agitation, spasms, CNS disorders, cardiovascular disorders may occur. Give plenty of water to drink. Induce the patient vomiting. If the affected individual does not feel good call immediately the doctor.

SKIN CONTACT: Flush with plenty of water. Remove the contaminated clothes. Wash your hands after working with the substance.

EYE CONTACT: Flush with plenty of water. If the pain continues call for the ophthalmologist

CHRONIC EFFECTS: After absorption, nausea, vomiting, agitation, spasms, CNS disorders and cardiovascular disorders may occur.



HAZARD OF FIRE



It is not flammable. Firefighting media should be selected according to the nearest stored media. All around fire may release hazardous vapor.

HANDLING AND STORAGE

The substance should be stored in a dry and tightly closed area.

PERSONAL PROTECTION

Protective clothing should be selected specifically for the workplace, depending on the concentration and quantity of the hazardous substance to be used. Respiratory protection is required when dust is generated. Hand protection is not necessary.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	34/61

SLAKED LIME

Cas No: 1305-62-0

TYPE OF SUPPLY

Slaked lime is brought to the Mine Site in solid state with the transportation tanker. The lime is transferred to the lime silo via the transport hose. The slaked lime is transferred to the silo pneumatically. During transfer from the tanker, the driver and the chemical operator are in transfer area until the transfer of lime is complete.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Lime controls the pH of leach pulp. Lime is added to the grinding process from the storage silo.

HAZARDS



INHALATION: Lime is white powder. It is irritant when inhaled. Sore throat and coughing occurs. If it is inhaled, deep fresh air must be also inhaled. If the affected individual does not feel good call for medical assistance.

INGESTION: Sore throat, abdominal pain, cramps, diarrhoea and coughing occur. Water or milk should be drunk. Call for medical assistance.

SKIN CONTACT: Local skin destruction, burns after itching and sweating. Flush the lime contaminated area with plenty of water. Lime contaminated clothes should be washed before reuse.



EYE CONTACT: It is irritant. Risk of serious damage to eyes. Tears and burning sensation occur. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call for medical assistance.

CHRONIC EFFECTS: It is not a toxic substance. If inhaled, irritation, sore throat, coughing may occur. In case of contact with eyes, tears and burning sensation occur. In case of contact with skin, local skin destruction, itching, burning sensation during sweating. In case of swallowing, sore throat, abdominal pain, cramps, diarrhoea and vomiting occur.

HAZARD OF FIRE

It is not flammable. At 580° it turns into calcium oxide. Calcium oxide does not burn but enters into reaction with water and acid and releases heat.

HANDLING AND STORAGE

It should be outdoors or in ventilated places. Should be stored in a dry place and be kept from moisture. Should be stored in waterproof packaging or silo. It should not be transported within aluminium tankers or stored in the aluminium silos. If the product is moist, it reacts with aluminium and causes formation of hydrogen.

PERSONAL PROTECTION

Working environment standard is 5mg/m³ in an unventilated and dusty environment, mask should be used. Safety goggles and protective gloves should be used. Protective clothing should be worn (long sleeved shirt, trousers and waterproof shoes).

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No TMD_ISG_PLN.006	Rev. 0	Page 35/61
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SULPHAMIC ACID

Cas No: 5329-14-6

TYPE OF SUPPLY

Sulfamic Acid is transported to Mine Site in solid powder state and in a 25 kg sacks.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used to clean the burner exchangers of the stripping unit at the process plant. Acid cleaning in a closed circuit, with using sulphamic acid is required to be performed in order to remove residues and other contaminants that accumulate over time in the heat exchanger plates which affect the effectiveness of the units.

HAZARDS

INHALATION: Irritant symptoms and coughing in the respiratory tract. Carry the affected individual to the fresh air. Call the doctor.

INGESTION: If swallowed, it causes the irritation to the mucous membranes of the mouth, pharynx, oesophagi, and gastrointestinal.

If swallowed, give the patient plenty of water to drink and call the doctor.

SKIN CONTACT: Irritates the skin. In case of skin contact, flush with plenty of water. Remove the contaminated clothes.

EYE CONTACT: Serious irritation to the eyes. In case of eye contact, Hold eyelids open and flush with plenty of water. Call the ophthalmologist.

CHRONIC EFFECTS: On the respiratory system, in case of skin and eyes contact, and if swallowed, it has an irritant effect.

**HAZARD OF FIRE**

It is not flammable. Firefighting media should be selected according to the nearest stored media. All around fire may release hazardous water. In the event of fire, sulphur oxides and nitrogen oxides may develop. Do not stand at the dangerous zone without respiratory equipment. Suitable protecting clothing should be worn to prevent the skin contact. Water used for fire-fighting should be prevented from leaking into surface water or underground water.

HANDLING AND STORAGE

It must be stored in tightly closed containers in a dry environment. There is no limitation to the storage temperature. There is a risk of explosion with chlorine. Hazardous gas and vapor may occur in case of contact with halogens, alkalis, oxidizing agents (nitrates, nitrites and nitric acid), metals and water.

PERSONAL PROTECTION

Non permeable protecting clothing, boots, gloves should be worn. Safety goggles and full face protecting equipment should be used. When dust is generated, respiratory tract must be protected (Filter B-(P2)). Contaminated clothes should be removed immediately. A protective cream may be used for the skin. After working with the substance, wash your hands and face.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	36/61

AMMONIA

CAS No: 7664-41-7

TYPE OF SUPPLY

Ammonia is transported to Mine Site as a %25 solution in liquid state and in glass bottles.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used in the laboratory for the preparation of buffer solution to be used for the water hardness analysis.

