Appendix 31-4: Cyanide Management Plan

CYANIDE MANAGEMENT PLAN

Version 2

MARCH 2023

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DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1	August 2022	All	All	First version of the Cyanide Management Plan	Health and Safety and Environment Departments
2	March 2023	13.6	56	Mock Drill frequency was modified to yearly, as per ICMC requirements and following reception of the ICMI comments on the September 2022 Audit reports Removed Appendix 5 (Nunavut Emergency Management)	Health and Safety and Environment Departments

The Cyanide Management Plan will be reviewed annually, and as needed after cyanide-related mock drills or actual release/emergency response to reflect the lessons learned from these events. The document management system (Intelex) will ensure that the review is planned on a yearly basis. All document records pertaining to the cyanide management will be stored in the document management system (Intelex) under Meliadine – Health & Safety – ICMC.

Agnico Eagle has developed several management plans, procedures and other documents that contain dispositions related to cyanide management. These documents should be considered as the most up to date references and have precedence over the present document.

ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AEGL	Acute Exposure Guidelines Level
Agnico Eagle	Agnico Eagle Mines Limited
APR	Air Purifying Respirators
AR AFFF	alcohol resistant aqueous film forming foam
ASME	American Society of Mechanical Engineers
ATV	All Terrain Vehicule
AWAR	All Weather Access Road
CIL	Carbon in Leach
Chemours	Chemours Canada Company
CMP	Crisis Management Plan
CNFree	Free cyanide
CNS	Central Nervous System
CNT	Total cyanide
CNWAD	WAD cyanide
CP	Containment Ponds
DDEC	Dominion Diamond Ekati Corporation
E&I	Energy and Infrastructure
ERP	Emergency Response Plan
ERT	Emergency Response Team
GN	Government of Nunavut
HCN	Hydrogen Cyanide
H&S	Health and Safety
HLF	Heap Leach Facilities
HSSO	Meliadine Health and Safety / Security Officer
IBC	Intermediate Bulk Container
ICMI	International Cyanide Management Institute
ICRP	Interim Closure and Reclamation Plan
IDLH	immediately dangerous to life or health

KCG	Kivalliq Contractor Groups LTD
Licence	Amended NWB Water Licence No. 2AM-MEL1631
MAC	Mining Association of Canada
MDMER	Metal and Diamond Mining Effluent Regulation
Mine	Meliadine Gold Mine
MOU	Memorandum of understanding
MSB	Multi-service building
NaCN	Sodium Cyanide
NEM	Nunavut Emergency Management
NIOSH	National Institute for Occupational Safety and Health
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
OMS	Operation, Maintenance, and Surveillance
PAPR	Powered Air Purifying Respirators
PPE	Personal Protective Equipment
Plan	Cyanide Management Plan
PM	Preventative maintenance
RSF	Rock Storage facilities
SAD	strong acid dissociable
SCBA	Self-Contained Breathing Apparatus
SDS	Safety Data Sheet
SOP	Standard Operating Procedure
TC	Transport Canada
TLV	Threshold Limit Value
TMS	Training Management System
TSF	Tailing Storage Facility
WAD	weak acid dissociable
WBWQM	Water Balance and Water Quality Model
WSCC	Workers' Safety and Compensation Commission

UNITS

%	percent
°C	degrees Celsius
g	gram
mg/L	milligram per litre
mg/kg	milligram per kilogram
mmHg	millimeter of mercury
km	kilometer(s)
kPa	kilopascal
L	Liter
Lbs	Pounds
m	metre
mm	millimetre
ppm	parts per million
psi	pound per square inch

1. INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) operates the Meliadine Gold Mine (the Mine) located approximately 25 kilometres (km) north of Rankin Inlet (Figure 1), Nunavut, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut (Figure 1). The Mine is subject to the terms and conditions of both the amended Project Certificate 006 issued by the Nunavut Impact Review Board (NIRB) in accordance with the Nunavut Land Claims Agreement Article 12.5.12 on March 2nd, 2022 (NIRB, 2022) and the Amended Water Licence No. 2AM-MEL1631 (the Licence), issued by the Nunavut Water Board (NWB) on May 13, 2021 and approved by the Minister of Northern Affairs on June 23, 2021 (NWB, 2021).

1.1 Purpose

The purpose of the Cyanide Management Plan (the Plan) is to provide guidance on the measures taken by Agnico Eagle, Meliadine division to ensure, not limited to, the safe handling, use, transport and emergency response with regards to cyanide in line with the protocols outlined by the International Cyanide Management Institute (ICMI) and the International Cyanide Management Code for the Manufacture, Transport and Use of Cyanide in the Production of Gold" (Cyanide Code).

1.2 Scope

The scope of the Plan is inclusive from the time Agnico Eagle takes care and custody of the product, to the point at which the product and its' packaging is destroyed.

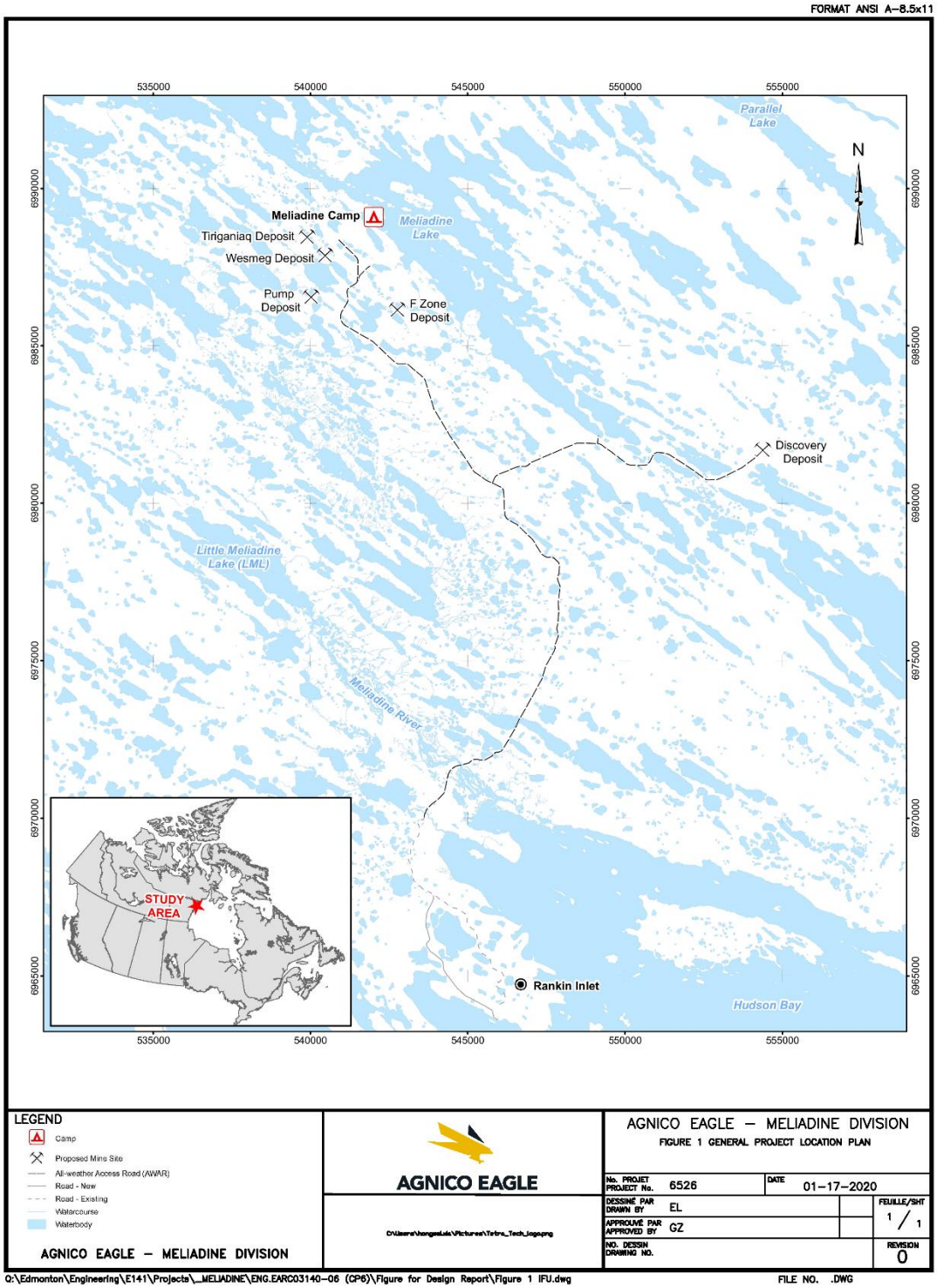


Figure 1 General Mine Site Location Plan

2. PROPERTIES OF CYANIDE

The properties of cyanide are presented in Table 1 below.

Table 1 Properties of cyanide

Common Name	Synonyms	Molecular Formula	State	Identifier	Melting Point (°C)	Boiling Point (°C)	Flash Point (°C)	Vapor Density @26°C	Specific Gravity (g/L)	pH
Hydrogen Cyanide	Hydrocyanic Acid	HCN	Liquid	Bitter almond or stinky sneaker odor	-13.3	26	-18	0.94	0.7	N/A
Hydrogen Cyanide	Hydrocyanic acid gas	HCN	Gaseous	Bitter almond odour	N/A	N/A	-17.8	0.93	0.938	N/A
Sodium Cyanide	Sodium salt	NaCN	Solid	White color	562	1497	N/A	N/A	N/A	11-12

3. HAZARDS OF CYANIDE

3.1 Health Hazards

Cyanide is a rapidly acting, potentially deadly chemical. Cyanide prevents the cells of the body from using oxygen, resulting in the dying of affected cells. Exposure could be from breathing contaminated air, drinking water, eating food, or touching contaminated surfaces which can cause respiratory distress loss of consciousness, convulsions, systemic toxicity, or death. Survivors of serious cyanide poisoning may develop heart, brain and nerve damage.

The extent of poisoning caused by cyanide depends on the amount of cyanide a person is exposed to, the route of exposure, and the length of time that a person is exposed.

Inhaling cyanide gas causes the most harm, but ingesting cyanide may also be toxic.
Cyanide gas is most dangerous in enclosed places where the gas will be contained.
Cyanide gas evaporates and disperses quickly in open spaces, making it less harmful outdoors.
Cyanide gas is less dense than air; so, it will rise.
Cyanide prevents the cells of the body from using oxygen. When this happens, the cells die.

Cyanide is more harmful to the heart and brain than to other organs because the heart and brain use a lot of oxygen.

<u>Routes of exposure</u>

Cyanide agents means of inducing toxicity is through inhalation, ingestion and skin/eye contact.

Inhalation: All breathable forms of cyanide are readily absorbed via the lung.

Ingestion: Ingested cyanide is immediately absorbed from the gastrointestinal tract. Alkali salts of cyanide are toxic only when ingested.

Skin/Eye contact: Cyanide may be absorbed through the skin or mucous membrane, although the onset of toxic symptoms may be delayed. Exposure to cyanide may result in skin and eye irritation.

Symptoms of Cyanide Poisoning

Workers handling, storing, using or generating cyanides are trained to recognize symptoms of cyanide poisoning.

The onset of symptoms of cyanide poisoning is generally fast, but can depend on:

The form—whether it is solid, liquid or gas

The route of exposure

The amount of cyanide the person is exposed to.

Exposure to, and inhalation of, cyanide gas generally results in the quickest onset of symptoms. Poisoning can be classed as acute (short-term) or chronic (long-term). The symptoms and health effects of cyanide poisoning are independent of the route of exposure.

Acute poisoning

Depending on the level of exposure, the level of poisoning can be described as *mild* or *moderate to severe*.

Mild poisoning can produce the following symptoms:

Headache
Anxiety
Dizziness
Nausea and vomiting – particularly if the cyanide has been ingested
Shortness of breath and a sense of suffocation
General weakness with heaviness of arms and legs

If treatment is not started quickly, symptoms may progress, and the person's condition can deteriorate to include signs of:

- Increased shortness of breath or gasping for air
- Falling blood pressure
- Cardiac arrhythmia—disturbance in heart rhythm and pulse
- Cyanosis—blue or purple colouration of the skin or mucous membranes
- Deteriorating levels of consciousness.

Moderate to severe poisoning results from exposure to higher concentrations of cyanides and symptoms include:

Rapid loss of consciousness
Seizures
Gasping for breath, weakness or absence of breathing
Cardiac arrest

Death may occur within a few minutes of exposure to moderate or high amounts of cyanides. Survivors may suffer brain injuries due to toxic effects or lack of oxygen.

Showing these signs and symptoms does not necessarily mean that a person has been exposed to cyanide. Carbon monoxide and cyanide inhalation are indistinguishable in a pre-hospital setting, both impair cellular oxygen uptake resulting in hypoxia.

Chronic poisoning

Chronic exposure to cyanides is rare because cyanides are metabolised quickly in the body and subsequently excreted. Chronic exposure can produce the following symptoms:

Headache
Eye irritation
Fatigue
Chest symptoms like shortness of breath
Nose bleeds.

Acute Health Effects

Central Nervous System: CNS signs and symptoms usually develop rapidly. Initial symptoms are nonspecific and include excitement, dizziness, nausea, vomiting and headache. This then may progress to stupor, apnea, generalized seizures and coma.

Cardiovascular: Abnormal heartbeat can occur in cases of severe poisoning. Bradycardia, intractable low blood pressure and death may result. High blood pressure and rapid heartbeat may be early, transient finding.

Respiratory: After systemic poisoning begins, victims may complain of shortness of breath and chest tightness. Pulmonary findings may include rapid breathing and increased depth of respirations. As poisoning progresses, respirations become slow and gasping; cyanosis may not be present. Pulmonary edema may develop.

Metabolic: Creates a high anion gap. Metabolic acidosis occurs in severe poisoning from increased blood levels of lactic acid mostly created by the bradypnea (respiratory acidosis).

Dermal: Contact with liquid cyanide causes skin irritation. Dermal absorption can occur and lead to a systemic toxicity.

Ocular: When splashed in the eye, liquid cyanide can cause eye irritation and swelling. Eye contact with cyanide salts has produced systemic reactions in experimental animal testing.

Potential Sequelae: Survivors of serious exposure should be evaluated for damage to the brain and heart. Worker with serious cyanide poisoning may be at risk for CNS sequelae including memory deficits and Parkinson-like syndromes. Severely exposed workers should be clinically evaluated for several weeks to several month post exposure

3.2 Exposure limits

Table 2 Cyanide Exposure Guidelines

Occupational Exposure Limits	
Occupation Exposure Limit	American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) Ceiling: 4.7 ppm

3.3 Environmental Hazards

Cyanide occurs in various organic and inorganic compounds containing cyano-group as part of their molecule. Two groups of cyanide are distinguished cyanide and complex cyanide. Molecular HCN is considered the moiety of concern for cyanides for the ecological assessment as it is expected to be the dominant free cyanide species under environmentally representative conditions. Precursors of free cyanide relevant to the ecological screening assessment may be classified as “weak acid dissociable” (WAD) cyanide complexes or “strong acid dissociable” (SAD) cyanide complexes. Cyanides may be measured in the environment as free cyanide (CNFree), WAD cyanide (CNWAD) or total cyanide (CNT), with the latter referring to the sum of CNFree and CNWAD species, and all other remaining strong cyanide complexes (i.e., “strong acid dissociable” CNSAD).

In air, cyanide is mainly found its gaseous hydrogen cyanide; a small amount may be present as fine dust particles. It takes about one to three years for half-life of hydrogen cyanide to disappear from the air.

Most cyanide in surface waters will form hydrogen cyanide and evaporate. Cyanide does not bioaccumulate. Many species of bacteria fungi algae and also plants are able to use cyanide and degraded to less toxic substances like CO_2, NO_3^-,SCN^-, and OCN^-. At high concentrations, cyanide becomes toxic to soil microorganisms and can pass through soil into underground water.

3.4 Analytical Methods of Determining Cyanide

The process plant utilizes titration and environmental monitoring as methods of determining cyanide presence.

3.5 Environmental Effluent guidelines

Table 3 Cyanide Environmental Guidelines

Source	Guidelines / Regulation		
Guidelines for Canadian Drinking Water Quality	Canadian Drinking Water 0.2 mg/L CN free		
Metal and Diamond Mining Effluent Regulation (MDMER) (SOR/2002-222)	Monthly Mean 0.50 mg/L CN total	Composite Sample 0.75 mg/L CN total	Grab Sample 1.00 mg/L CN total
Nunavut Water Board Type A Water Licence 2AM-MEL1631[1]	Monthly Mean 0.5 mg/L CN total	Grab Sample 1.00 mg/L CN total	
ICMI effluent Guideline	Direct Discharge 0.5 mg/L CN wad	Downstream of mixing zone 0.33 mg/L CN free	
Canadian Soil Quality Guidelines (CCME, 1999)	Agricultural / Residential 0.9 mg/kg CN free	Commercial / Industrial 8.0 mg/kg CN free	

4. CYANIDE TRANSPORTATION

4.1 Transport to Rankin Inlet

Agnico-Eagle has a contract with Chemours Canada Company (Chemours) for purchase and delivery of solid cyanide briquettes in boxes. Chemours is a certified cyanide producer and uses a certified cyanide transporter to deliver cyanide to the Port of Bécancour for shipment to Meliadine, as well as other mines in the territory.