HAZARDS



INHALATION: Call the doctor. It has a suffocating and sharp odor. It is dangerous to breath its vapor. It irritates the upper respiratory tract. The symptoms are fatigue, headache, dizziness, vomiting and apathy. Excessive effects cause pulmonary edema. Carry definitely the affected individual to fresh air.

INGESTION: Swallowing can cause stomach spasms. Definitely not induce vomiting. If the conscious is open give as much as water or milk to drink. In case of vomiting, keep the head upright to prevent obstruction of the respiratory tract. Call immediately the doctor.

SKIN CONTACT: It causes irritation and redness. Flush the affected area with water and soap for at least 15 minutes. Do not reuse the contaminated clothes. If complaints continue call definitely the doctor.



EYE CONTACT: It may cause redness, pain, irritation, temporary and even permanent blindness. Hold upper and lower eyelids open and flush with plenty of water for at least 15 minutes. Call immediately the doctor.

CHRONIC EFFECTS: Skin inflammation and eye, liver, lung, and kidney disorders.

HAZARD OF FIRE



It is not flammable. When the vapor gets into the air, it gets explosive characteristic. In case of fire, use foam, carbon dioxide or dry chemical. Water can be used to cool storage containers.

HANDLING AND STORAGE

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	37/61

It should be stored in cool, dry, and ventilated environments. Static electric must be observed. It should be stored away from sources of direct sunlight and fire. Care must be taken that empty containers may contain ammonia vapor. Should not be used with mercury, calcium, hypochlorite, hydrofluoric acid, oxidizing agents, brass, zinc, aluminium, copper, bronze and dimethyl sulphate.

PERSONAL PROTECTION

Non-permeable protective clothing, boots, gloves, laboratory aprons should be used. Safety goggles or full face shields must be worn since splashing is possible. In addition, there should be fixed or portable face and eye showers in the workplace.

ACETIC ACID

Cas No: 64-19-7

TYPE OF SUPPLY

Acetic Acid is transported to Mine Site as a %100 solution in glass bottles.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used at the laboratory for the preparation of buffer solution ph of 4,5 to be used in cyanide distillation.

HAZARDS

INHALATION: May cause serious damage on the upper respiratory tract. Do not breath its gas, fume, vapor and aerosols. Carry the affected individual to fresh air. If breathing is difficult, artificial respiration should be given. Even oxygen should be given. If complaints continue call the doctor.



INGESTION: It is irritant. If swallowed it causes serious burns of at mouth, oesophagi and stomach. Do not induce vomiting. Flush and rinse the mouth of the patient with plenty of water. Call immediately the doctor.



SKIN CONTACT: May cause irritation, burns and redness. Flush the affected area with plenty of water and soap for at least 15 minutes. Do not use contaminated clothes again. If the complaints continue consult the doctor

EYE CONTACT: May cause irritation, redness and blurred vision. Hold upper and lower eyelids open and flush with plenty of water for at least 15 minutes. Consult immediately the doctor.

CHRONIC EFFECTS: It may cause damage to the kidney, mucosa, skin and teeth.

HAZARD OF FIRE

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	38/61

Use carbon dioxide and alcohol foam as fire extinguishers. Use clothes including vapor respirator and rubber gloves.

HANDLING AND STORAGE

Avoid sources of heat, open flame and sparks. Never add water. Store the product isolated and enclosed. Acetic acid is corrosive to mild steel. Stainless steel, high density polyethylene or glass can be used as packing material. Keep away from oxidizing agents, reducing agents, metals, acids and alkalis.

PERSONAL PROTECTION

Acetic acid has a sharp vinegar smell. The working environment must have a general or local ventilation system as well as a fixed or portable face and eye wash showers. A filter gas mask should be used above its maximum value. Non-permeable rubber or neoprene-coated clothing, boots, rubber gloves and laboratory aprons should be used. Safety goggles and masks should be used as splashing is possible. The working environment should have a fixed or portable face and eye wash showers.

ACETONE

Cas No: 67-64-1

TYPE OF SUPPLY

Acetone is delivered to Mine Site as a liquid state in 5L plastic container.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used in the laboratory for the preparation of the indicator

HAZARDS

INHALATION: Exposure to high vapor concentrations may cause headache, fatigue, dizziness, alcohol poisoning, vomiting and loss of consciousness. Carry the affected individual definitely to fresh air. If breathing is difficult, artificial respiration should be given. Even give oxygen. If complaints continue call the doctor.

INGESTION: It may cause irritation and papilla in the mouth, stomach and digestive organs. Diarrheal, vomiting and abdominal pain are among the symptoms. Do not induce vomiting. Call immediately the doctor.



SKIN CONTACT: Severe irritation, burns and redness may occur. However, it has painful and irritant effect on wound and burns. Flush the affected area with plenty of water and soap for at least 15 minutes. Do not reuse the contaminated clothes.

EYE CONTACT: Eye irritation. Hold eyelids open and flush with plenty of water for at least 20 minutes.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	39/61

CHRONIC EFFECTS: None



HAZARD OF FIRE

Flammability is high. In the event of fire, use alcohol-resistant foam, water spray, carbon monoxide and water droplets. Do not use water jet.

HANDLING AND STORAGE

It should be stored in cool, dry and ventilated environments. Storage tanks can be dangerous due to evaporation when empty. The containers should be tightly closed and should not be left in direct sunlight, keep away from any sources of heat and fire.

PERSONAL PROTECTION

The working environment should have a general and local ventilation system and fixed or portable face and eye showers. Gas masks should be used above their maximum values. Non-permeable protective clothing, boots, gloves, laboratory aprons should be used. Wear safety goggles or face shields.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	40/61

PHOSPHORIC ACID

Cas No: 7664-38-2

TYPE OF SUPPLY

Phosphoric acid is delivered to Mine Site as a liquid state and %85 solution in 2.5L plastic container.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Phosphoric acid is used for the binding of ore in the gold determination analysis at Laboratory.

HAZARDS

INHALATION: Mist and dust are not dangerous unless there are not high temperatures. Carry the affected individual to fresh air. If breathing is difficult, artificial respiration should be done. Even oxygen should be given. Consult the doctor.

INGESTION: It is irritant. If swallowed, it may cause serious burns in mouth, throat and stomach. It may cause tissue damage and death. Do not induce definitely vomiting. If conscious is open give as much water as possible. Call immediately the doctor.



SKIN CONTACT: Severe irritation, burns and redness may occur. Clean the affected area with plenty of water and soap for at least 15 minutes. Do not use contaminated clothes again. If complaints continue call definitely the doctor.

EYE CONTACT: It causes eye irritation, redness and blurred vision. It may cause permanent visual impairments and even blindness when excessively affected. Hold upper and lower eyelids open and flush with plenty of water for at least 15 minutes. Call immediately the doctor.



CHRONIC EFFECTS: It can cause damage to blood, liver, skin, eyes and bone marrow.

HAZARD OF FIRE

There is no danger of fire and explosion. Entering in reaction with the metals causes formation of flammable hydrogen gas.

HANDLING AND STORAGE

It should be stored in cool, dry and ventilated environments. While mixing, add the phosphoric acid to water. Do not do the reverse. It may cause corrosion with mild metals. Keep it in plastic containers. Do not expose it to freezing and direct sunlight. Storage containers can be dangerous when empty. For this reason, pay attention before pouring again. Contact with chlorite and stainless steel causes formation of hydrogen gas. Very strong reaction with sodium tetrahydrofolate. Mixture with nitromethane is explosive.

PERSONAL PROTECTION

The working environment should have a general and local ventilation system as well as a fixed and portable face and eye showers. A filtered gas mask should be used above maximum values. Non-permeable protective clothing, boots, gloves, laboratory aprons should be used. Safety goggles or any full face shields must be worn since splashing is possible.

HYDROFLUORIC ACID

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	41/61

CAS No:7664-39-3

TYPE OF SUPPLY

Hydrofluoric acid is delivered to Mine Site as %38-40 solution in 2.5L plastic container.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used as a solvent in the silicate treatment process in the laboratory.

HAZARDS

INHALATION: May cause irritation in respiratory tract, difficulty in breathing, coughing and blockages in the lungs and inflammation. Carry the affected individual to fresh air. Even oxygen should be given. Call the doctor as soon as possible.

INGESTION: It causes nausea, vomiting, irritation in the digestion organs, abdominal pain and kidney disorders. Do definitely not induce vomiting. If conscious is open give as much water as possible. In case of vomiting, tilt the head forward to prevent respiratory arrest.



SKIN CONTACT: May cause severe irritation or burns. The effects can occur after 8 hours. Fluoride ions can penetrate to the skin, even to the bones. Clean the affected area with plenty of water for at least 15 minutes. If possible, massage the affected zone with 2.5% gluconate gel. Remove absolutely contaminated clothes and shoes. Certainly call the doctor.



EYE CONTACT: Corrosive. It causes irritation in the eyes. It may cause permanent visual impairments and even blindness when excessively affected. Hold the upper and lower eyelids open for at least 15 minutes and clean with water. Contact your doctor immediately.

CHRONIC EFFECTS: Effects of 6 mg on a daily basis have destructive effects on joints, bones and organs.

HAZARD OF FIRE

There is no danger of fire and explosion. It enters the reaction with water and generates heat in dangerous quantities.

HANDLING AND STORAGE

It should be stored in cool, dry and ventilated environments. Store in closed polyethylene tanks. Do not use together with arsenic trioxide, phosphorus pentoxide, ammonia, calcium oxide, sodium hydroxide, sulfuric acid, vinyl acetate, weak bases, ethylenediamine, most metals, organic substances, cyanates, glass silica.

PERSONAL PROTECTION

The working environment should have a general and local ventilation system as well as a fixed and portable face and eye showers. Non-permeable PVC or neoprene protective clothing, rubber boots, gloves, laboratory aprons should be used. Protective goggles or full face shields must be worn since splashing is possible.

SULFURIC ACID

Cas No: 7664-93-9

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	42/61

TYPE OF SUPPLY

Sulfuric acid is delivered to Mine Site as %95-97 solution in 5L plastic container.

PLACE AND PURPOSE OF USAGE AT MINE SITE

In the laboratory, it is used as a solvent in the cyanide determination process. It is prepared as 10% solution.