Agnico Eagle takes care and custody of the product once the product containers are safely landed at the port loading area.

4.1.1 Offloading Barge at Itivia

All attempts are made to ensure that the sea cans are loaded directly on to the transport trucks for immediate delivery to the mine site. Cyanide sea cans must not be stored at Itivia for longer than 72 hours. In the event of bad weather,

1 Effluent quality limits for the discharge of effluent from the final discharge point at monitoring program station MEL-14 and directed to Meliadine Lake

communication will be held with the Sea Captain for the decision to proceed with the offloading of the barge. The offloading of the barge/holding of the containers on the ship is at the Sea Captain discretion in the event of bad weather.

If temporary storage is required, additional measures will be put in place as per the MEL-HSH-PRO-3001 Safe Escort of Cyanide during Bulk Transport procedure, such as building a temporary berm around the cyanide laydown pad, the sea cans will be placed door to door and monitoring for intrusion or leakage of the containers will be monitored by AEM personnel from the logistic department for the total duration of the storage. Cyanide warning signs will also be placed at the storage pad for the duration of the storage, alerting workers that: 1) cyanide is present, 2) smoking, open flames, eating and drinking are not allowed and 3) personal protective equipment must be worn.

4.2 Transport to Meliadine

The procedure MEL-HSH-PRO-3001 Safe Escort of Cyanide During Bulk Transport outlines the mitigation measures put in place to prevent cyanide release during transportation from Itivia to Meliadine site.

The cyanide sea cans are transported from the landing area at Itivia by flatbed transport trucks. As per the Roads Management Plan, the Bypass road, a 5.9 km long road between Itivia and the All-Weather Access Road (AWAR) is used, which circumvents Rankin Inlet and is closed to public use.

During the offloading from the barge and transport to site the shipments of cyanide are accompanied by an Emergency Response Team (ERT) and travel in a specific convoy. Prior to the transport cycle, certain required activities, checks, and notifications are completed and are described below. Documentation records of these activities will be maintained in Agnico Eagle's Meliadine division electronic records.

Drivers transporting cyanide sea cans to site will utilize Agnico Eagle owned trucks in the transport. As regulated drivers, they are legally bound by Hours of Service regulations. This limits the driving time, on-duty time, and work day limit. Only drivers with the appropriate and valid class of license for the respective vehicle will be permitted to transport cyanide sea cans to site.

The Logistics Supervisor will ensure to verify the drivers Licences prior to cyanide transport, as per the MEL-HSH-PRO-3001 Safe Escort of Cyanide during Bulk Transport procedure. If Kivalliq Contractor Groups LTD (KCG) drivers are utilized, the logistic supervisor will verify every 3 months with the local license issuing body (Ie: the province which they receive their driver license) the validity of the employee license. If any irregularity is identified during those checkups, the KCG project manager and affected workers are contacted and workers cannot operate equipment for Agnico Eagle until the situation has been resolved.

When contractor drivers are utilized, a representative from the Agnico Eagle Logistics Team contacts the contactor within 30 days of the transport as an additional check to verify compliance with the appropriate licensing.

Cyanide sea cans arrive by barge and are scheduled later in the barge season to avoid disruptions of road travel and transport during the caribou migration (which usually takes place in June and/or July). The planning and readiness for cyanide transport begins some months early with the initiation of the "Cyanide Transportation Readiness Plan" which includes preparation by each department involved in the transportation.

Prior to cyanide being transported from Itivia to Meliadine, Agnico Eagle informs relevant stakeholders as per Table 4

Table 4 Pre-Cyandide Transport Communication

Notification	Timeline	Responsible Party
Notification to National Defense / RCMP	(1) 30 days in advance, (2) 7 days in advance, (3) When dates are finalized	Supply Chain
Notifications to Local Community and Health center	30 days in advance	Community Relations
Advise the medical director of the probable schedule of cyanide transporting	30 days in advance	Medical Practitioner – Health and Safety (H&S)
Confirmation of drivers valid licensing (Email sent to the contractor).	30 days in advance	Logistics Team
General email the day prior (24 hrs) announcing anticipated closure times	24 hours in advance	Incident Commander or designate

***** A community meeting involving the medical staff, first responders, and concerned citizens is organized to review the cyanide transport safety protocols, and to answer any concerns brought forward. This is hosted by members of the Agnico Eagle Communications and Health and Safety departments.

4.3 Training

Initial training and refresher training including Cyanide Awareness, Respiratory protection, Dangerous Goods training, and Spill response is required for parties involved in the transport cycle including equipment operators, transport truck drivers, and Emergency response personnel. For the Medical and ERT personnel, additional training in the use of Self-Contained Breathing Apparatus (SCBA) is required.

Table 5 Required trainings for workers involved in Cyanide Transport

Transport / Training	Cyanide Awareness	Cyanide Transport	Cyanide Task training	Respiratory Protection	ERT Hazmat & Cyanide	Driver Awareness	Spill Response	SCBA
Truck Drivers	X	X		X		X		
Hyster Operator	X		X	X		X		
ERT members additional training					X		X	X

The Rankin Inlet Health center Medical Practitioners receive specialized training in cyanide poisoning and treatment including the use of “cyanokits”, presented by the clinic personnel of Meliadine. Due to Covid-19 restrictions, this was conducted in a limited capacity since 2020; however, it is intended to be re-instated in 2022, pending local public health orders.

Table 6 Training Program Description for Cyanide Transport

Training Program	Program Summary	Course name / Provider
Driver Awareness	Required training for Meliadine operations	TMS MEL 2.2/ Training Department
Cyanide Awareness	Training covers theoretical and practical knowledge on the Cyanide, chemical used in the Process Plant	MEL.1.34
Cyanide Task	Training covers practical knowledge on the Cyanide, chemical used in the Process Plant	Cyanide Awareness (MEL.1.34)
Chemical Awareness	Training covers theoretical and practical knowledge on chemicals used in the Process Plant. (cyanide included)	MEL.1.2
Respiratory Protection	Introduction to respiratory protective devices and Fit testing for respiratory mask	TMS Nun 1.20 / Training Department
Spill Response	Fundamentals of spill response and spill contingency procedures	TMS Nun1.38 / Training Department
Vehicle Operator Certification	Appropriate certification for the class of vehicle (i.e. Class 1 driver licence)	Canadian Driver licence for the class of vehicle to operate on public roads
ERT Hazmat & Cyanide	Training given on hazmat and cyanide response for ERT members	ERT Training MEL.4.11

4.4 Equipment Inspections

The maintenance conducts equipment preventative maintenance and inspections of the vehicles prior to transport including emergency vehicles, transport trucks and barge off loading equipment.

The emergency and convoy response equipment are inspected by members of the ERT.

The Supply Chain department will confirm load capacity of the trailers used in the transport to ensure that the trailers loads do not exceed the rated capacity.

In addition of the preventative maintenance and inspections, equipment is inspected on a daily basis prior to use by the operator of the equipment using a “pre-operation” check-list. These “pre-operation” inspection forms are placed in the form collection point on the second floor of the multi-service building (MSB).

4.5 Route Inspection

The route is inspected 7 days prior to the scheduled transport and again 24 hours prior to ensure road conditions and presence of wildlife cyanide will not impede the cyanide convey.

Cyanide Transportation

Convoy

The transport convoy is comprised of three components:

1. Lead Vehicle – Ambulance with Medical Practitioner and ERT member

2. Transport Trucks

3. Rear Vehicle – Emergency Decontamination vehicle

Transport Route

Transportation starts at the Itivia laydown area then take the Bypass road that goes around the community, past the National Defense building, the airport, the Rankin Inlet Gun Club and the Iqalugaarjuup Nunanga Territorial Park (Figure 2). The convoy will then take the AWAR at the end of the Bypass road and continue north to the mine site.

Figure 2: Bypass Road (in red), between Itivia and the AWAR

Road Security and Traffic Management

During the transport, the AWAR is used exclusively for the transport convoy, with only Energy and Infrastructure (E&I) department road maintenance crews allowed access. All other access is by permission of the ERT member in the lead convoy vehicle.

- The intersection of the Bypass and AWAR is blocked for all traffic.
- The AWAR is closed to all southbound traffic, oncoming traffic to the convoy.
- At the incident commander's discretion, additional roadblocks and guards may be put in place.

During Transport

Day of Transport

The morning of the transport the ERT member will conduct a pre-trip discussion with all parties involved. The topics include, but are not limited to:

- Verify that all drivers and team members for fit for work (Physically and mentally)
- Verify training requirements are met.
- Review the planned route
- Explain where to park and how
- Maintain speed limits and distance

- Ensure suitability of trailers and appropriate Safe Working Load
- All Radios will be on the appropriate channel
- Plan to verify the loads before leaving Itivia, and at KM19 (i.e. the seacans are well secured with a chain or twist lock system on the trailers)
- Discuss the chemical SDS and emergency plan
- Explain the hazards of cyanide, signs/symptoms of poisoning and treatments
    - **Signs and Symptoms of Cyanide Poisoning include:** Headache, Dizziness, Confusion, Anxiety, Restlessness, nausea, vomiting, shortness of breath, rapid breathing, Loss of consciousness, seizures.
    - **Treatment**: Oxygen and fkit, both of which are readily available to personnel during the transport.

* One hour prior to departure from Itivia, the ERT Captain initiates road security and closure.

Transport from Itivia to Meliadine

As detailed in the MEL-HSH-PRO-3001 Safe Escort of Cyanide during Bulk Transport procedure, the movement of the convoy during cyanide transport is organized as follows:

1. ERT member is responsible for calling the Presence of the Convoy:
    - ERT advise dispatch 1 hour in advance of departure to close all southbound traffic
    - ERT records name of each driver with each truck and the order
    - Each truck driver can call in their name to dispatch and truck upon arrival to Meliadine
    - Any southbound vehicles should pull over for the convoy.

2. At the ERT member's discretion
    - ERT may stop the convoy to allow an All Terrain Vehicle (ATV) to pass the convoy
    - ERT may allow access to the AWAR northbound upon request, only once the convoy is >10km ahead

3. ERT member will ensure loads are verified
    - Before departure from Itivia
    - At KM19
    - More frequently upon ERT discretion

4. Incident Commander - Site Notifications via the Public Announcement Channel*
    - KM19 – "20 min notice for the Cyanide Transport, I say again, 20 min notice for the Cyanide Transport"
    - KM25 – "Attention, The Cyanide Convoy is approaching Meliadine. The Cyanide route is now closed to all traffic and guards should be in place. I say again, the Cyanide Convoy is approaching Meliadine. The Cyanide Route is now closed to all traffic and guards should be in place."
    - Arrival at storage pad - "This is All Clear for the Cyanide Route, I say again, this is the All Clear for the Cyanide Route"

*These are sample announcements and may not be verbatim at the time of the transport.

To ensure the safety of the transport process the Agnico Eagle employee work hours should be limited to the normal shift duration without the express consent of the supervisor for overtime work. Consistent with the Agnico Eagle use of the employee work card, any overtime must be indicated and authorized.

Emergency Response team - Required equipment

Emergency Response Personnel

- Minimum of two trained ERT persons
- Medical Practitioner trained in cyanide treatment

Ambulance (Front of the convoy)

- Hydroxocobalamin cyanide antidote kit (Cyanokit™) 2 kits or more as per discretion of Medical Practitioner
- 250mL bag of NaCl solution for dilution
- Iridium satellite phone
- Airway bag
- Trauma bag
- Extra medication (orange suitcase)
- Cardiac monitor
- Safety Data Sheet (SDS) of NaCN
- AWAR Inspection form

Rear Convoy Vehicle

- Gas detector with HCN
- Two brushes for decontamination
- Two portable pools
- 200 L (Minimum) of freshwater
- 2X 20 lbs. fire extinguishers ABC (nitrogen-charged and not CO2)
- Oxygen Therapy kit
- Yellow 45 gallon spill kit

Personal Protective Equipment (PPE)

- Class B Ty-Chem suit
- Nitrile gloves
- Rubber Gloves
- Rubber boots
- Duct tape
- SCBA
- Hard hat
- ERT Radios

Emergency Preparedness

The convoy accompanying the cyanide transportation is trained and equipped to respond immediately to an emergency incident complete with equipment to initiate decontamination and treatment of cyanide exposures. Any incident requiring further resources and situation are available through established emergency procedures.

Risk Analysis

A risk assessment was carried out in July 2022 with internal relevant stakeholders on the subject of cyanide transport between Itivia and Meliadine site. This risk assessment allowed to identify the risk areas along the transport route and associated control measures to mitigate those risks. The result of this exercise is available in Appendix 1. The risk assessment will be reviewed and updated on an annual basis prior to each cyanide transport occurrence.

4.6 Transport on Site

Sea cans containing 20 bulk containers of sodium cyanide are transported by Hyster from the cyanide storage pad to the process plant.

The transport procedure for the movement of cyanide on site is prescribed in the MEL-SPC-PRO-0003 Safe Escort of Cyanide on the Meliadine Site and is summarized below.

Once an order has been received by the warehouse, the Transit Clerk will pre-inspect the route to ensure there is nothing to impede the safe transport of the cyanide to the Process Plant. The Hyster operator will inspect the sea can to be moved to ensure the integrity of the container and that the door locks are intact. Any deficiencies are noted and the warehouse supervisor should be notified immediately.

The cyanide transport will be escorted by a lead vehicle and announcement on the site radio of a transport in progress. All traffic must yield the right of way to the loaded Hyster transporting a sea can of sodium cyanide.

There are only two routes approved for the transport of the cyanide sea cans to the process plant as shown below in Figure 3 and 4. The design of this road is in accordance with the Meliadine Traffic Management Plan, for a single lane road at twice the width of the largest vehicle operating on the road. In Figure 4, the closest waterbody outside of the site's water management infrastructures (Lake G2) is approximately 115m to the northeast of the road.

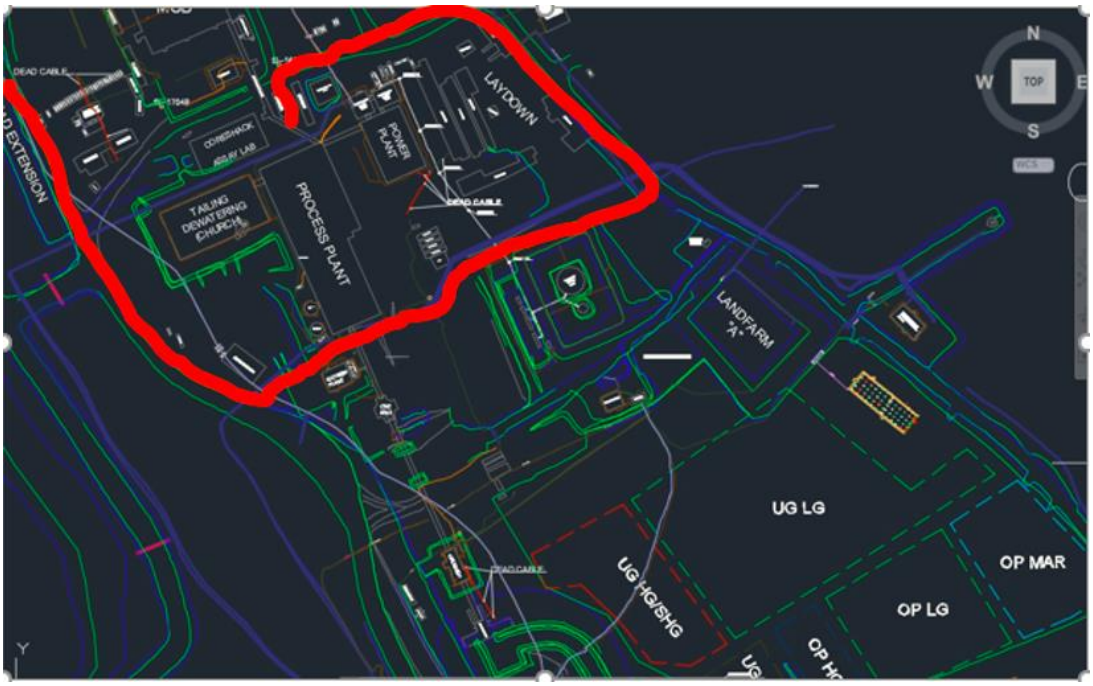


Figure 3 Transport route from Cyanide storage pad to the Process Plant

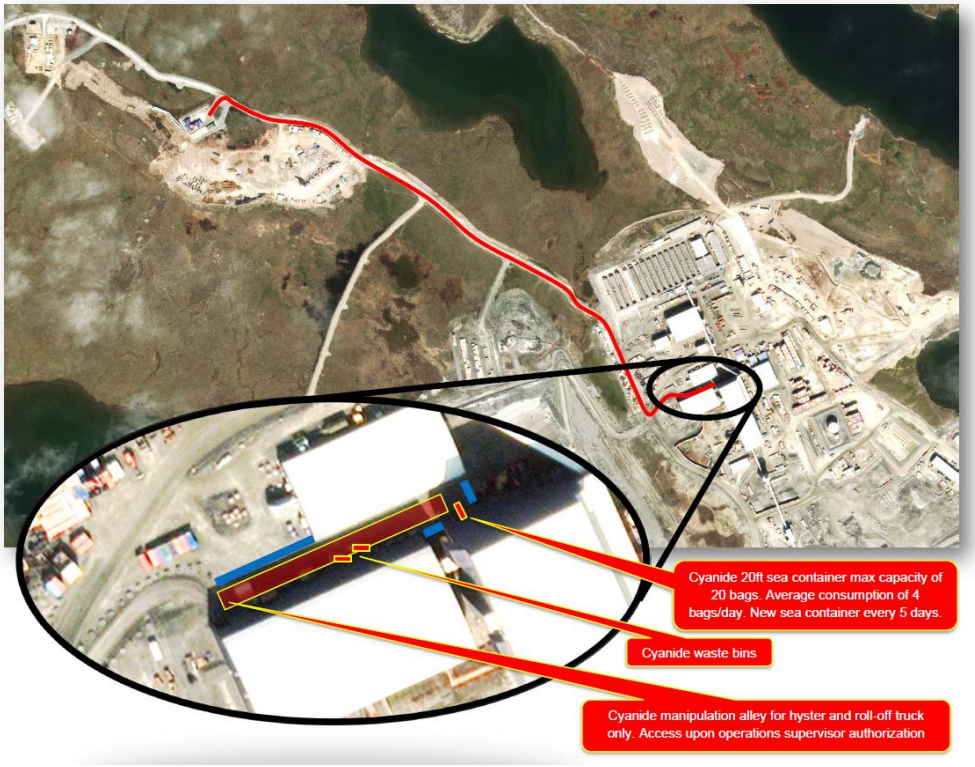


Figure 4 Transport route from Cyanide storage pad to the Process Plant and permanent daily storage

4.7 Transport of Hazardous Material - Documentation

Any movement of cyanide sea cans from the producer to the final destination at the Meliadine site are tracked and documents retained. Movement of Hazardous Materials will be carried out in compliance Government of Nunavut (GN) and Transport Canada (TC) regulations.

From Producer to Rankin Inlet: The documents and manifest are retained. Copies of all transfers are retained by the Logistic Department

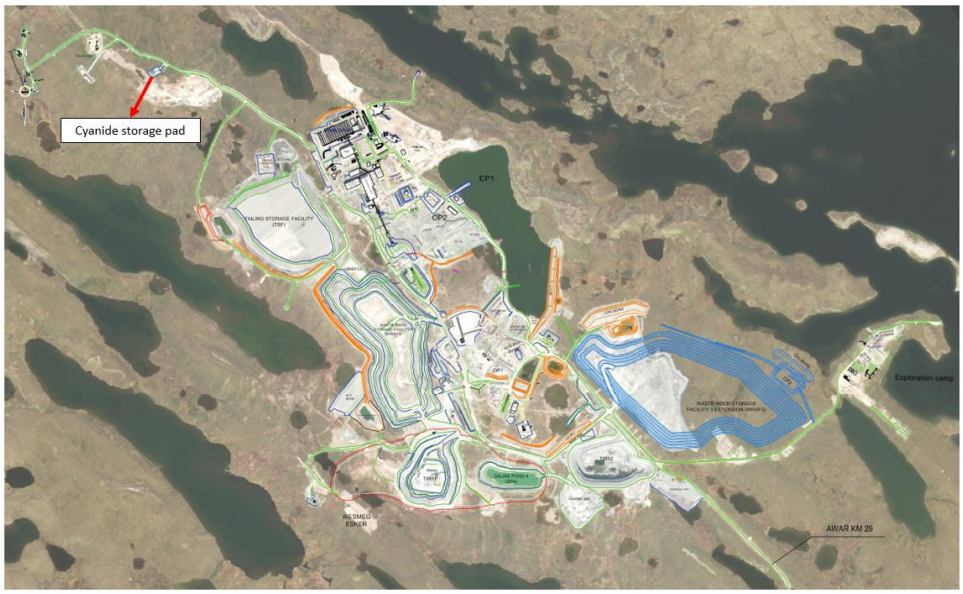
Land transport from Rankin Inlet to Meliadine: Other than the manifest documentation, the Health & Safety department retains copies of the "Cyanide transport readiness plan", and the Convoy checklist. The Warehouse keeps documentation of the vehicle prechecks, vehicle load ratings, and worker hours. The Meliadine E&I department is responsible for the road inspections and retains copies of the inspections.

On site Transfers from the Cyanide Storage pad to the Process Plant: Transfer documentation is retained by the Warehouse.

5. STORAGE OF SODIUM CYANIDE AT THE MINE SITE

A description of the site cyanide storage pad, associated risks and mitigation measures are outlined below in Table 7.

Table 7 Storage of sodium Cyanide on site

Description	Sea cans are stored on a specific storage pad on site separated from all other workings, within the secure mine boundary. The compound is located on a restricted access road and secured by a barricade gate.  **Figure 5 Meliadine Mine site plan and location of the Cyanide Pad**  **Figure 6 Cyanide Pad**
Risks	• Integrity of the sea cans and spill of dust • Worker /Public access to the storage pad – contact with Cyanide dust/vapors

Prevention	Containment: • Design and construction of the Cyanide packaging to prevent rupture. • Sodium Cyanide transport and storage is protected by three levels of containment. The cyanide is contained within 4 mm water-resistant plastic bag • Inside an intermediate bulk container (IBC). The IBC holds 1,000 kg of cyanide and have the following approximate dimensions: 44" x 44" x 44". The third level of containment is the sea can which normally holds 20 IBC's. • The area is visually inspected by the Hyster operators when they deliver or pickup cyanide containers. • Hazardous Material signage • The seacans are stored door to door, preventing any access. In the event there is an uneven number of seacans, the last seacan will be placed perpendicular to another one, with the doors facing the side of the other seacan. • Restricted access – (gate) • The Cyanide pad is bermed on all sides to prevent runoff from flowing off the pad in the event of cyanide release Separation: • Storage pad is spatially separated from all other materials • Inventory control of product to ensure all Cyanide packages are accounted Procedures • MEL-PRL-PRO Managing the Hazardous Materials Manifest

6. CYANIDE USE IN OPERATIONS

6.1 Overview of cyanide use

Gold is leached from the ore using an alkaline cyanide solution. The cyanide will bond to the gold in the ore forming a gold cyanide complex in solution (pregnant solution) which the gold then may be extracted by an absorption process of carbon, leaving behind a solution containing the cyanide ions, the "barren solution".

The gold bearing slurry then passes through a carbon stripping process leaving high concentrated gold which is sent to the refinery to be made into gold bars. The remaining solution (barren solution) containing cyanide ions are then detoxified in the destruction cycle to a non-toxic cyanate which forms carbonates and ammonia.

This leftover slurry is then filter pressed to a solids content of approximately 85% by weight. The filtered tailings will have the consistency of damp, sandy silt and will be transported by haul truck to either the paste plant for use underground as backfill or for placement and storage in the TSF in a process conventionally referred to as "dry stacking". Water from the filter press is returned to the Process Plant for recirculation.

6.2 Cyanide use in the Process Plant

The simplified milling flowsheet is presented in Figure 7 below. A description of the cyanide related risks in the Process Plant and associated mitigation measures are described in Tables 8 to 11 below.

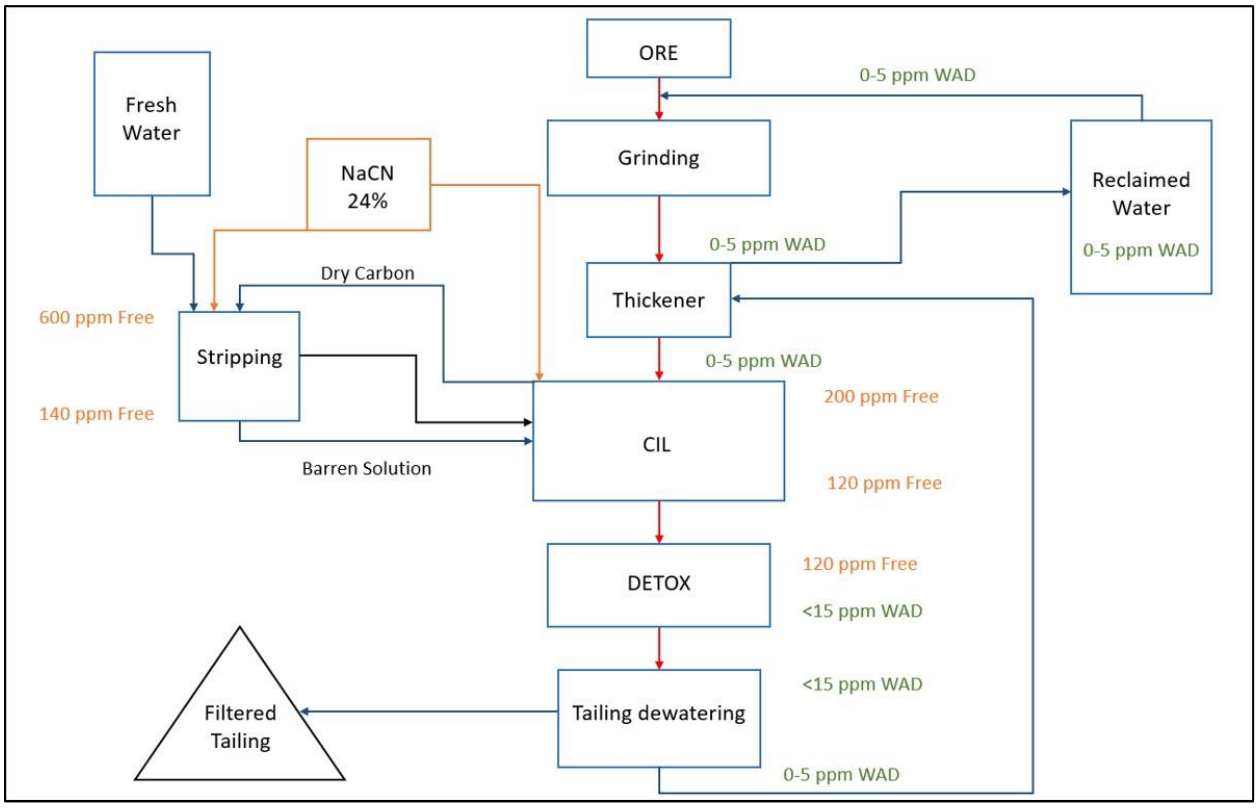


Figure 7: Meliadine simplified milling flowsheet

Table 8 Cyanide Mixing at the Process Plant

Description	Solid Sodium Cyanide is mixed with water and caustic solution manually and stored in the Cyanide distribution tank which holds concentrated NaCN 24%.  **Figure 8 Cyanide Distribution tank**
Risks	• Cyanide Gas • Worker exposure to CN dust • Integrity of storage tank • Piping system from distribution tank and sump
Prevention	• CN Gas (HCN)is controlled by pH control with the addition of lime. pH above 11.0 prevents CN gas. • A Fixed HCN gas detector is mounted at the distribution tank which is tied into the alarm system. • The PH is monitored by the worker at the mixing station. • Procedure in place for the mixing of cyanide includes PPE requirements and an observer in case of an accident (MEL-MIL-PRO-590 Cyanide Mixing) • Procedure in place for inspection of the cyanide lines (MEL-PRP-PRO-590.4 Cyanide Lines Inspection) • A cyanokit is available in the main office hallway which is the main access to the process plant area. • There are diphoterine stations nearby the area. <u>Training</u> Workers must complete the following training • Cyanide Awareness • Process Plant Induction • Reagent Operator training • Cyanide Task Training

	• This program covers the tasks required for cyanide mixing and Cyanide spill management Procedures • MEL-MIL-PRO-590 Cyanide Mixing • MEL-PRP-PRO-590.4 Cyanide Lines Inspection

Table 9 Carbon in Leach Gold Cyanidation

Description	Ore slurry and concentrated cyanide at high pH, greater than 10.5 are mixed in a carbon leaching process to separate the gold from the ore. During this process the operator manually collects samples to determine the cyanide concentrations by a titration method.
Risks	• Worker exposure Concentrated Cyanide solution • Loss of PH control which would promote the formation of cyanide gases • Rupture of vessel / pipe/ valve systems containing cyanide solution
Prevention	Exposure • Workers are expected to use the proper PPE for chemical contact exposure. • The system is maintained at a high pH which is monitored and recorded with an automated sampler, which is connected to an alarm system in Process Plant Control Room. The low pH limit on the alarm is set at 9.9 • A cyanokit is available in the main office hallway which is the main access to the process plant area. Containment Design of the system to contain any inadvertent spills within the process plant and inside a containment berm. Training Workers must complete the following training • Cyanide Awareness • Process Plant Induction • CIL and Elution circuit training Control Plan and procedures • Control Plan of the Carbon in Leach (CIL) Circuit (V0) • MEL-PRP-PRO-590.4 Cyanide lines inspection • Procedures for CIL Operation

Table 10 Carbon Stripping

Description	The separation of the gold from carbon is accomplished in a two-step process, acid washing followed by elution (extraction). The Acid Wash using 3% HCL which removes organic foulants from the carbon. The next stage involves treating the carbon with a caustic-cyanide solution at high temperature (115°C) and pressure (230 kPa). The sodium cyanide is required for solubilising the adsorbed gold cyanide complex and the caustic (sodium hydroxide) is added to maintain a high pH to minimise the evolution of HCN gas. Upon the completion of this stage the gold cyanide complex is still adsorbed to the carbon (i.e., no gold is removed into solution during this stage) but the attraction between the complex and the carbon is 'weakened', allowing it to be easily desorbed in the following elution stages. The final stage is stripping the carbon at high temperature and pressure leaving concentrated gold complexes (pregnant solution).
Risks	• Exposure to high temperature vapors containing elevated concentration of cyanide and caustic • Loss of PH control which would promote the formation of cyanide gases • Rupture of vessel / pipe/ valve systems containing cyanide solution
Prevention	<u>Exposure</u> • During the Carbon strip cycle excess pressure is bled off the strip vessel into a containment berm. Access to this area is restricted during operations which is controlled by both a notification barrier and a warning strobe. • The system is maintained at a high Ph in the CIL tanks which are monitored and recorded with an automated sampler, which is connected to an alarm system in Process Plant Control <u>Containment</u> • Design of the System to contain any inadvertent spills within the process plant and inside a containment berm <u>Training</u> Workers must complete the following training • Chemical Awareness • Process Plant Induction • Cyanide Task Training • CIL and Elution circuit training <u>Procedures</u>

	• Refer to Intelex, operations procedures for carbon-stripping (Ex. MEL-MIL-PRO-580 Stripped Carbon Transfer)

Table 11 DETOX – Cyanide Destruction

Description	Free Cyanide is oxidized to a non-toxic cyanate. In this process the cyanide ion and the cyanide component of metal complexes are oxidized to cyanate by a mixture of SO_2 or sodium metabisulphite and air in the presence of a copper catalyst at a controlled pH. A further reaction of Cyanate in the presence of elevated oxygen will produce carbonates and ammonia.
Risks	• CN (wad)" weak acid dissociable" which may dissociate to free CN and CN gases. • Loss of Oxidation reaction potential would increase the Cn concentrations in the tailings slurry. Ph control and the concentration of copper in the destruction are vital in to minimize the production of Free of wad Cyanide • Incomplete cyanide destruction resulting in high Cyanide solution being introduced to the clarifier tank and Process Plant process water • Overflow of the vessel and piping/ valve systems resulting in spill of potentially concentrated cyanide solution
Prevention	• Lime is added to maintain the oxidation reaction at a controlled PH of 8-9. The target values of cyanide WAD is 15 ppm for the destruction cycle • Maintenance of pH and copper concentrations; pH control and the concentration of copper in the destruction are vital in to minimize the production of Free or WAD Cyanide • Continuous Monitoring of the cyanide WAD concentrations • Destruction tank containment that will contain 110% of the volume of the destruction tanks • Further destruction of Cyanide ions is by exposure to the environment where natural degradation will take place <u>Training</u> Workers must complete the following training • Chemical Awareness • Process Plant Induction • Cyanide Task Training <u>Control Plan</u> • 582-Control Plan of Cyanide Destruction Circuit (V0)

6.4 Tailings Management

Table 12 Tailings Storage Facility (TSF)

Description	Tailings generated by mill production at Meliadine will be dewatered by pressure filtration to a solids content of approximately 85% by weight. The filtered tailings will have the consistency of damp, sandy silt and will be transported by haul truck to either the paste plant for use underground as backfill or for placement and storage in the TSF in a process conventionally referred to as dry stacking.
Risks	• Worker Contact exposure to cyanide solution • Environmental spill of cyanide from rupture of paste line on surface
Prevention	• By maintaining a limit of 15 ppm Cn (WAD) in the Detox tanks the free cyanide which is capable of reaction will be almost zero • Any cyanide solution will be minimal as the tailings only contain 15% water • Tailings are monitored for Cn (total, wad and free) and various other parameters on a regular basis (every 2 weeks) • Tailings supernatant is monitored for Cn (total, wad and free) on a regular basis • The tailings are being stored in a facility that will freeze-back (i.e. re-develop permafrost) and inhibit water movement within a few years of placement • Surface contact water with the TSF is collected in the site's water management infrastructures (Containment Ponds) which are monitored for water quality parameters, including cyanide, on a monthly basis during open water season. • Design of the system: The system is typically only used at 60% of its tested pressure Note: system was tested to 2,000 psi typically used at 1,200 psi • Compliance with Agnico Eagle Tailings management practices, which considered the design and life cycle of the storage facilities • Compliance with the Mining Association of Canada standards of practice <u>Training</u> • Chemical awareness • Reagent circuit training <u>Agnico Eagle Policies and Management Plans</u> • AEM-RMMS-MS-Tailings Storage Facilities, Heap Leach Facilities, Water Management Infrastructure and Rock Storage facilities • AEM-RMMS-OS-Executive Level Roles & Responsibilities Tailings Management • AEM Tailings Management Policy • Mine Waste Management Plan • Water Management Plan • Tailings Deposition Plan

	• Operation, Maintenance, and Surveillance (OMS) Manual for the Tailings Storage Facility (TSF)

6.5 Cyanide Waste Management

Table 13 Cyanide Waste Disposal

Description	Cyanide waste materials includes:
	• Chemical shipping containers
	  o Sodium cyanide for the Meliadine project is in briquette form and packaged in water-resistant super sac and 4mm bags inside an intermediate bulk container (IBC). The IBC holds 1,000 kg of cyanide, and have the following approximate dimensions: 44" x 44" x 44
	  o Shipping pallets
	• PPE used by workers handling Cyanide products; Disposable coveralls, gloves, used respirator cartridges, seam tape, etc.
	The shipping containers and used PPE are disposed of in special marked waste bins and transported to the cyanide burn pad for destruction. Cyanide waste is clearly marked a red bin with yellow striping.
	 