HAZARDS

INHALATION: Significant damage to the respiratory tract and as it is highly concentrated it may cause severe burns or death. Observations of the effects may be late. Remove the affected individual to fresh air, give oxygen if there is difficulty in breathing. If breathing stops, artificial respiration should be done. Immediately call a doctor.



INGESTION: It is very irritating. It causes burns in the mouth, throat and pharynx. Absolutely not induce vomiting. If conscious is open give plenty of water or milk to the affected individual.

SKIN CONTACT: It causes burns and the formation of yellow and brown stains. Clean the affected area with plenty of water for at least 15 minutes. Wash absolutely contaminated clothing and shoes before reuse. Place ice-water bags in places where the patient comes into contact with acid during transportation. Contact your doctor immediately. If medical assistance is delayed, wait for the affected area, often by immersing it in iced water, so that the tissue does not freeze.



EYE CONTACT: It may cause sudden pain, severe burns and corneal damage that may result in temporary blindness. Hold the upper and lower eyelids open for at least 15 minutes and clean with water. Contact your doctor immediately.

CHRONIC EFFECTS: With an extended contact, harmful effects on tissues occur. It may cause damage on kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes and teeth.

HAZARD OF FIRE

There is no danger of fire. But it reacts with the metals and forms easily flammable hydrogen gas. Do not use water to extinguish fire, use carbon dioxide or dry chemicals.

HANDLING AND STORAGE

Fire sources should be kept away from sulfuric acid storage, handling and equipment. It should be kept away from flammable, oxidizing substances, bases and metal powders. Storage tanks should not be exposed to water and moisture and should be well ventilated. Check tanks for cracks before use. The tanks must be completely closed.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	43/61

TOLUENE (METHYLBENZENE)

Cas No: 108-88-3

TYPE OF SUPPLY

Toluene is delivered to Mine Site in the form of liquid concentrate in 2.5L gas bottles.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used to degrease oil when needed in the oil analysis laboratory.

HAZARDS



INHALATION: Do not breathe the vapor. It irritates upper respiratory tract. Symptoms are fatigue, headache, dizziness and numbness. Excessive effect can cause loss of consciousness and death. The affected person should be removed to fresh air. If difficulty in breathing, artificial respiration should be done. Even oxygen should be given. If the complaints continue, contact the doctor.

INGESTION: Swallowing can cause stomach spasms. Absolutely not to induce vomiting. Give as much water or milk as possible if the conscious is open.

SKIN CONTACT: Causes severe irritation. Absorption occurs by the skin. Clean the affected area with plenty of water and soap for at least 15 minutes. Remove contaminated clothes. Contact the doctor immediately.



EYE CONTACT: It causes redness and pain. Hold the lower and upper eyelids for at least 15 minutes and clean with plenty of cold water. Do not allow the exposed person to rub eyes and keep eyes closed. Contact the doctor immediately.

CHRONIC EFFECTS: Effects are anaemia, liver and kidney disorders. If repeated and prolonged skin contact takes place, skin inflammation may occur.

HAZARD OF FIRE

It fires with heat and sparks. In case of fire, use dry powder chemicals, alcohol foam, carbon dioxide. Use water to cool the warmed containers.

HANDLING AND STORAGE

Keep away from sources of sunlight, open flame and sparks. Store in cool, dry and well-ventilated areas. Keep away from smoking areas. Do not use together with strong oxidizers, nitric acid, sulfuric acid, sodium difluoride and nitrogen tetraoxide.

PERSONAL PROTECTION

The working environment should have a general and local ventilation system as well as a fixed and portable face and eye showers. Non-permeable rubber or neoprene-coated clothing, boots, rubber gloves and laboratory aprons should be used.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	44/61

NITRIC ACID

Cas No: 7697-37-2

TYPE OF SUPPLY

Nitric acid is delivered to Mine Site in liquid state in 40L plastic containers.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used in the laboratory as a solution of 55% in gold determination analysis.

HAZARDS

INHALATION: It creates pain in the throat, coughing, shortness of breath, various respiratory difficulties. It irritates the respiratory tract. It can cause pulmonary edema. The effects occur over time. Definitely carry the affected individual to fresh air. If breathing is difficult, artificial respiration should be performed. Even oxygen should be given. Consult the doctor as soon as possible.

INGESTION: Immediately drink plenty of water, if necessary, a few liters, stop vomiting against the risk of puncture. Call a doctor immediately and do not try to neutralize.

SKIN CONTACT: May cause irritation, burns and redness. Clean the affected area with plenty of water and soap for at least 15 minutes. Wipe with polyethylene glycol 400. Remove absolutely contaminated clothes and shoes. Absolutely consult a doctor.



EYE CONTACT: It may cause redness in the eyes, pain and double vision. Hold the upper and lower eyelids open for at least 10 minutes and clean with water. Immediately call an ophthalmologist.

CHRONIC EFEEFCTS: Damage to teeth, gums and nose.

HAZARD OF FIRE

It's not flammable. An all-around fire can release dangerous vapors. During the fire, do not be around without respiratory equipment. To avoid contact with skin, stop at a safe distance and wear suitable protective clothing. The container must be cooled by spraying water at a safe distance. Contains water and leaking vapors. Fire-fighting water must be prevented from leaking into surface water or groundwater.

HANDLING AND STORAGE

Avoid sources of heat, open flames and sparks. Store in cool, dry and well ventilated areas with acid-resistant flooring and good drainage systems. Polymerization may occur at low temperatures. Keep away from other acids, reducing agents, oxidizers and bases. Never use hot water and do not add water to acid. The tanks must be sheltered to avoid physical damage.

PERSONAL PROTECTION

The working environment should have a general and local ventilation system as well as a fixed and portable face and eye showers. Non-permeable rubber or neoprene-coated clothing, boots, rubber gloves, laboratory aprons should be used.

DIISOBUTYL KETONE

Cas No: 108-83-8

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	45/61

TYPE OF SUPPLY

Diisobutyl ketone is delivered to Mine Site Laboratory in formation of liquid concentrate in 1L glass bottles.

PLACE AND PURPOSE OF USAGE AT MINE SITE

3ml is used in the analysis of gold determination in the laboratory. Received in one liter glass bottles and is used by adding ten millilitres of aliquot into a litter.

HAZARDS

INHALATION: It causes irritation in mucous membranes, coughing, nausea, vomiting, hypotension, headache, dizziness, intoxication, central nervous system disorders and pulmonary edema. If immediate fresh air is required, mouth-to-mouth resuscitation or mechanical respiration should be performed. The respiratory tract must be kept open.

INGESTION: Give plenty of water immediately to drink. Then apply activated charcoal (20-40 g of 10% liquid). Do not induce vomiting, do not give milk or digested oils. Keep respiratory tract open. Call the doctor. The risk of aspiration and pulmonary stasis may occur in the case of spontaneous vomiting.

SKIN CONTACT: Drying effect resulting in hard and cracked skin. Wash with plenty of water. Absolutely remove contaminated clothing.



EYE CONTACT: May cause slight irritation in eyes. Wash thoroughly with plenty of water for at least 10 minutes by holding the eyelids open. Immediately call an ophthalmologist.

CHRONIC EFFECTS: It can cause kidney and lung diseases.

HAZARD OF FIRE

It is flammable. Forms explosive mixtures with air at elevated temperatures. Vapors are heavier than air. In case of fire, dangerous combustible gases or vapors may form so do not stay in dangerous zone without respiratory equipment. Prevent firefighting water from leaking into surface water or groundwater.

HANDLING AND STORAGE

To avoid fire and explosion, keep away from ignition sources. Take precautions to prevent electrostatic charging. Keep away from sources of ignition and heat and keep it tightly closed in a well-ventilated place.

PERSONAL PROTECTION

The working environment should have a general and local ventilation system as well as a fixed and portable face and eye showers. After you work with the substance, wash your hands and face. Boots, rubber gloves, goggles and aprons should be used.

STANNOUS CHLORIDE ANHYDROUS

Cas No: 7772-99-8

TYPE OF SUPPLY

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	46/61

Stannous chloride anhydrous is delivered to Mine Site in liquid state in 1kg glass bottles.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Stannous Chloride Anhydrous solution is prepared in the laboratory and 2 ml is used during cyanide distillation.

HAZARDS



INHALATION: It is irritant to the respiratory system and causes increase in body temperature in case of long breathing. Carry the patient to fresh air. If the patient feels bad, call the doctor.

INGESTION: The patient should drink plenty of water, induce vomiting and call the doctor.

SKIN CONTACT: It is irritant, there is a risk of skin sensitization. The area in contact should be washed with plenty of water should be washed and the contaminated clothing should be removed.



EYE CONTACT: May cause irritation in the eyes. Hold eyelids open and flush with water. Call an ophthalmologist.

CHRONIC EFFECTS: If breathing too much it will damage the respiratory system. If contacting too much with skin and eyes it irritates.

HAZARD OF FIRE

It's not flammable. An all-around fire can release dangerous vapors. During the fire, hydrochloric acid may develop. Suitable extinguishing media is dust, do not use water at all. Do not stay in dangerous areas without respiratory equipment and chemical protective clothing. Contains vapors leaking with water. Prevent firefighting water from leaking in surface water or underground water.

HANDLING AND STORAGE

Do not allow dust to be formed, do not breathe dust, avoid substance contact, store in a closed air with providing fresh air. It is stored tightly closed and dry.

PERSONAL PROTECTION

Respiratory protection is necessary when dusts are formed. Plastic gloves, goggles and apron are used.

ZINC ACETATE, DIHYDRATE

Cas No: 5970-45-6

TYPE OF SUPPLY

Zinc Acetate is delivered to Mine Site warehouse in 1kg plastic containers.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No TMD_ISG_PLN.006	Rev. 0	Page 47/61
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PLACE AND PURPOSE OF USAGE AT MINE SITE

Zinc acetate dihydrate solution is prepared in the laboratory and 5 ml is used during cyanide distillation

HAZARDS



INHALATION: It irritates mucous membranes and causes coughing. If breathing the vapor, pulmonary edema occurs. Carry the patient to fresh air after breathing. If the affected individual feels bad consult the doctor.

INGESTION: It causes diarrhoea, vomiting, and cardiovascular disorders. Give the patient plenty of water to drink and induce vomiting. Consult the doctor.

SKIN CONTACT: It is slightly irritating. The contact area must be washed with plenty of water and the contaminated clothes must be removed.



EYE CONTACT: May cause slight irritation in eyes. Wash thoroughly with plenty of water by holding the eyelids open. Immediately call an ophthalmologist.

CHRONIC EFFECTS: It has a compressive effect on the mucous membranes.