Risk	Exposure contact to cyanide of workers handling the cyanide containers and/or waste products
Prevention	Procedures are in place for the management of all cyanide waste materials during the mixing process including marking all the waste material; bags, containers, etc. with an orange “x” indicating cyanide waste. Cyanide bags are also rinsed as per the below listed procedures. <u>Training</u>

	Process Plant workers must complete the following training • Chemical Awareness • Process Plant Induction • Cyanide Task Training <u>Procedures</u> • MEL-MIL-PRO-590 Cyanide Mixing • MEL-ENV-PRO-1024 Material Burning

7. ENVIRONMENTAL MONITORING

Cyanide monitoring is included in several environmental programs as summarized below.

Water is recycled through the mill and water filtered off the tailings from the filter press is sampled from the effluent downstream of the filter press.

Surface runoff in contact with the TSF is collected in Containment Ponds 1 and 3 (CP1 and CP3). As per the NWB Type A Water Licence, water quality monitoring is conducted at sampling stations MEL-12 (CP1) and MEL-20 (CP3) for various parameters, including cyanide. In addition to WL requirements, MEL-20 sampling station is also monitored for cyanide, free and WAD. This monitoring will allow for the identification of trends in water chemistry (including cyanide), if any, that could potentially indicate a change in the environmental conditions. MDMER and NWB Water Licence cyanide criteria for discharge to the environment (Meliadine Lake, monitoring station MEL-14) are presented in Table 3 above.

As per the Mine Waste Management Plan, tailings solids are sampled bi-monthly at the Process Plant, immediately after the filter press. A 14-day tailings composite sample are also taken from the tailings reject that the Assay Lab uses for process control (internal monitoring). The tailings solids are analyzed for various geochemical parameters as well as cyanide content (total, free and WAD). The table 14 below summarizes the cyanide monitoring performed.

Table 14 Cyanide Monitoring

Sample point	Scope	Frequency	Reference material / governance
MEL-12 (CP1)	- Cyanide total	Monthly (during discharge)	- NWB Type A Water License - Water Management Plan - Water Quality and Flow Monitoring Plan
MEL-20 (CP3)	- Cyanide total, - Cyanide free - WAD	Monthly (open water)	
Tailings solid	- Cyanide total, - Cyanide free - WAD	Bi-monthly	- Mine Waste Management Plan - Assay Lab Process control (internal)
Tailings solid		14 days composite	

Sampling is carried out by qualified personnel and according to detailed procedures for sample collection, handling, quality control and quality assurance, etc. In addition, routine visual geotechnical inspections of the TSF are carried out on a regular basis as per the Mine Waste Management Plan.

As required by the NWB Type A Water Licence, a Water Balance and Water Quality Model (WBWQM) was developed for Meliadine and is updated on an annual basis. The WBWQM is built in the GoldSim v14 software platform and the primary modelling objective is the prediction of water and solute load transfers within the mine site facilities, and to the receiving environment for the period of 2019 to 2027. Results of the WBWQM are reported annually in the Annual Report.

Design parameters for CP3 are detailed in the Design Report for CP3, CP4, CP Berms, Berm2, Channel3, and Channel4, Meliadine Project, Nunavut. June 2018 (TetraTech 2018). Water management at Meliadine is detailed in the Water Management Plan.

Environmental monitoring in the event of a cyanide spill at Meliadine is detailed in the internal MEL-ENV-PRO-1048 Cyanide Spill Sampling Plan. Regular (NWB Water Licence) sample locations for the Meliadine Mine site are presented in Figure 9 below.

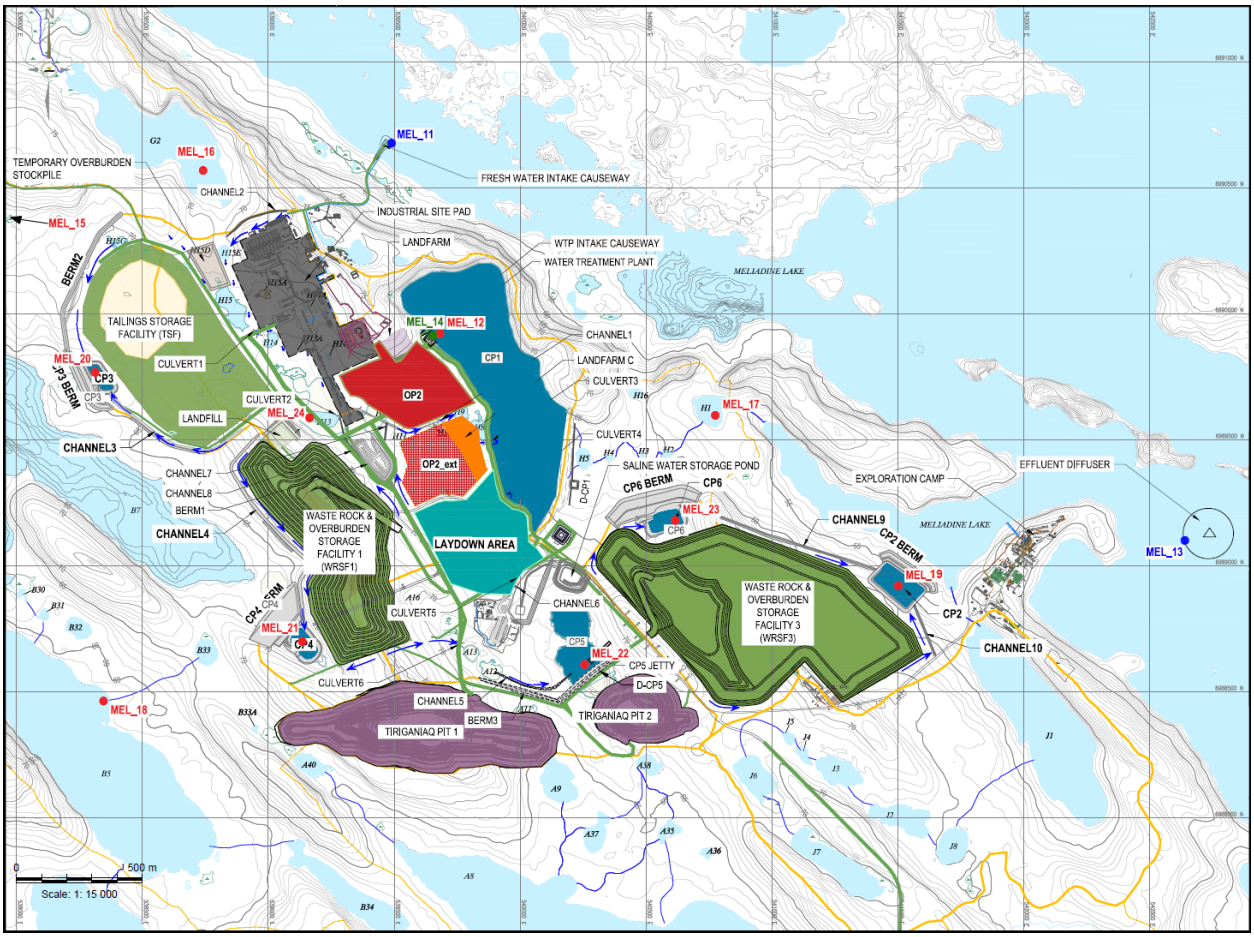


Figure 9 Meliadine Site Sampling Locations

8. PREVENTATIVE MAINTENANCE QA/QC PROGRAMS AND MANAGEMENT OF CHANGE

The maintenance program can be segmented as following:

- Design and QA/QC
- Detection systems
- Fixed equipment
- Mobile equipment
- Management of change

Agnico Eagle Meliadine's Maintenance Management System is JDE software. All preventative/corrective maintenance instructions and proof of execution are archived within JDE. Triggers for executions are also managed in JDE. All relevant reference drawings, instructions, checklists and manuals are linked to the related work orders and can be access via JDE. Additionally, a document control system is in place to manage all drawings and schematics. Finally, Management Of Change system (MOC) is in place and designed to control changes to our equipment, processes and systems.

The following section provides an overview of the scope of the key area of the maintenance program described above.

8.1 Design and QA/QC

All of Agnico Eagle's equipment and facilities related to cyanide have been designed purchased and installed with compliance with applicable industry standards.

The following table summarizes the cyanide tanks.

Table 15 Cyanide tanks

Description	JDE	Standard	Nom. Capacity (m3)	Year
NaCN Mixing Tank	65CUV59001	API Standard 650	20	2017
NaCN Distribution Tank	65TSO59001A	API Standard 650	33.24	2017

8.2 Fixed Detection Sensors

The fixed cyanide detection sensors within the Process Plant are calibrated on a 28-day interval.

8.3 Mobile equipment

The following table summarizes the maintenance programs for mobile equipment used within the scope of cyanide management. The maintenance program is designed to ensure mobile equipment meets design descriptions, safety and operation parameters.

Table 16 Maintenance program for mobile equipment

Name	Frequency	Use related to cyanide
Hyster	2 months 6 months Yearly	Sea containers transport from cyanide storage at site to Process Plant. Loading of sea containers on tractor trailer.
Transport tractors	6 weeks	Transfer sea containers from Itivia to site
Trailers	11 weeks	Transfer sea containers from Itivia to site

8.3 Fixed equipment

The fixed equipment maintenance is summarized in the table below.

Table 17 Maintenance program for fixed equipment

Type	JDE	Frequency	Purpose
Tanks	65CUV59001 (Mixing tank) 65TSO59001 (distribution tank)	Monthly Annual	Cyanide inspection NDT certified techs
Agitators	65AGI59001	10,000hrs 3 months Monthly	Oil change Lubrication Inspection
Chutes	65CHU59001	Monthly	Inspection
Sump Pumps	65PPU59001	Monthly 168hrs 3 months	Cyanide inspection Service A Lubrication
Distribution Pumps	65PSO59001A (distribution 1) 65PSO59001B (distribution 2) 65VAS59001 (PRV)	Monthly Monthly	Cyanide inspection
Safety shower	65SEM59001	Weekly	Test and inspection
Fans	65FAN59001	6 months Monthly	Inspection Inspection
Hoppers	65HOP59001 (bag loading)	Monthly Monthly	Cyanide inspection Knives sharpening
Piping (including manual valves)	65STE57600 (CIL) 65STE58100 (refinery) 65STE56400 (acacia) 65STE59000 (general NaCN area) No JDE # for piping (JDE zones)	Monthly	Visual inspection for leaks, identification and paint.

8.4 Management of Change (MOC)

A management of change system is implemented to control changed done on equipment, processes and systems. The table below details what type of changes required to follow the MOC process and what does not.

Table 18 MOC requirements

MOC required	MOC not required
• Change to the existing lockout procedure • Change related to the ICMC code • Addition of new equipment ex: pump, motor, agitator • Change that requires engineering approval • Overhaul to the Human Machine Interface (HMI) or additional expert systems • Change or addition to oxygen and SMBS system, copper sulfate or cyanide process • Change in the process requiring shutdown	• Altering the type of material, for example plastic piping to stainless piping. Drawings will be updated. • Extension of water supply to remove a section of water hose. Drawings will be updated • Increasing the size of a part, for example install a larger strainer on the calcium line • Change requiring 2 or less workers and less than 12hrs to complete. • Change not identified as process inclusion.

Section 4 of the MOC is a section dedicated to changes affecting the cyanide management plan.

9. WORKER SAFETY

9.1 Training

General workers in the process plant receive the Meliadine Process Plant induction, Chemical awareness and Cyanide awareness trainings.

A cyanide Task training is in place and tracked with Meliadine's Training Management System (TMS). The Cyanide task training includes cyanide mixing, cyanide transportation and convoy, hyster operation and maintenance on milling equipment. Several operating procedures related to cyanide management were developed and implemented at Meliadine for the workplace safety, including:

- MEL-HSH-PRO-3001: Safe Escort of Cyanide During Bulk Transport
- MEL-SPC-PRO-0003: Safe Escort of Cyanide on Site
- MEL-PRP-PRO-590.1: Cyanide Cleanup
- MEL-PRP-PRO-590.2: Cyanide Mixing

<u>Process Plant – Reagent Operator</u>

The training for a Reagent operator is divided into two categories i) common Health & Safety training for all operators in the process plant and ii) Specific training for the circuit.

The common training is approximately 22 hours and covers the basics of working in the process plant including Hazard Analysis, Chemical safety, and safe work procedures. The full details are available in the Agnico Training Management System (TSM).

The second phase of the training is a graduated approach, where the potential operator completes a "Process Plant Trainee" program and then a specialization in specific circuit training.

Category	Name	Description	Sum of Full Training
Specific			
	Crushing Circuit		
		Objective: Acquire necessary knowledge to safely operate the Crushing Circuit. Training covers theoretical and practical knowledge about Crushing Circuit parts and operation.	168
	Grinding Circuit		
		Objective: Acquire necessary knowledge to safely operate the Grinding Circuit. Training covers theoretical and and practical knowledge about Grinding Circuit parts and operation.	168
	Leach/CIL Stripping Circuit		
		Objective: Acquire necessary knowledge to safely operate the Leach / CIL Stripping Circuit. Training covers theoretical and practical knowledge about Leach / CIL Stripping Circuit parts and operation.	84
	Paste Plant Circuit		
		Objective: Acquire necessary knowledge to safely operate the Paste Plant Circuit. Training covers theoretical and practical knowledge about the Paste Plant Circuit.	84
	Process Plant Trainee Program		
		Objective: Acquire necessary knowledge to master the position of the process plant helper and Utility person. Training covers theoretical and practical knowledge to accomplish the tasks performed by the process plant helper and utility man.	504
	Reagent Circuit		
		Objective: Acquire necessary knowledge to safely operate the Mixing and Distribution Circuit. Training covers theoretical and practical knowledge about Mixing and Distribution Circuit parts and operation.	84
Grand Total			**1260**

Figure 10 Reagent Operator Specialty Training

9.2 Workplace Safety

All SDS for chemical products can be found on the company server using the software “Paratox” or are made available to the workers through their supervisor. The SDS must be available in the immediate for personnel.

Signage similar as the image depicted below is posted at all entrances to the Process Plant.

Figure 11: Cyanide signage at entrances of the Process Plant

Cyanide is found on site at the following locations/equipment:

- Cyanide mix tanks (HCN gas)
- Orange colored pipes carry Cyanide
- Carbon and leach tanks CIL (in the slurry) (HCN gas)
- Carbon strip circuit (HCN gas)
- Cyanide storage area in the Process Plant (1 Tonne totes)
- Process Plant Cyanide containers supply (located at a specific area at Process Plant laydown)
- Cyanide storage pad

9.3 Working on Cyanide equipment or vessels

Prior to working on cyanide equipment or vessels, several preventative measures must be utilized. These preventative measures are incorporated into the Process Plant task training program.

9.4 Safe Handling of Sodium Cyanide

The cyanide is kept in the sealed containers until it is delivered to the process plant, exposure potential is minimal to this point. The pallets of CN are only opened at the mixing point in the process as per procedure MEL-MIL-PRO-590 Cyanide Mixing.

10. MEDICAL FACILITIES

Meliadine has on site two Medical Practitioners at all times and an Emergency response team with advanced first aid capabilities. The on-site clinic is capable of responding to most medial conditions and emergencies including cyanide exposure and treatment.

The local Health authority in Rankin is available for additional patient care and in an extreme case where advanced care is required the patient may be air lifted via a medevac service to an advanced medical care facility.

11. CYANIDE MIXING PPE

The image below depicts the PPE required for Sodium Cyanide mixing (MEL-PRP-PRO-590 Cyanide Mixing).

Figure 12 Sodium Cyanide Mixing Required PPE

11.1 Personal Protective Equipment (PPE)

Safe use of protective clothing and equipment requires specific skills developed through training and practice. PPE according to different Levels of Cyanide exposure is described in Table 19.

Table 19 PPE requirements according to the different levels of cyanide exposure

Greater Than 1.7 ppm (*from MEL-HSS-GUI-4011 PPE and Evacuation Guidelines for Gas Exposure*) **<u>If contamination is unknown</u>**	**LEVEL A: (RED ZONE)**: Select when the highest level of respiratory protection is necessary but a lesser level of skin protection is required. This is the minimum protection for workers in danger of exposure to unknown chemical hazards or levels above the Immediately Dangerous to life of health (IDLH) or greater than Acute Exposure Guideline Level (AEGL)-2. • A National Institute for Occupational Safety and Health (NIOSH)-certified CBRN full-face-piece SCBA operated in a pressure-demand mode or a pressure-demand supplied air hose respirator with an auxiliary escape bottle. • A hooded chemical-resistant suit that provides protection against CBRN agents. • Chemical-resistant gloves (outer). • Chemical-resistant gloves (inner). • Chemical-resistant boots with a steel toe and shank.	

	• Coveralls, long underwear, a hard hat worn under the chemical-resistant suit, and chemical-resistant disposable boot-covers worn over the chemical-resistant suit are optional items	
Less than 4.7 ppm Handling Sodium Cyanide dry chemicals	**LEVEL B: (YELLOW ZONE)**: Select when the contaminant and concentration of the contaminant are known and the respiratory protection criteria factors for using Air Purifying Respirators (APR) or Powered Air Purifying Respirators (PAPR) are met. This level is appropriate when decontaminating patient/victims. • A NIOSH-certified CBRN tight-fitting APR with a canister-type gas mask or CBRN PAPR for air levels greater than AEGL-2. • A NIOSH-certified CBRN PAPR with a loose-fitting face-piece, hood, or helmet and a filter or a combination organic vapor, acid gas, and particulate cartridge/filter combination or a continuous flow respirator for air levels greater than AEGL-1. • A hooded chemical-resistant suit that provides protection against CBRN agents. • Chemical-resistant gloves (outer). • Chemical-resistant gloves (inner). • Chemical-resistant boots with a steel toe and shank. • Escape mask, face shield, coveralls, long underwear, a hard hat worn under the chemical-resistant suit, and chemical-resistant disposable boot-covers worn over the chemical-resistant suit are optional items.	

No exposure to Gas or solid Sodium Cyanide including dust	**LEVEL C: (GREEN ZONE)**: Select when the contaminant and concentration of the contaminant are known and the concentration is below the appropriate occupational exposure limit or less than AEGL-1 for the stated duration times. • Limited to coveralls or other work clothes, boots, and gloves.	

11.2 Emergency Response PPE Donning Procedure

Required Equipment:

- Ty-Chem or any other recommended suit
- Hard hat
- Rubber boots and gloves
- Facemask (or SCBA faceplate, depending on the scenario)
- Hand held radios c/w push to talk remote switch
- Grey duct tape
- Gas monitors (MX-6; with appropriate sensor)

Required Training: HAZMAT Response Training

Donning of PPE

All the PPE required to intervene for a Dangerous Goods situation are in the ERT sea-can next to MSB Building.

The worker should always remember to use the ‘’buddy’’ system, i.e. to work in pairs for mutual safety. This is to avoid missing steps and to increase efficiency and be able to improve response time. The following are the recommended steps to the worker for PPE donning:

- Choose the right size of suit. Be mindful of the atmosphere and the ambient temperature of the response location. It will depend if you are asked to go outside or inside a building.
- Make sure to take your handheld radio and turn it “ON” the designated channel. Your team captain will designate the working channel.
- Step into the TyChem suit and make sure to not physically damage it. Fully pull up the zipper.
- Remove the protective strip from the sticky ribbon and close the front flap in order to seal the zipper.
- Step into the designated rubber boots and overlap the legs of the TyChem suit over them. With duct tape, carefully seal the TyChem suit over the boots.

- Tip: Give yourself more leg room by sealing the pant in the middle of the rubber boots. This way, the seal will keep its efficiency in awkward body positions.
- Before donning your facemask, make sure to turn the speaker switch to “ON” position. Clip on the handheld radio and the ‘’push-to-talk’’ system
- After donning the facemask, make sure to test if it is sealing well. Do not turn the air on until requested by the ERT captain.
- Pull the TyChem hood over your head and all around the rubber face seal of your facemask. **There should be no skin exposed**.
- Put on your head protection.
- Put on your rubber gloves. Make sure to overlap the glove before sealing it with the TyChem suit by using duct tape. This is to avoid accidental penetration of chemical by lifting your arms in upright position.
- Complete PPE will also include a portable gas monitoring device.

11.3 Fire Fighting Equipment

In a fire fighting response, a similar methodology will be utilized for the chemical PPE. The fire fighters will utilize a supplied air breathing system.

The extinguishing medium for the fire would preferably be alcohol resistant aqueous film forming foam (AR AFFF). The ultimate decision of the tactics used to extinguish the fire will be based on the on-scene assessment by the Fire Captain.

11.4 Cyanide detection

Meliadine uses both fixed gas detectors strategically placed in throughout the process plant and personal portable gas detectors used by process plant and chemical operators and Emergency Response personnel.

Fixed Gas Detectors

There are fixed gas detectors within the process plant.

Personal portable Gas Detectors

Meliadine uses Industrial Scientific - MX6 as the personal portable gas detectors. Worker required training prior to using these includes: completion of an introduction in the operation and care of the devices and fit tested for respiratory upon completion of the Respiratory Protection training.

11.5 First Aid and Cyanide Treatment

Cyanokits (cyanide poisoning antidote) are available at the clinic and one is also available at the process plant.

Antidote is checked by the Medical Practitioner on a monthly schedule. An inventory of medicine is maintained on a database that prompts the Medical Practitioner when antidote is coming up for renewal.

There are diphoterine stations in the Process Plant and this equipment is also inspected on a regular basis.

12. EMERGENCY RESPONSE

Agnico Eagle – Meliadine has a local Emergency Response Plan (ERP). The ERP outlines the following information:

- The key stakeholders

- Roles and responsibilities
- The training of the involved parties
- Call-our procedures for team members
- Emergency response equipment

The Meliadine ERP can be found on the Intranet and on Intelex. In the case of discrepancies between this document and the Meliadine Emergency Response Plan, the Emergency Response Plan would take precedence.

At the time of any emergency, all management team and/or their designate must report to the Incident Command Center(s) that will be the Emergency Control room. The primary Incident Command Center is the Polar Bear room, on the third floor of the MSB.

The Emergency Control Team structure lends support, fosters efficiency, and provides additional knowledge during an emergency response situation.

The Official In-Charge (Manager on Duty) maintains the overall coordination and direction of the Emergency and ensures the continued safety of all employees and the public. However, with the help of the Incident Commander or designate of the Area effected by the emergency, they will assist with the development of the overall emergency response.

The remainder of the Emergency Control Team will be given specific tasks to perform that will assist with the management and coordination of the emergency response plan. Included in the Emergency Response Plan, there are specific “Duty cards” for each of the members as aids in the efficient execution of an emergency response.

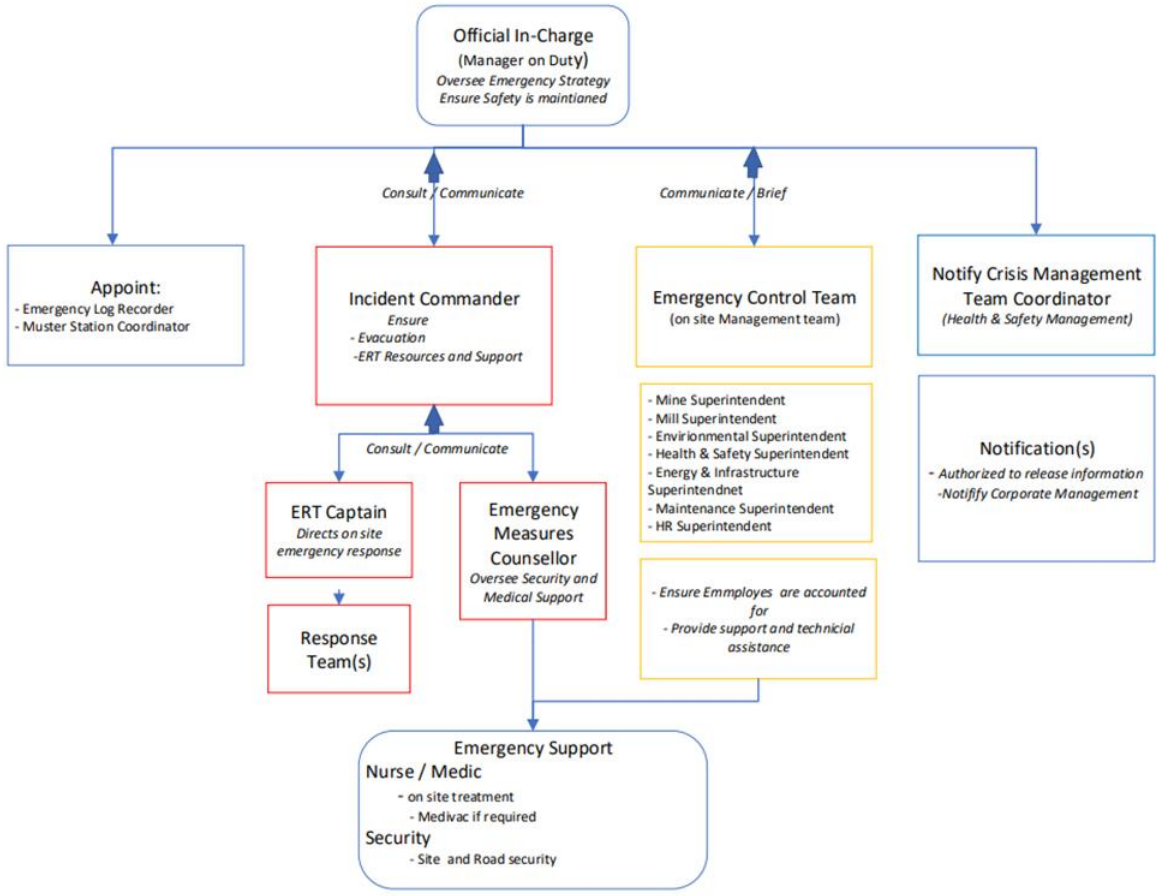


Figure 13 Emergency Response Organization Structure

12.1 Emergency Response; Roles and Responsibilities

Site Manager: Responsible for implementing and Maintaining the Emergency Response Plan (ERP)

- Spokesperson on behalf of Agnico Eagle, including submitting reports to regulatory agencies and corporate management
- Ensure the necessary resources and training are available to maintain the emergency readiness of the site including; Emergency Response training, Emergency Plans, and exercises

Official In-Charge (Manager on Duty): Take charge and oversee and approve the overall emergency strategy

- Ensures Safety of Operations
- Appoints Emergency Log Recorder (scribe) and a Muster station Coordinator
- Communication:
    - Consult with the Incident Commander
    - Brief the Emergency Control Team
- Ensures procedures are in place for the timely deployment of resources, personnel and equipment
- Primary authority to commit the resources necessary to implement the emergency response plan

- Notification:
    - In-Charge is the only person authorized to release information to Government Agencies, Corporate Office or the Local Communities. This may be delegated to a member of the Emergency Control Team
    - Activate the Crisis Management plan when required
    - Notify Corporate Management of a significant probable events such as: fatality, injuries of public interest, public health risk, significant chemical spill (cyanide spill), spill outside mine lease area, or disruption to operations that may extend for more than 2 days

Emergency Log Recorder (Scribe)

The log is intended to be a progressive record of the events from the start of the emergency through all phases to its termination and will be used in the preparation of the final report. It is important that the log be legible, and that all information is recorded.

Muster Stations Coordinator

Proved a head count during an emergency. The Muster Stations Coordinator is required to contact the three Muster Stations by radio on channel ''Muster Station'' to ensure that there is a Supervisor or designate in charge of that specific muster station.

Incident Commander

- Establishes response priorities
- Provides instructions to the ERT Response team(s)
- Ensures evacuation procedure have been activated
- Ensures Sufficient ERT members are available
- Verifies that ERT has back-up support and resources
- Ensures internal and external resources are available
- Acts as secondary authority to commit the resources necessary to implement the emergency response plan
- Communicates with Official In-Charge regarding rescue and recovery operations
- Communicates with ERT Captain on emergency and recovery operations
- Participates in investigations
- Reviews and revises any procedures related to the emergency as required
- Compiles final report

Response Teams

- ERT Captain will maintain communications with the Incident commander
- Follow instructions from the Incident Commander and will not put the Team at risk

Emergency Measure Councillor

Operations

- Mobilize all ERT/MRT personnel, equipment, personal protective equipment and supplies as required to the site of the emergency
- Oversee all security and medical activities on site and will arrange for Medevac transport

Emergency Readiness

- Ensure all rescue equipment and procedures are maintained and regularly inspected
- Assist in developing and implementing emergency response training programs and exercises

Emergency Control Team

The Emergency Control team is comprised of the senior management from the various departments, each having specific skills and knowledge in support of an emergency.

- Ensures that all employees working, are accounted for
- Ensures that the ERT Members of his crew have responded to the “code One” emergency

Support Response Operations

- Assists in recovery and restoration of normal operating standards
- Communicates and advises Official In-Charge

Environmental Superintendent / Designate

Provides technical advice on probable environmental effects resulting from a spill and how to minimize them

Health & Safety Superintendent / Designate

- Oversees all activities that require Security or Nursing. He will arrange for Medevac transport, if required

Health Care Professional (Medical Practitioner/Medic)

- Providing on-site treatment and other medical support
- Arranges for medevac transportation, if required

Site Security Team

- Ensures that access points to the emergency are properly guarded
- Assists with other duties as requested by the emergency control group

13. CRISIS MANAGEMENT PLAN

Agnico Eagle – Meliadine has a local Crisis Management Plan (CMP). The CMP is intended primarily for the guidance of Meliadine Division Management who has a direct role to play in crisis management at Agnico Eagle. The plan is mainly concerned with crisis that have, or could have, a significant impact on the Division and Corporation as a whole.

The Meliadine Crisis Management Plan is intended to complement the site emergency response plans and procedures and does not replace or detract from them.

The Meliadine CMP can be found on the Intranet and on Intelex. Any discrepancies between this document and the Meliadine Crisis Management Plan, the Crisis Management Plan would take precedence.

The level of notification of a crisis are based on the extent and complexity of the emergency.

Table 20 – Definition of Crisis Levels, related examples and notification protocols

CRISIS LEVEL	Event Characteristics	Event Scenarios Examples	Notification Protocol
Level One Local, Contained event / issue	Impact not expected to extend beyond Meliadine site; Local and/or national media not likely to be interested; Can be resolved with existing resources at site or limited help; Our emergency response teams are trained to respond to this kind of emergency can handle the situation.	Fuel spill inside facility Lube system fire Cyanide containment overflow	None necessary
Level Two Local event but require assistance to resolve	Can be handled by our emergency response teams with help from our management team or fellow employees who have been called in before normal operations can resume.	Underground ventilation failure Fire at the electrical sub-station Major Equipment Failure	Meliadine Site Management Control Group will be assembled. Corporate Office should be notified through the routine reporting process (weekly report)
Level Three More serious event /issue uncontrolled or resolved	Requires the help of off-duty or off-site people (Mutual Aid), outside vendors as well as local police, fire and/or Emergency Medical Services crews; Circumstances of the incident/issue are known outside the corporate office or operation; Media and/or other stakeholders are calling or inquiring about the incident.	Employee fatality / trauma / cyanide related Tailings pipe failure Major spills (external): fuel, chemical / cyanide release SO2 tank fire and explosion Ramp/shaft accident blocking access for a long period Open pit wall collapse Protests/Demonstrations	Meliadine crisis management team will assemble and deal with the situation. Corporate crisis management chair or crisis coordinator will be notified immediately.
Level Four Severely damaging event that threatens to impact Agnico's credibility if control	Out of control event that will impact an extended area and numerous people indefinitely. Normal business operations will be curtailed and employees diverted from routine duties until	Tailings dam failure Mine collapse Plane crash with Agnico Eagle employees/contractors on-board Abuse of Power Theft of Gold	Meliadine crisis management team will assemble and deal with situation. Corporate crisis management

is not immediately re-established	situation resolved. Local response agencies will be in charge. Federal and provincial/state response agencies may be called in to assist.	Discharge of firearm on premise Major event involving cyanide	chair/coordinator must be notified immediately.

13.1 External Emergency Resources

Mutual Aid Agreements

Agnico Eagle – Meliadine has Mutual Aid Agreements with other mining operations within Nunavut and North-West Territories and with mining operations from Quebec, Abitibi area.