HAZARD OF FIRE

It is not flammable. An all-around fire can release dangerous vapors. During the fire, use fire extinguishers in accordance with the nearest stored material. Do not stay in dangerous areas without respiratory equipment. Prevent the extinguishing water from leaking into surface water or groundwater.

HANDLING AND STORAGE

Do not allow dust to be formed, do not inhale the dust, do not allow it to penetrate in the sewer system, and store it away from the solvents. It is stored tightly closed and dry.

PERSONAL PROTECTIVE

Respiratory protection is necessary when dusts are formed. Rubber gloves, goggles and aprons are used. After working with the substance, wash your hands.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	48/61

SODIUM ACETATE TRIHYDRATE

Cas No: 6131-90-4

TYPE OF SUPPLY

Sodium Acetate Tryhydrate is delivered to Mine Site in 1kg plastic containers.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used in the preparation of 4.5 buffer used in cyanide distillation in the laboratory.

HAZARDS

INHALATION: Causes slight mucosal irritation. Carry the patient to fresh air after breathing.

INGESTION: After swallowing too much, gastrointestinal complaints happen and if the person feels bad, call for medical advice.

SKIN CONTACT: It is slightly irritating. Skin must be washed under running water.



EYE CONTACT: Causes slight irritation on eyes. Should be washed with plenty of water.

CHRONIC EFFECTS: Does not cause chronic disorders.

HAZARD OF FIRE

It's not flammable. An all-around fire can release dangerous vapors. In the event of fire, flammable vapors may develop. In accordance with the nearest stored material during the fire. During the fire, use fire extinguishers In accordance with the nearest stored material. Do not stay in dangerous areas without respiratory equipment. Prevent the extinguishing water from leaking into surface water or groundwater.

HANDLING AND STORAGE

Do not allow dust to be formed, do not inhale the dust, do not allow it to penetrate in the sewer system, and store it away from the solvents. It is stored tightly closed and dry. It must not be heated while using and keep it away from nitrates.

PERSONAL PROTECTION

Respiratory protection is necessary when dusts are formed. Rubber gloves, goggles and apron are used. After working with the substance, wash your hands. Change contaminated clothes.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No TMD_ISG_PLN.006	Rev. 0	Page 49/61
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CHLORAMINE T

Cas No: 7080-50-4

TYPE OF SUPPLY

Chloramine T is delivered to Mine Site in 1kg plastic containers

PLACE AND PURPOSE OF USAGE AT MINE SITE

During the cyanide coloration in the laboratory, chloramine T solution is prepared and 2 ml of the solution is used.

HAZARDS

INHALATION: May cause allergies. Carry the affected individual to fresh air after breathing. If breathing has ceased, artificial respiration should be administered. If there is a difficulty in breathing, oxygen should be given and a doctor should be called.

INGESTION: If swallowed, do not induce vomiting, give plenty of water to drink. Never give anything by mouth to a unconscious patient. Call the doctor.



SKIN CONTACT: May cause burns in contact with skin, remove the contaminated clothes and wash the affected area with running water for at least 15 minutes. Call a doctor. Wash dirty clothes and shoes immediately. They are corrosive.

EYE CONTACT: It causes irritation in the eyes. Wash with running warm water for at least 15 minutes keeping eyelids open.

CHRONIC EFFECTS:

Does not cause chronic disorders.

HAZARD OF FIRE

It's not flammable. Preferably water or mist should be used. Foam, powder and carbon dioxide may be used. In case of fire, it emits toxic fumes. In the event of a fire, you must wear a full face mask, or full protective clothing, including safety goggles, rubber aprons and boots.

HANDLING AND STORAGE

Do not allow dust to be formed, do not inhale dust, and avoid contact with eyes and skin. Do not contact with acidic products and water vapor. Store in cool place. Keep container tightly closed and in dry place.

PERSONAL PROTECTION

There should be good ventilation and eye and body shower. In case of dust formation use dust mask. Full protective chemical protective eyewear, protective gloves and apron should be used.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	50/61

BARBITURIC ACID

Cas No: 67-52-7

TYPE OF SUPPLY

Barbituric Acid is delivered to Mine Site in 500 gr containers.

PLACE AND PURPOSE OF USAGE AT MINE SITE

During the cyanide coloration in the laboratory, barbituric acid solution is prepared and 5ml of the solution is used.

HAZARDS

INHALATION: It irritates the respiratory tract. After breathing you should go to fresh air.

INGESTION: If swallowing occurs, the patient should be given plenty of water to drink, induce vomiting and consult a doctor.

SKIN CONTACT: It is local irritant. The affected area should be washed with plenty of water and contaminated clothes should be removed immediately.



EYE CONTACT: Causes local irritation in the eyes. Wash with plenty of water while holding eyelids open.

CHRONIC EFFECTS:

Does not cause chronic disorders.

HAZARD OF FIRE

It is flammable. In case of fire, dangerous combustion gases and vapors may evolve. Nitrogen oxides may evolve. In the event of fire, water, carbon dioxide, foam and powder extinguishers may be used. Do not enter in the dangerous zone without respiratory equipment as a protective equipment. Contains vapor leaking with water. Prevent firefighting water from leaking into surface water or groundwater.

HANDLING AND STORAGE

Do not allow dust to be formed, do not inhale dust, do not allow to enter in the sewer system. It is stored tightly closed and dry. It should not be heated when in use.