Table 21 Meliadine Mutual Aid Agreements

Rankin Inlet Fire Department	2021	Memorandum of Understanding (MOU) Purpose: pursue discussions towards establishing and mutual beneficial collaboration aimed at ensuring the safety of people property and environment around them Note: agreement only to pursue a mutual Aid agreement
NORTHERN MINING HEALTH & SAFETY FORUM MINE RESCUE MUTUAL AID AGREEMENT Artic Diamond Mine Company, Ekati Mine Diavik Diamond Mines (2021) Inc De Beers Canada, Gahcho Kue Mine Agnico Eagle Meadowbank Complex, Meliadine, and Hope Bay Giant Mine Remediation Project Baffin Iron Ore Mary River Project Cheetah Resources Lid	2021	The operators of the Arctic Canadian Diamond Mine, Rio Tinto - Diavik Diamond Mines Inc., DeBeers Canada – Gahcho Kue, Agnico Eagle Mines Ltd. (Meadowbank Complex, Meliadine, and Hope Bay), Baffinland Iron Ore - Mary River Project, Parsons Giant Mine Remediation Project, and Cheetah Resources are committed to safety as a fundamental value. They each recognize that having Crisis and Emergency Response capability is essential in the event that extraordinary circumstances put human life, operational infrastructure or the environment in extreme danger. To that end each party has created a fully equipped Crisis and Emergency response capability supported by documented response procedures, highly trained personnel, and appropriate equipment and infrastructure to respond to the

		variety of emergencies that may occur from time to time on their respective sites. Each Operator also recognizes that, at times, the scale of an emergency or crisis may overwhelm their individual resources; and believe that given their geographic distance from the usual First Responders and the physical proximity of their respective sites - it is both desirable and prudent to establish terms for a combined response should such circumstances arise at one mine site or the other
Agnico Eagle – Laronde Mine Agnico Eagle – Goldex Mine Agnico Eagle – Lapa Mine (Referenced as Southern Mines)		Note: No document agreement in place
Quebec Mine Rescue		To improve the coordination of mine rescue operations, the Québec Mining Association has established the CATAMINE program to coordinate actions and the dispatch of equipment in an emergency. The CATAMINE Committee makes it easier for mines to provide each other with assistance if a major accident or disaster occurs. Note: No document agreement in place
Emergency Medevac		
Nunavut Emergency Management MOU for Emergency LAND Medevacs -Kivalliq Region	2011	The role of Nunavut Emergency Management (NEM) is to assist and support responses requiring remote (on the land) emergency evacuations. When the emergency involves an ill or injured person, the health centre is to be notified immediately.

See the Emergency Response Plan for the most recent contact information.

Table 22 Emergency Contacts

QUEBEC MINE RESCUE			
NAME:	HOUSE:	CELL:	OFFICE:
URGENCE 24 HEURES			418-845-9815
JEAN PROULX		581-888-9048	418-845-8365

Aurora Northern Contractors (National Defense Building Maintenance):

Name	Phone	Email
Dave Sothern	(867) 645-6426	Anc3657@qiniq.com
Robert Crawford	(250) 616-3843	rlcrawford@telus.net

Property Administrator:

Officer Commanding Real Property Operations North Detachment Yellowknife, Department of National Defense.				
Major Joshua Van Tine	Joshua.VanTine@forces.gc.ca	(867) 873-0700	CSN: 766-6909	BB: (867) 765-8609

Dominion Diamond Ekati Corporation (DDEC):

Call (867) 880-2201 or (867) 880-4444. Both phone numbers are answered and monitored by DDEC Security Control 24 hours a day.

State that the call is a mutual aid request for the Mine Manager (or designate on the weekend). Security will transfer the telephone call to the requested Mine Manager immediately and the ERT team will be paged, or the ERT Coordinators contacted.

DDEC ERT Coordinators are David English and Nathan Pitre. Office phone number is (867) 880-2394.

Agnico Eagle Mines Limited (Nunavut Operations):

Call (819) 860-6258 OR **(819) 819-759-3555 ext. 3911 Meliadine, (819) 819-759-3555 ext. 3911 Meadowbank.**

State that the call is a mutual aid request for the Mine Manager (or designate – Manager on Duty). Person will transfer the telephone call to the requested Mine Manager immediately and the ERT team will be paged, or the ERT Coordinators contacted.

Meadowbank ERT Contact. Office phone number is (819) 759-3555 ext. 6809
Meliadine ERT Contact. Office phone number is (819) 759-3555 ext. 3113

MEDEVAC

Table 23 Medevac contact

Contact the Medical Director (Dr. Lee) or his delegate to determine if a MEDEVAC transfer is required. If a MEDEVAC transfer is required, follow the next steps. • **Dr. Lee - Cell: 1-819-856-5092** • **Dr. Lee - Home: 1-418-527-4810**
Contact Keewatin Air Dispatch to request a MEDEVAC transfer and to inform of the receiving hospital and the accepting physician. • **Keewatin Air Dispatch:** 1-800-913-4393 or 1-204-784-6567
Nunavut Emergency Management 867-979-6262

13.2 Activating Emergency Response

A Code 1 can be called by any person on site with a two-way radio or a camp telephone to report any accident, serious incident, fire or an environmental spill which requires the response of the ERT (Emergency Response Team).

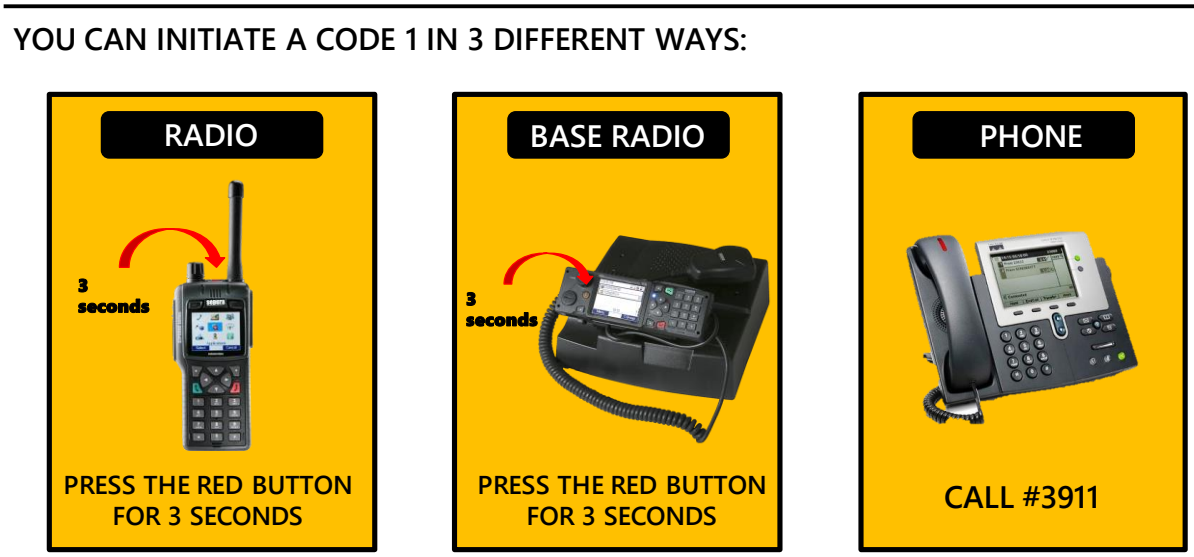


Figure 14 Initiate a Code 1

The procedures for code 1 and muster stations are available in Intelex:

13.3 Crisis Management Team Notification

In the event of an emergency the Manager on Duty (official In-Charge) will contact the Crisis Management Team Coordinator who is the Health & Safety Superintendent or Designate as the Crisis Management Plan.

It is the responsibility of the Chair of the Meliadine Crisis Management Organization to oversee and activate the Meliadine Crisis Management Plan. When that decision has been endorsed, it is the responsibility of the Crisis

Coordinator to ensure that the logistics supporting the day to day tasks of the Meliadine Crisis Management Committee are in place.

The Mine Manager – Assistant Mine Manager and/or Manager on active Duty will automatically act as Co-Chair of the Crisis Management Team during the crisis. The manager on duty must appoint a co-chair.

13.4 Emergency Notification of a Cyanide Spill

Any significant cyanide incident must be initially report to the ICMI within 24 hours of an occurrence, stating the date of the incident, nature of the incident, and contact information of the AEM representative. Further information, such as root cause, health, safety and environmental impacts, and any mitigation or remediation is requested to be provided within seven days of the incident.

A significant occurrence as described in the glossary would include; human exposure that requires an action by the emergency response, unpermitted release on or off site that enters natural waters, a release or transport incident requiring an intervention by emergency response teams, wildlife fatalities, or theft of cyanide.

In the event of a significant cyanide incident, Denis Therrien (denis.therrien@agnicoeagle.com) or Josée Noël (josee.noel@agnicoeagle.com) from the Corporate Sustainability Team must be contacted as soon as possible and they will be reporting the incident to ICMI via email at **info@cyanidecode.org.**

13.5 Emergency Response Training

The requirements for Mine Rescue training and qualification are specified in the Mine Regulations Nunavut (Department of Justice Government of Nunavut, 2011). To be consider an active member each member must have been; certified by a doctor or Medical Practitioner to be fit to work with breathing apparatus, hold a valid mine rescue certification, a valid first aid certification, and attended a minimum of 8 hours of practices during the previous two months.

The Mine rescue certification is a sixty-hour program covering a variety of topics. The ERT (Emergency Response Team), of which there are at least 20 members on site at any one time, has an annual training cycle of six modules, each of ten-hour duration. These include, but are not limited to:

- Rope Rescue
- BG4, Extrication, Use of the UG foam generating unit with inflatable seal
- Haz-Mat / Cyanide response / SCBA
- Fire Fighting, and training will all extrication tools
- First aid with Scenarios
- UG scenarios

The Dangerous Goods response training which include instruction for spill response and cyanide is conducted each year just prior to the cyanide transport.

13.6 Mock Drill

Mock Drills for Cyanide related incidents occur in line with the Health and Safety Calendar. Mock drills will be conducted yearly for both Mining Operations and Transportation-related scenarios and will consist of field exercises, as per the ICMI Guidance for use of the Mining Operations and Transportation verification protocols (June 2021). All personnel that may be expected to provide emergency response will take part in response drills.

Exercises will be derived from the identified potential release mechanism identified in section 15.1 Emergency and Spill Scenarios. Each exercise is evaluated as a part of the debriefing phase for the following factors;

- The difficulty of the scenario
- The adequacy of the emergency plans
- The adequacy of training
- The actual response
- The adequacy of the Emergency Management and notification processes

An example of the Planning and Evaluation format is presented in Appendix 2.

14. EMERGENCY PROCEDURES

14.1 Procedures for Cyanide exposure

Refer to Appendix: Cyanide (Sodium Cyanide) of the Meliadine Emergency Response plan for details.

14.2 Potable Water

In the event that the drinking water supply for the Meliadine mine is contaminated, Agnico Eagle Mines will charter a flight to deliver potable to the mine via the Rankin Inlet airport.

14.3 Decontamination

The procedure MEL-HSH-PRO-3007 Cyanide Exposure Decontamination details the process for reducing the level of contaminants which have been accumulated on personnel and equipment during an incident for the purpose of safe doffing of equipment without the exposure to the hazard, and also to prevent the spreading of contamination beyond the warm zone.

14.4 Medical Treatment of Cyanide poisoning

The proper management of cyanide poisoning in case of exposure is detailed in the MEL-HSH-PRO-2007 Cyanide Poisoning Management procedure.

14.5 Mass Exposure Incident

<u>Emergency Triage</u>

Field medical triage must be conducted at three levels;

- On site triage (level 1)
- Medical triage (level 2)
- Evacuation triage (level3)

Level 1 This is a rapid categorization of victims with potentially severe injuries needing immediate medical care “where they are lying” or at a triage site. Personnel are typically first responders. Patients are characterized as “acute” or “non-acute”. Simplified color coding may be done if resources permit: During the initial response phase, first responders can use the START protocol for the Primary Triage. “START” stands for Simple Triage and Rapid Treatment.

Casualties may be tagged according to the seriousness of their conditions and placed into one of the following categories

immediate (critical) = Ventilations present after positioning the airway or ventilations are over 30 per minute or capillary refill greater than 2 seconds or no radial pulse or cannot follow simple command. As an example Persons that have experienced significant Cyanide gas inhalation would be expedited.

Delayed (urgent) = Any patient not in the immediate or minor categories. These patients are generally non-ambulatory.

Minor (ambulatory) = Any patient requiring medical attention who is not immediate or delayed and who is able to walk.

Deceased (expired) = black tag = No ventilations present after the airway is opened.

Medical triage cold zone (Level 2)

Rapid categorization of victims at a casualty site by the most experienced medical personnel available to identify the level of medical care is needed. Knowledge of the medical consequences of various injuries (e.g., burn, blast, or crush injuries or exposure to chemical) is critical.

- Casualties who require immediate life-saving interventions (airway, breathing, circulation):
- *Urgent*. Casualties who do not require immediate life-saving interventions and for whom treatment can be delayed:
- *Delayed*. Casualties who are not expected to survive due to the severity of injuries complicated by the conditions and lack of resources:
- *Expectant/Deceased*.
- *Minor* Individuals who require minimal or no medical care:

Evacuation triage-loading zone (Level 3)

Level 3 triage assigns priorities to disaster victims for transfer to medical facilities. The goal is appropriate evacuation (by land or air) of victims according to the severity of injury and available resources. Same medical personnel as in Level 2 triage. Evacuation can be useful in a disaster. There are several indications for evacuation in a disaster:

- To decompress the disaster area
- to improve care for most critical casualties by removal to off-site medical facilities and
- to provide specialized care for specific casualties such as those with burns and crush injuries

There are also several reasons to delay or defer evacuation of some casualties. These include:

- contaminated casualties;
- casualties with transmissible diseases, and
- Unstable casualties

Patient Decontamination in a Mass Exposure incident

Mass casualty situation due to chemical exposure, triage is absolute required for categorizing the casualties in accordance with medical care priorities. Patient decontamination reduces the threat of contamination related injuries to health service support workers personnel and patients.

The decision to decontaminate should take into account a combination of key indicators, including (but not limited to):

• Signs and symptoms of exposure displayed by the patient;

- Visible evidence of contamination on the patient's skin or clothing;
- Proximity of the patient to the location of the release;
- Contamination detected on the patient using appropriate detection technology;
- The chemical identity (if known), physical state, characteristics, and behavior; and
- Request by the patient for decontamination, even if contamination is unlikely

Decontamination should be performed if the potential contamination on a patient requiring transport to, or care in, a health care facility poses a reasonable risk of exposure to first responders, first receivers, other patients, or contamination of critical infrastructure.

Considerations:

As the sole criterion, prevention of secondary contamination may not justify patient decontamination when the concern is unsubstantiated by any indicator the patient is actually contaminated. Patients meeting all of the following criteria are unlikely to pose significant risk of secondary contamination:

- Displaying neither signs nor symptoms of chemical exposure;
- No visible contamination on skin or clothing; and
- History that makes exposure unlikely (i.e., not near the location of release)

14.5 Medevac

Personnel and persons at the Meliadine site may require additional medical care.

In the event of a serious medical condition requiring advanced medical care, the patient may be medical evacuated (medevac) by air from Rankin Inlet to an appropriate medical facility. In such an event, the process and communication is always a key success factor in caring efficiently for the patient. The MEL-HSH-PRO-2009 Medevac Procedure details the process and communication process. The Meliadine Emergency Response Plan and Crisis Management Plan also present relevant information on Medevac evacuation.

The onsite Treatment Provider (Ie: Medical Practitioner or alternate) will make the decision in consultation with the Medical Director.

Air Transport Medevac
The Onsite Medical Practitioner will contact the Keewatin Air Dispatch to request a MEDEVAC transfer
Keewatin Air Dispatch: 1-800-913-4393 or 1-204-784-6567

Non-emergency may be transported off site during regular flights and carriers.

14.6 Fire in areas of Cyanide exposure

Sodium cyanide is not flammable, although hydrogen cyanide gas is at certain concentrations. An Emergency Response Guide for Fire details what precautions to take and what response is recommended in the event of a fire involving sodium cyanide.

As for solution cyanide, solid sodium cyanide does not burn. However, the hydrogen cyanide liberated by the heat can be ignited at certain concentrations.

Precautions

- Use of water will generate cyanide gas
- Firefighting water is to be collected and treated as contaminated water
- Do not use CO2
- CO2 is sufficiently acidic to liberate Cyanide gases
  Note: Most foams will react with the agent and release corrosive/toxic gases.
- Sodium cyanide is non-combustible.
- The agent itself does not burn.
- Sodium cyanide releases highly flammable and toxic hydrogen cyanide gas on contact with acids or water.
- Fire will produce irritating, corrosive, and/or toxic gases.
- For small fires, do not use carbon dioxide; use dry chemical, dry sand, or alcohol-resistant foam.
- For large fires, use alcohol-resistant foam. Move containers from the fire area if it is possible to do so without risk to personnel. Use water spray or fog where the risk associated with the generation of cyanide gas has been evaluated and the risk is deemed acceptable; do not use straight streams. Dike fire control water for later disposal; do not scatter the material.
- For fire involving tanks or car/trailer loads, fight the fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after the fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tanks. Always stay away from tanks engulfed in fire.
- Run-off from fire control or dilution water may be corrosive and/or toxic, and it may cause pollution.
- If the situation allows, control and properly dispose of run-off (effluent).