PERSONAL PROTECTION

Respiratory protection is necessary when dusts are formed. Gloves, goggles and apron are used. After working with the substance, wash your hands. Contaminated clothes should be replaced.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No TMD_ISG_PLN.006	Rev. 0	Page 51/61
--	---------------------------------------	------------------	----------------------

SODIUM HYPOCHLORITE

Cas No: 7681-52-9

TYPE OF SUPPLY

Sodium Hypochlorite is delivered to the warehouse at Mine Site in 50-60L plastic containers.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Sodium Hypochlorite is used at the settling ponds at Mine Site in pH regulation. 4 L should be added for 1 m3 Sodium bisulphate solution.

HAZARDS

INHALATION: It irritates the upper respiratory tract. After breathing, fresh air needs to be provided and should be kept warm while resting. If breathing ceases, artificial respiration should be performed. If breathing is difficult, oxygen should be given and a doctor should be consulted.

INGESTION: It is dangerous and poisonous. If swallowed causes irritation in mouth, throat and skin. If swallowing has occurred, it should never be vomited. There is absolutely nothing to be given to the patient who is not in the conscious place. Drink 1 cup (250-300ml) of water every minute of consciousness. Immediately consult a doctor.

SKIN CONTACT: It is dangerous. Redness, pain and irritation are known symptoms. Wash with plenty of water for at least 15 minutes. The clothing in the contact area must be removed. The doctor should be consulted.



EYE CONTACT: It is dangerous and poisonous. It is harmful. Redness causes blurred vision for a while, causing pain and some tissue irritations. Keep eyelids open and wash with plenty of water for at least 15 minutes. The doctor should be consulted.

CHRONIC EFFECTS: In case of inhalation, irritation to the lungs, when swallowed, irritation and damage to the throat, stomach and intestines, and severe eye damage when contacted by high concentration.

HAZARD OF FIRE

There is no danger of fire and explosion. In acidic environment, it is degraded by the effect of heat and light. If there is pressure in the containers, when heated or contacted with acid gases it may explode. Oxidizing organic substances enter into severe reactions which can result in fire. Extinguishing media suitable with the surrounding conditions, water spray, carbon dioxide, dry chemicals or foam may be used. Suitable extinguishers such as water spray and blankets should be used to extinguish the fire. Containers exposed to fire should be cooled with water spray. Unburned parts should be removed from the environment.

HANDLING AND STORAGE

Store in a cool, dry, well-ventilated place. Ventilated containers should be used. Packages must be kept in a vertical position and protected against physical damage. Due to the limited shelf life of sodium hypochlorite it is impossible to store it for a long time. It should be kept away from daylight and flammable substances. Safety showers should be provided for skin and eye contact. It should be kept away from foodstuffs and drinks.

PERSONAL PROTECTION

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	52/61

In case of heavy exposed, air clothing and hat and protective equipment independent from surrounding air and covering full face should be used. Protective clothing such as waterproof boots, PVC gloves, plastic aprons, PVC clothes should be worn as skin protectors. Protective eyewear and face shield should be used. Personnel who will intervene in the fire should use clothing that completely protects the body (chlorine mask, sealed chemical glasses, pvc boots and gloves) and respiratory equipment.

DELTAMETHRIN

Cas No: 52918-63-5

TYPE OF SUPPLY

Deltamethrin is delivered to Mine Site in 50 ml plastic bottles in a liquid state. If needed, it is mixed with 8-14 l water, it is used with pulverization.

PLACE AND PURPOSE OF USAGE AT MINE SITE

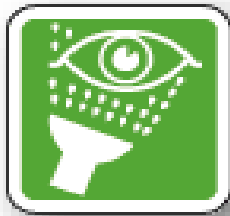
It is used as a fly spray by the Environment Department at Mine Site.

HAZARDS

INHALATION: It may be poisonous when inhaled. The patient should be carried to fresh air and provided to breath comfortably while resting. If the symptoms persist, contact a health center.

INGESTION: May be toxic if swallowed. Do not induce vomiting. Wash the mouth with water. Provide resting for a while and consult a health center for medical assistance.

SKIN CONTACT: It may damage the skin. Remove contaminated clothing immediately. Wash the affected area with soap and plenty of water. After deep contact, use cream containing vitamin E. If the symptoms persist, contact a health center.



EYE CONTACT: It may cause damages to eyes. In case of contact with the eye, wash the eye with plenty of water and seek medical advice..

HAZARD OF FIRE

Use water spray, foam, dry powder, carbon dioxide to extinguish. The product itself is not easy flammable. Normal fire-fighting measures may be taken. Hazardous gases may emerge during the fire. Do not inhale the gas that emerged in case of fire or explosion. When fighting against fire, wear absolutely protective equipment that provide safe

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	53/61

breathing. If possible, remove the the packages contact with flames. Spray water to keep unopened packages cool. Whenever possible, use sand and soil with water.

HANDLING AND STORAGE

No special precautions are required when dealing with unopened packages. After work, wash your hands with soap and water before eating, drinking and smoking. The substance is flammable but not easily flammable. Keep away from the environment where it may come in contact with the flame or catch fire. Do not smoke. Store in unopened packages in dry and cool places. Keep away from animal feed sources, seeds, and fertilizer. Keep it in an environment where only authorized persons can enter. Keep away from direct sunlight and chilliness. Store at 0-30 ° C.