Table 24 Response in the event of a fire incident

Fire (Cyanide Liquid)	
Description	Fire involving cyanide in liquid state
Equipment	• Normal fire-fighting equipment for chemical fire and toxic gas • Basic equipment • Self-contained breathing apparatus
Response	• Reduce temperature by water spray or foam to vehicle or structure and attack the fire source • Hydrogen cyanide gas evolved is unlikely to reach explosive limits • Fire-fighting water is to be collected and treated as a contaminated liquid until proven otherwise. • Carbon dioxide extinguishers are not to be used.
Fire (Solids)	
Description	Fire at incident site causing solid cyanide temperature to become elevated
Equipment	• Normal fire-fighting equipment for chemical fire and toxic gas. • Basic equipment • Self-contained breathing apparatus

Response	• If cyanide has not been spilt, spray the container with water to reduce its temperature. • Fire-fighting water is to be collected and treated as a contaminated liquid until proven otherwise. • If cyanide has been spilt at the incident site, do not spray the cyanide with water or carbon dioxide extinguishers. • Use a dry powder extinguisher to suppress the fire around the cyanide

15 SPILL OR RELEASE OF CYANIDE

Any spill or release of cyanide will be managed as per the Spill Contingency Plan. For cyanide spills inside the mill or inside storage containers, the procedure MEL-PP-PRO-590.1 Cleaning Cyanide Spills and Crystals outlines the steps to follow to clean-up the spill.

As per the Spill Contingency Plan, it is strictly prohibited to add any chemicals or neutralizing solutions to a Sodium Cyanide spill near a drainage system, or near or into a water body, or in any situation where there is a potential for impacting surface water.

In the event of any cyanide exposure, release and/or impact that is considered to constitute a significant cyanide incident, the ICMI will be notified by email (info@cyanidecode.org) by the Corporate Sustainability Team as described in Section 13.4.

External reportable spills will be reported by the Environment Department to the NT-NU 24-Hour Spill Report Line, CIRNAC, Kivalliq Inuit Association (KIA), ECCC, NWB and NIRB as per the Spill Contingency Plan. A detailed spill follow up report will be provided to the same external stakeholders no later than 30 days after the spill.

15.1 Emergency and Spill Scenarios

The development of effective emergency response procedures requires a realistic evaluation of potential cyanide releases and/or exposure scenarios that may occur, regardless of the probability or likelihood of occurrence. A range of potential scenarios are therefore identified below, along with brief summaries of the likely nature of the potential release or exposure and the appropriate response. This is not an inclusive list, so expertise of the Emergency Response Team will be leveraged in situations not outlined below.

15.2 Potential Release Mechanisms

Table 25 Preventative measures and response to potential generation of hydrogen cyanide gas from accidental release of sodium cyanide briquettes

Scenario	Potential generation of hydrogen cyanide gas from accidental release of sodium cyanide briquettes during transport
Nature of Incident	Potential generation of hydrogen cyanide gas from accidental release of sodium cyanide briquettes
Potential Cause	Transport Accident and breach of Sea can or pallets containing Sodium Cyanide briquettes

Risk impacts	Toxic Gas: Sodium Cyanide contact with water or moisture resulting in the production of toxic Cyanide Gas. Evacuation of persons: A large scale incident could require the evacuation of the greater portion of the community or Meliadine camp Injuries: In an accident involving equipment there is also the injuries or damages as a result of the accident Environment Contamination: Release of chemical that have potential negative effects on the environment which may include the Cyanide being transported, chemicals used in the neutralization process, or fuels from the equipment involved in the accident
Preventative Measures	• When transporting cyanide there is a precautionary procedure is in place for the safe escort of the cyanide. • Avoidance of high-risk road areas to minimize the risk of public contact and transport interruption. • Establishment of co-operative arrangements with local emergency response organisations located in towns or villages along the primary transportation corridors • Strict controls over transport operations from Rankin Inlet (Itivia) to the Meliadine site, including Driver training/competence certifications; Specific logistics and routing instructions for transport to the operation; Convoy and escort vehicles with flashing lights and UN-compliant signals and placarding; Direct (radio/telephone) communication capabilities along the entire transit Established route Safety and maintenance of the means of transportation (e.g. vessels, vehicles, or railway cars) throughout transport; Compliance with applicable national regulations in each phase of transport; Safety training for transporters and handlers throughout transport Visual general inspection of the seacans prior to transport Security throughout transport; and Specific instructions for unloading; and planned and co-ordinated emergency response actions, if necessary, at any point in the transportation process. AGNICO EAGLE and transporter compliance with the *International Cyanide Management Code* Procedure MEL-HSH-PRO-3001: Safe Escort of Cyanide
Response	Emergency “Code One” condition as warranted at the local scene as detailed in MEL-HSH-PRO Code 1 Procedure Implementation of the Crisis Management plan at Level 1 – Level 4 depending on the potential impacts. If Level 3 or greater, immediate so-ordination by the Crisis Management Team with

	the local community and emergency response facilities; Rankin or Nunavut Emergency Response Co-ordination Secure the spill site, immediately initiate air quality monitoring actions, notify and evacuate down-wind areas. Procedure MEL-HSH-PRO-3004 Emergency evacuation to Muster Station Under dry conditions, use shovels and/or front-end loader to pick up material and place in drums for use or return or the chemical manufacturer for recycling, and remediate contaminated soil. Under wet conditions, cover with plastic to prevent contact with water and recover material. Conduct incident investigation and undertake appropriate preventative measures.

Table 26 Preventative measures and response to potential release of hydrogen cyanide gas during cyanide off-loading, and storage

Scenario	Potential release of hydrogen cyanide gas during cyanide off-loading, and storage
Nature of Incident	High Concentration of hydrogen cyanide gas release
Potential Cause	Sea cans containing pallets of Sodium Cyanide are stored on a remotely located separate Cyanide pad or stored outside the Process plant Rupture of sea can due to operator error in the off-loading or manipulation of the sea cans on the storage pad allowing Cyanide exposure to moisture Failure of the integrity of the storage sea can allowing Cyanide exposure to moisture
Risk impacts	Toxic Gas: Sodium Cyanide contact with water or moisture resulting in the production of toxic Cyanide Gas. Evacuation of persons: A large scale incident could require the evacuation of a portion of the community or Meliadine worksite/camp Injuries: In an accident involving equipment there is also the injuries or damages as a result of the accident Environment Contamination: Release of chemical that have potential negative effect on the environment
Preventative Measures	Provision for highly audible and visible (flashing light) alarms, triggered by appropriate airborne cyanide detectors within the Process Plant Compliance with applicable Standard Operating Procedures (SOP)s, including: Inspections of Cyanide Tanks, Pipelines, and other Cyanide Facilities Maintenance and Calibration of Hydrogen Cyanide Monitoring Equipment Decontamination of Cyanide Handling Equipment Emergency Response Preparedness Visual general inspection of the seacan prior to transport
Response	Emergency “Code One” condition as warranted at the local scene as detailed in MEL-HSH-PRO Code 1 Procedure Implementation of the Crisis Management plan at Level 1 – Level 4 depending on the potential impacts. If Level 3 or greater, immediate coordination by the Crisis Management Team with the local community and emergency response facilities; Rankin or Nunavut Emergency Response Coordination Secure the spill site, immediately initiate air quality monitoring actions,

	Notify and evacuate down-wind in areas as indicated in the Cyanide Management Plan. Procedure MEL-HSH-PRO-3004 Emergency evacuation to Muster Station Under dry conditions, use shovels and/or front-end loader to pick up material and place in drums for use or return or the chemical manufacturer for recycling, and remediate contaminated soil Under wet conditions, cover with plastic to prevent contact with water and recover material Conduct incident investigation and undertake appropriate preventative measures.

Table 27 Preventative measures and response to potential release of hydrogen cyanide gas during initial mixing of process solution

Scenario	Potential release of hydrogen cyanide gas during initial mixing of process solution (operator error scenario)
Nature of Incident	High Concentration of hydrogen cyanide gas release
Potential Cause	Operator error during process solution mixing that would introduce low to neutral pH water into the container tank
Risk impacts	Toxic Gas: Sodium Cyanide contact with water or moisture resulting in the production of toxic Cyanide Gas. Evacuation of persons: A large scale incident could require the evacuation of the portion of surface facilities / camp.
Preventative Measures	Piping system interlocks designed to prevent a potential for accidental operator introduction of low to neutral pH water Provision for highly audible and visible (flashing light) alarms, triggered by appropriate process set points. The alarms are set to a local alarm and a general evacuation alarm based on the set points for HCN, SO2, and NH3 gases There is a local HCN Monitor. Compliance with the with applicable Procedures, including: MEL-MIL-PRO-590 Cyanide Mixing. o Draft Cyanide line inspection procedure and inspection form o MEL-PRP-PRO-5001 General Evacuation Alarm o Training of Process plant Operators including; o Chemical Awareness o Process plant Induction

	○ Cyanide Task Training ○ Local Emergency Response Plan
Response	Declaration of an Emergency General Process Plant Evacuation as detailed in the MEL-MIL-PRO-5001 Implementation of the Crisis Management plan at Level 1 – Level 4 depending on the potential impacts. If Level 3 or greater, immediate co-ordination by the Crisis Management Team with the help of local community and emergency response facilities; Rankin or Nunavut Emergency Response coordination. Secure the spill site, immediately initiate air quality monitoring actions. Notify and evacuate down-wind in areas as indicated in of the Cyanide Management Plan. Procedure MEL-HSH-PRO-3004 Emergency evacuation to Muster Station. Contain and neutralize the spill as indicated in the Cyanide Management Plan. Conduct incident investigation and undertake appropriate preventative measures. Level 1 Evacuation All process plant personnel evacuate to Muster Point – in the Artic Corridor Supervisor to contact process plant workers outside the process plant (ie: SWTP, Crusher, and Paste Plant) Head count to verify all persons accounted for – if missing persons, ERT will be notified Confirmation of alarm with process plant control room Investigation: Operations crew in SCBA and appropriate PPE will investigate the source of the gas leak and action repairs, if safe to do so. Stand Down: Must be initiated by the supervisor in charge Level 2 Evacuation (gas leak is not controllable) 1) ERT will be notified. The Operations crew will not re-enter the process plant. 2) Guards will be posted at all Process Plant doorways to prevent inadvertent entry 3) Medical clinic notified 4) ERT discussion regarding the details of re-ventilation and correction of the leak a. 2 Locations will be used as incident command control room for these types of emergency: the muster station control room and the Fire hall. 5) The reintegration (stand down) will be permitted only by the supervisor in charge (this should be the incident commander in consultation with process plant highest level of Supervision) once the area will be considered safe. If, all persons are not accounted for the Missing Persons process in the Emergency Response Plan (ERP) would be initiated as summarized below Supervisor Actions Ensure that the worker's room, workplace, and public areas have been searched, in addition to checking with the Clinic Personnel.

	If not found, the Meliadine Health and Safety / Security Officer (HSSO) must be advised. If not, available the front desk should be advised If the front desk is not available, the Medic will take charge to contact H&S and/or ERT The IC (incident Commander) will attempt to contact the missing person by cell phone IC to determine last known contact from friends or colleagues Search and Rescue initiated Emergency Response Plan activation, as required HR will post a "Missing" Poster in the Camp An inside Camp or Outdoor search may be initiated as necessary as detailed in the ERP

Table 28 Preventative measures and response to potential release of hydrogen cyanide gas from the processing plant or SO2/air treatment plant

Scenario	Potential release of hydrogen cyanide gas from the processing plant or SO2/air treatment plant
Nature of Incident	Low concentration hydrogen cyanide release
Potential Cause	Temporary loss of process pH control systems
Risk impacts	a) Toxic Gas: Sodium Cyanide contact with low pH liquids resulting in the production of toxic Cyanide Gas. b) Evacuation of persons: A large scale incident could require the evacuation of the greater portion of the community or Meliadine camp
Preventative Measures	Provision for highly audible and visible (flashing light) alarms, triggered by appropriate process set points. The alarms are set to a local alarm and a general evacuation alarm based on the set points for HCN, SO2, and NH3 gases Automated pH Monitoring of the CIL tanks Compliance with the with applicable Procedures, including: o Draft Cyanide line inspection procedure and inspection form o MEL-PRP-PRO-5001 General Evacuation Alarm o Training of Process plant Operators including; o Chemical Awareness o Process Plant Induction

	○ Cyanide Task Training ○ Local Emergency Response Plan
Response	**NOTE: The response would be the same as above with the stated notes and limitations**

Table 29 Preventative measures and response to potential cyanide solution releases within the process plant from faulty tanks, pipelines, fittings, or valves

Scenario	Potential cyanide solution releases within the process plant from faulty tanks, pipelines, fittings, or valves
Nature of Incident	Strong cyanide solution release from reagent mixing, storage, or carbon-in leach (CIL) tanks; low strength cyanide solution release from processing area; or very low strength cyanide solution release from SO2air treatment plant
Potential Cause	Failure or leaks from tanks, pipelines, couplings, valves, or secondary containment systems; power outages and pump failures occurring simultaneously with malfunctions of pump interlocks and high-level switches
Risk impacts	a) Toxic Gas: Sodium Cyanide contact with low pH liquids resulting in the production of toxic Cyanide Gas. b) Evacuation of persons: A large scale incident could require the evacuation of the greater portion of the community or Meliadine camp
Preventative Measures	Design to prohibit potential mixing of process solution with precipitation or low or neutral pH water Installation of concrete secondary containment structures for the CIL tanks and all cyanide process areas within the process plant, capable of capturing 110% of the volume of process solution that could potentially report to a given containment Provision for highly audible and visible (flashing light) alarms, triggered by appropriate process set points. The alarms are set to a local alarm and a general evacuation alarm based on the set points for HCN, SO2, and NH3 gases Design of interlocks and backup systems to eliminate the potential for simultaneous pump/level switch failures Installation of backup generators to prevent loss of electrical service to all cyanide process pumps Use of design standards for piping system/pump/ component selection, including requirements for materials and structural characteristics compatible with cyanide service. Compliance with ASME B31.3 Piping for Category M Fluid Service Engagement of qualified construction firm with certified tank and piping system welders

	Strict construction quality assurance requirements in construction and acceptance testing of process plant, including receiving inspection of all construction materials, welder certification and welding inspections, tank and piping system integrity inspections, and appropriate system pressure and operational tests during plant commissioning Compliance with the with applicable Procedures, including: o Cyanide line inspection procedure and inspection form o MEL-PRP-PRO-5001 General Evacuation Alarm o Training of Process plant Operators including; o Chemical Awareness o Process Plant Induction o Cyanide Task Training o Local Emergency Response Plan
Response	Declaration of an Emergency General Process Plant Evacuation as detailed in the MEL-MIL-PRO-5001 Implementation of the Crisis Management plan at Level 1 – Level 4 depending on the potential impacts. If Level 3 or greater, immediate co-ordination by the Crisis Management Team with the local community and emergency response facilities; Rankin or Nunavut Emergency Response coordination Secure the spill site, immediately initiate air quality monitoring actions, Notify and evacuate down-wind in areas as indicated in the Cyanide Management Plan. Procedure MEL-HSH-PRO-3004 “Emergency evacuation to Muster Station Contain and neutralize the spill as indicated in the Cyanide Management Plan Conduct incident investigation and undertake appropriate preventative measures.

16. CYANIDE ACCIDENT AND INVESTIGATION

16.1 Incident investigation

All incidents are classified and investigated to a level consistent with the nature and severity of an incident. Investigations may include the affected party, witnesses, supervision, management, various H&S Department members, subject matter experts, and/or corporate leadership.

Data and information gathering may include:

- Visiting the scene of the incident
- Interviewing personnel directly and indirectly involved
- Reviewing documentation and electronic data, if available
- Examining physical evidence

The incident is tracked to closure in Intelex. The final investigation with corrective actions will be tracked in Intelex.

17. AUDITS

Internal

Audits are conducted by the H&S Department, in conjunction with other key stakeholders to provide objective evidence of conformance or non-conformance. Audits verify that the Safety Management System, or components of, have been:

1. Communicated to personnel to ensure they understand their responsibilities

2. Fully implemented and followed

The below processes define the company expectations in relation to auditing and evaluating the effectiveness of implementation of the company's management system in order for continuous improvement.

Audit Planning

Audit and inspection plans set in the internal audit schedule for the upcoming year. This will minimize disruption to operations and confirm availability of audit resources. Planned audits are incorporated in the annual Health and Safety Calendar.

The audit plan shall be based on:

- Current and inherent risks
- Upcoming business activity
- External audits that are required for regional and regulatory certification
- Past audit findings

External

Agnico Eagle will participate in external third-party audits for the initial certification with the ICMI and at three year intervals thereafter.

18. REPORTING

All findings and recommended actions derived from inspections, audits and accidents are reported in Intelex, complete with responsible parties and due dates for remediation actions.