PERSONAL PROTECTION

Dust mask as a respiratory protection, PVC gloves as hand protection, chemical proof gloves, goggles that do not penetrate the chemical should be worn. Wear protective clothing and PVC boots for skin and body protection. Do not eat, drink or smoke during use. Remove the contaminated clothing immediately. After applying with medication, wash your hands and face thoroughly. Work in an adequately ventilated room.

RODILON PASTE

Cas No: 104653-34-1 Difethialone (0,0025 %)

TYPE OF SUPPLY

Rodilon Paste is delivered to Mine Site in 100 gr plastic bags enclosed within parcels.

PLACE AND PURPOSE OF USAGE AT MINE SITE

Used by the Environment Department as mouse poison.

HAZARDS

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	54/61



INHALATION: Highly toxic after inhalation.

INGESTION: Highly toxic after ingestion. Do not induce vomiting the patient. Flush the mouth with water. Let the patient rest for a while. Call for medical assistance from a health center.

SKIN CONTACT: It's very toxic when touched. Remove contaminated clothing immediately. Wash affected area with soap and plenty of water and, if possible, with polyethylene glycol 400. If the symptoms persist, contact a health center.



EYE CONTACT: In case of contact with the eye, wash the eye with plenty of water and seek medical advice.

HAZARD OF FIRE

Use water spray, dry powder, sand and carbon dioxide to extinguish the fire. Hazardous gases may emerge during the fire. Do not pull the gas that emerged in case of fire or explosion. When fighting against fire, wear absolutely fittings that provide secure breathing.

HANDLING AND STORAGE

After working with product, wash your hands with soap and water before eating, drinking and smoking. Keep away from the environment where it may come in contact with the flame or catch fire. Do not smoke. It should be stored in unopened packages in dry and cool places. Keep away from animal feed sources, seeds, and from fertilizers. Keep it in an environment where only authorized persons can enter. Avoid the product from direct sunlight and cold. Store at a temperature below 40 ° C.

PERSONAL PROTECTION

No respiratory protection is required. Nitrile plastic gloves with CE marking with a minimum thickness of 0.40 mm should be used as protective gloves. You wash your hands when contaminated. When it get inside the gloves, destroy the gloves if the contamination is not washed out. Chemical-resistant safety goggles must be worn. Do not eat, drink or smoke at all during usage. Remove the contaminated clothing immediately. Clean your hands and face after applying with medication. Work in an adequately ventilated room. Separate the clothes you wear during the pest control from the others.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	55/61

ROUNDUP STAR

Cas No: 70901-12-1

TYPE OF SUPPLY

Round up star should be transported to Mine Site in 5L and 1L plastic containers packed in parcels.

PLACE AND PURPOSE OF USAGE AT MINE SITE

It is used to remove weeds from the Mine Site.

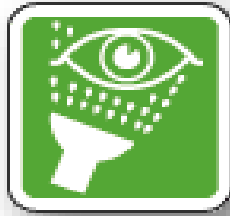
HAZARDS

Toxic to aquatic organisms. May cause long-term side effects in water environment.

INHALATION: Carry the affected individual to fresh air

INGESTION: Give water to drink. If the conscious is closed do not give anything by mouth. Call for medical assistance.

SKIN CONTACT: Clean the affected skin with plenty of waters. Remove the contaminated clothes, watch and jewellery. Wash clothing before reuse. If symptoms continue to exist call for medical assistance.



EYE CONTACT: Flush eyes immediately with plenty of waters. If possible remove the contact lenses. If symptoms continue to exist, call for medical assistance.

HAZARD OF FIRE

The product has no characteristic of burning. Use water, foam, dry chemicals or carbon dioxide as fire extinguishers. To prevent the environment from being polluted, use as little water as possible. The hazardous products resulting from combustion are carbon monoxide (CO), phosphorus oxides (P_xO_y) and nitrogen oxides (NO_x). A portable respiratory equipment that will provide flexibility in moving should be used. After usage the equipment should be completely cleaned.

HANDLING AND STORAGE

Eye contact should be prevented. Do not eat, drink or smoke while using the product, After using the product or after the contact with the product your hands should be thoroughly washed. The contaminated clothes should be washed before re-use them. After usage the equipment should be thoroughly cleaned. When rinse water is discharged from the equipment, sewers, basements and waterways should not be polluted. Rinse water should be drained to the spraying tank.

Minimum storage temperature is -15 ° C and maximum storage temperature is 50 ° C. Suitable materials for storage are stainless steel, glass fiber, plastic and glass enclosures. Galvanized steel, untreated mild steel are not suitable for

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	56/61

storage. It should be kept away from food, drinks. The product should be stored in the containers tightly closed and in a cool and well-ventilated area; and stored only in the original container. Minimum shelf life is 2 years.

PERSONAL PROTECTION

If potential of contact is high wear safety goggles. If repeated or prolonged skin contact takes place, gloves resistant to chemicals should be worn.

EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	57/61

APPENDIX 2 – LAPSEKİ HAZMATS INVENTORY

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EXPLOSIVES AND HAZARDOUS MATERIALS MANAGEMENT PLAN for LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	58/61

APPENDIX 3 – LAPSEKİ HAZMATS STORAGE AREA

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EXPLOSIVES and HAZARDOUS MATERIALS MANAGEMENT PLAN For LAPSEKİ & İVRİNDİ PROJECTS	Document No	Rev.	Page
	TMD_ISG_PLN.006	0	60/50