Reports of the incident may be reported to external agencies dependent on the nature and severity of the incident

Table 30 External reporting of incidents and accidents

External Reporting of accidents and incidents			
	Initial Report	Final Report	
ICMI **info@cyanidecode.org**	24 hrs	7 days	Significant spill As defined in the glossary including; Human exposure that requires an action by the emergency response, unpermitted release on or off site that enters natural waters, a release or transport incident requiring an

			intervention by emergency response teams, wildlife fatalities, or theft of cyanide.
Spill Report spills@gov.nt.ca	24 hrs	30 Days	Reportable Spills: As per Spill Contingency Plan
Workers' Safety and Compensation Commission (WSCC) WSCC connect portal https://connect.wscc.nt.ca/	24 hrs	72 hrs	Dangerous Occurrence and Serious Injuries as defined by Mine regulations

19. LEGISLATION REGULATIONS AND BEST PRACTICES

Table 31 Related regulations and guidelines

TRANSPORTATION OF DANGEROUS GOODS ACT, 1992 S.C. 1992, c. 34 *Transportation of Dangerous Goods Regulations SOR/2001-286.* *Transportation of Dangerous Goods Regulations - Schedules SOR/2001-286.*
TRANSPORTATION OF DANGEROUS GOODS ACT, 1990 S.N.W.T. 1990, c. 36 *Transportation of Dangerous Goods Regulations R-049-2002.*
ENVIRONMENTAL PROTECTION ACT R.S.N.W.T. 1988, c. E-7 *A Guide to the Spill Contingency Planning and Reporting Regulations January 2002.* *Environmental Guideline for Contaminated Site Remediation November 2003.*
Canada Occupational Health and Safety Regulations (SOR/86-304) *Section 10 Hazardous products Last Amendment July 1, 2021*
American Society of Mechanical Engineers *ASME B13.3 Chapter VIII – Piping for Category M Fluid Service*
Canadian Standards Association *CSA B51.19 Boiler, pressure vessel and pressure piping code*
MAC (Mining Association of Canada) 3rd Edition (2017) Tailings Guide

20. RELEVANT AND RELATED PROCEDURES AND DOCUMENTS

Table 32 Related documents

Emergency Response
Meliadine Crisis Management Plan
Meliadine Emergency Response Plan
MEL-HSH-PRO-3006 HAZMat Operations PPE Donning
MEL-HSS-GUI-4011 PPE and Evacuation Guidelines for Gas Exposure (Summary of the PPE Requirements for Hazardous Gases used on site)
MEL-HSH-PRO-3007 Cyanide Decontamination Procedure (Decontamination of personnel with reference to decontamination of tools and equipment)
MEL-HSH-PRO-3000 Code 1 Procedure
MEL-HSH-PRO-3009 Dispatch – Initiation of an ERT Call Out
MEL-HSH-PRO-3004 Emergency Evacuation to Muster Stations
MEL-PRP-PRO-5001 General Evacuation Alarm
Transport
MEL-HSH-PRO-3001 Safe Escort of Cyanide during Bulk Transport
MEL-SPC-PRO-0003 Safe Escort of Cyanide on Site
Medical
MEL-HSH-PRO-2007 Cyanide Poisoning Management
MEL-HSH-PRO-2009 Medevac Procedure
MEL-HSH-PRO-3007 Cyanide Decontamination Procedure
Process Plant - Operations
MEL-MIL-PRO-590 Cyanide Mixing.
MEL-PP-PRO-590.1 Cyanide Cleanup
MEL-PP-PRO-590.3 Rinsing to work on cyanide discharge line
MEL-PRP-PRO-590.4 Cyanide lines inspection
582 Cyanide Destruction Control Plan
576 CIL Control Plan
Tailings Management

AEM-RMMS-MS-Tailings Storage Facilities (TSF), Heap Leach Facilitie (HLF)s, Water Management Infrastructure and Rock Storage facilities (RSF)
AEM-RMMS-OS-Executive Level Roles & Responsibilities Tailings Management
Tailings Deposition Plan
Operation, Maintenance and Surveillance (OMS) Manual for the Tailings Storage Facility (TSF)
Mine Waste Management Plan
General Health &Safety
Meliadine Health and Safety Department Prevention Program
MEL-HSH-0015-Confined Space Procedure

REFERENCES

Agnico Eagle. 2015a. Meliadine Gold Project: Mine Plan. Version 1. 6513-MPS-10. April 2015.

International Cyanide Management Institute. 2021. The International Cyanide Management Code. June 2021.

International Cyanide Management Institute. 2021. Guidance for Use of the Mining Operations Verification Protocol. June 2021.

International Cyanide Management Institute. 2021. Guidance for Use of the Cyanide Transportation Verification Protocol. June 2021.

Mackenzie Valley Land and Water Board. 2013. Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories. November 2013

Nunavut Impact Review Board (NIRB). 2019. NIRB Meliadine Gold Mine Project Certificate [NO.: 006] Amendment. February 26, 2019.

Nunavut Water Board (NWB). 2021. Amended Water Licence: No: 2AM-MEL1631. May 13, 2021.

Golder. 2020. Meliadine Gold Project. Meliadine Site Water Balance and Water Quality Model. Type A 2AM-MEL1631 Water Licence Amendment. 20144940-779-RPT-Rev1. July 2020.

INAC (Aboriginal Affairs and Northern Development Canada). 2010. Guidelines for Spill Contingency Planning. Last modified- 2010/09/15 http://www.aadnc-INAC.gc.ca/eng/1100100024236/1100100024253#sub1A_6

APPENDIX

Appendix 1 Cyanide Transport Risk Assessment

Session 1 - Date completed: 2022-07-26

Participants:
Environment technician
E&I Supervisor
H&S General Supervisor
H&S Superintendent
Logistics Supervisor
Warehouse Leader
Compliance Specialist

Risk ID #	Date identified	Dept/Location	Exact Location	Task / Workplace / Activity / Infrastructure / Area	Risk Description	Category	Aspect / hazard category	Comments	Initial Consequence	Initial probability	Initial Score (S X P)	Description of control measure(s)	Type of Control measure	Residual Consequence	Residual probability	Residual Score (S X P)	Owner
1	26-Jul-22	Meliadine	Itivia	Unload the seacans from the barge, and direct transport to site (no storage at Itivia)	Inadequate handling of the seacans (punctured, dropped, etc.)	Health & Safety	HS - Chemical	Most likely, cyanide packaging not impacted, seacan could be damaged	1	4	4	Training of operators (Desgagnes), use of the appropriate equipment, selection of a qualified contractor	Engineering Controls	1	1	1	Logistics Supervisor
2	26-Jul-22	Meliadine	Itivia	Unload the seacans from the barge, and direct transport to site (no storage at Itivia)	Traffic risk (presence of other equipment, potential collision)	Health & Safety	HS - Mechanical	Equipment would be damaged but not cyanide integrity	1	3	3	Traffic control by a security agent, signs are put up to indicate transport ongoing	Administrative Controls	1	1	1	Logistics Supervisor
3	26-Jul-22	Meliadine	Itivia	Unload the seacans from the barge, and direct transport to site (no storage at Itivia)	Risk of potentially damaged seacan during maritime transport which would result in cyanide exposure	Health & Safety	HS - Chemical		5	3	15	General visual inspection of the seacans at arrival for integrity before the transport	Administrative Controls	1	1	1	Logistics Supervisor
4	26-Jul-22	Meliadine	Itivia	Unload the seacans from the barge, and direct transport to site (no storage at Itivia)	Weather issue (wind, rain, ice)	Health & Safety	HS - Chemical		1	4	4	Weather monitoring, agreement with boat captain prior to starting the unloading	Administrative Controls	1	1	1	Logistics Supervisor
5	26-Jul-22	Meliadine	Itivia	Unload the seacans from the barge, and direct transport to site (no storage at Itivia)	Drop from access ramp	Health & Safety	HS - Chemical		5	4	20	Engineer designed Ramp specs. Ramps are very wide which would limit possibility of equipment falling.	Administrative Controls	5	1	5	Logistics Supervisor
6	26-Jul-22	Meliadine	Itivia	Unload the seacans from the barge, and direct transport to site (no storage at Itivia)	Equipment failure on mobile equipment used for cyanide	Health & Safety	HS - Mechanical		1	4	4	Daily inspection from the Desgagnes mechanics will be required by AEM	Administrative Controls	1	2	2	Logistics Supervisor

7	26-Jul-22	Meliadine	AWAR, Bypass, Site Roads	Transport from Itivia to site	Equipment failure on mobile equipment used for cyanide transport	Health & Safety	HS - Mechanical		1	4	4	Inspections (pre-op daily), preventative maintenance, all equipments are inspected by the mechanics prior to cyanide transport	Administrative Controls	1	2	2	Warehouse Supervisor
8	26-Jul-22	Meliadine	AWAR, Bypass, Site Roads	Transport from Itivia to site	Load not well secured (mobile seacan, which could be dropped from the trailer)	Health & Safety	HS - Chemical		1	3	3	Procedure to inspect how load is secured prior to transport and at KM 19, mechanical inspection	Administrative Controls	1	1	1	Warehouse Supervisor
9	26-Jul-22	Meliadine	AWAR, Bypass, Site Roads	Transport from Itivia to site	Bad weather which could result in collision, etc.	Health & Safety	HS - Other (please specify)	bad weather could lead to collision if visibility is bad, to the convoy being stalled etc	1	4	4	Weather monitoring pre-transport	Administrative Controls	1	1	1	Warehouse Supervisor
10	26-Jul-22	Meliadine	AWAR, Bypass, Site Roads	Transport from Itivia to site	Traffic risk (potential collision)	Health & Safety	HS - Mechanical		1	3	3	Community is informed, road is closed on both sides and there is a convoy (Safe Escort of Cyanide Procedure), roads at site are blocked for the convoy as well, Traffic Management Plan	Administrative Controls	1	1	1	Warehouse Supervisor
11	26-Jul-22	Meliadine	AWAR, Bypass, Site Roads	Transport from Itivia to site	Getting off the road	Health & Safety	HS - Chemical	It is very unlikely the trucks would turn over, would stay straight	5	4	20	Training of the operators (driver awareness, class 1 licence), inspections of the road, traffic control, speed limit procedure, signage	Administrative Controls	5	1	5	Warehouse Supervisor
13	26-Jul-22	Meliadine	AWAR, Bypass, Site Roads	Transport from Itivia to site	Bad Road conditions (including the bridges)	Health & Safety	HS - Mechanical	There could be a flat tire for example, would not lead to trucks getting off the road	1	3	3	Road inspections, including bridges (this is in the procedure for cyanide transport)	Engineering Controls	1	1	1	Warehouse Supervisor
14	26-Jul-22	Meliadine	AWAR, Bypass, Site Roads	Transport from Itivia to site	Wildlife Encounter	Health & Safety	HS - Other (please specify)	Could lead to a collision with wildlife or other vehicle from the convoy	1	3	3	Speed limit is applied, Wildlife response plan, Driver Awareness	Administrative Controls	1	1	1	Warehouse Supervisor
15	26-Jul-22	Meliadine	Site Cyanide Pad	Unloading the seacans at the cyanide pad (at site)	Inadequate handling of the seacans (punctured, dropped, etc.)	Health & Safety	HS - Chemical		1	4	4	Hyster Inspection (daily and pre-transport), including seacan clip Training Adequate equipment is used for the task	Engineering Controls	1	1	1	Warehouse Supervisor
16	26-Jul-22	Meliadine	Site Cyanide Pad	Unloading the seacans at the cyanide pad (at site)	Traffic risk (presence of other equipment, potential collision)	Health & Safety	HS - Mechanical		1	2	2	Traffic is controled as per Transport Procedure, there is a fence at the cyanide pad which limits traffic	Administrative Controls	1	1	1	Warehouse Supervisor

17	26-Jul-22	Meliadine	Site Cyanide Pad	Unloading the seacans at the cyanide pad (at site)	Weather issue (wind, rain, ice)	Health & Safety	HS - Other (please specify)	bad weather could lead to collision if visibility is bad, for example	1	4	4	Weather monitoring pre-transport	Administrative Controls	1	1	1	Warehouse Supervisor
18	26-Jul-22	Meliadine	Site Cyanide Pad	Unloading the seacans at the cyanide pad (at site)	Equipment failure on mobile equipment used for cyanide	Health & Safety	HS - Mechanical		1	4	4	Inspections (pre-op daily), preventative maintenance, all equipments are inspected by the mechanics prior to cyanide transport	Administrative Controls	1	2	2	Warehouse Supervisor

Appendix 2 Mock Drill Planning and evaluation

PLANNING

Date: Click or tap to enter a date.

1.0 Description of Scenario	
2.0 Emergency Scenario Elements	
Emergency Response Elements	Additional or Related Elements
☐ Transportation Accident	☐ Worker Exposure to Cyanide
☐ Loading /mixing in the Process \plant	☐ Release of liquid or Solids to the environment
☐ Release During Fire / Explosion	☐ Release of Cyanide to water body
☐ Tank, valve rupture	
☐ Power outage / Pump failure	
☐ Uncontrolled leak	
☐ Failure of Cyanide treatment (ie pH)	

☒ Yes Is there a Written Procedure for the Scenario ☐ No If Yes Please indicate Procedure used Click or tap here to enter text.
Comments: Click or tap here to enter text.
3.0 Resources Utilized

Internal	External
☐ ERT	☐ Rankin Fire/ Emergency Response
☐ Clinic	☐ Rankin Medical Facility
☐ Security	☐ Medical Air Transport
☐ Environment (ie spill)	☐ Port Authority (Rankin)
☐ E&I (i.e. surface equipment)	

☐ Yes Are there a Written Procedure for the Scenario related for the resource allocation ☐ No If Yes Please indicate Procedure used

Click or tap here to enter text.
4.0 Notification
☐ Yes Is the Scenario described likely to involve external resources ☐ No
☐ Yes Have the external resources been advised of their roles and responsibilities ☐ No

Appendix 2 Glossary

Total Cyanide	Total cyanide is an analytically defined term that refers to the sum total of all of the inorganic chemical forms of cyanide that dissociate and release free cyanide when refluxed under strongly acidic conditions. Total cyanide is determined analytically through strong acid distillation or UV radiation and exposure to strong acid followed by analysis of liberated free cyanide. In water, total cyanide includes the following dissolved species: free cyanide, weak metal cyanide complexes and strong metal cyanide complexes. However, it should be noted that some of the strong metal cyanide complexes, such as those of gold, cobalt and platinum, may not be fully recovered during the total cyanide analytical procedure (Ref. 1). Total Cyanide is also sometimes referred to as Strong Acid Dissociable (SAD) Cyanide
Weak Acid Dissociable (WAD) Cyanide	An operationally defined group of cyanide species that undergo dissociation and liberate free cyanide when refluxed under weakly acidic conditions (pH 4.5-6). Weak acid dissociable cyanide is determined analytically through weak acid distillation and analysis of liberated free cyanide. Weak acid dissociable cyanide provides a conservative estimate of toxicity as it recovers both free cyanide and weak metal cyanide complexes (Ref. 1)
Free Cyanide	The form of cyanide that is bioavailable and known for its toxic effect on organisms. Free cyanide refers to either molecular hydrogen cyanide (HCN) or ionic cyanide (CN^-). At a pH of 7 or less in water, free cyanide is present entirely as HCN. Above pH 11, free cyanide exists entirely as CN^- . Free cyanide is operationally defined as being capable of diffusing as HCN gas at room temperature and at a pH of 6. Diffusible (free) cyanide is recovered

	and determined using microdiffusion (or gas diffusion) analysis (Ref. 1; Free Cyanide and Diffusible Cyanide).
ACGIH TLV	ACGIH: American Conference of Governmental Industrial Hygienists. A professional organization devoted to worker health protection. TLV: Threshold Limit Value to hazardous substances
Significant Cyanide Incident	Significant cyanide incidents are considered to include any of the following confirmed events: a) Human exposure that requires an action by an emergency response team, such as decontamination or treatment; b) An unpermitted release which enters natural surface waters, on or off-site; c) An unpermitted release that occurs off-site or migrates off-site; d) An onsite release requiring action by an emergency response team; e) A transport incident requiring emergency response for cyanide release; f) An event of multiple wildlife fatalities where cyanide is known or credibly believed to be the cause of death; and g) Theft of Cyanide
Reportable Spill of Cyanide	Spills of the following nature must be reported to the Any spill into a waterbody or ice Section 36 (3) of the *Fisheries Act*, 5L or 5kg *Nunavut Environmental Protection Act*. *Consolidation of Spill Contingency Planning and Reporting Regulations* R-068-93. Class 6.1 dangerous goods

Appendix 3 Cyanide Poisoning Medical Management Protocol

AGNICO EAGLE
NUNAVUT

Annex B
To Cyanide Poisoning
Medical Management Protocol

FOLLOW-UP INSTRUCTIONS FOR MILD EXPOSURE TO HCN NOT REQUIRING CYANOKIT®

Patient's Name: _____ Company: _____

Employee Number: _____ Department: _____

Keep this page and take it with you to your next appointment. Follow only the instructions checked below.

- ☐ Call the nursing personnel if you develop any unusual signs or symptoms within the next 24h, especially;
  - Difficulty breathing, shortness of breath or chest pain
  - Confusion or disorientation
  - Increased pain or discharge from your eyes
  - Increased redness, pain or pus-like discharge in the area of a skin burn
- ☐ No follow-up appointment is necessary unless you develop any symptoms listed above.
- ☐ Call your treating physician to make an appointment upon your return home. If you don't have a treating physician, you will have to go to your local walk-in clinic or emergency department.
- ☐ Return to the medical clinic on ____/____/____at ____:____ AM/PM for a F/up.
- ☐ Do not perform vigorous physical activities for _____ days.
- ☐ You may resume everyday activities including driving and operating machinery.
- ☐ You may return to work on regular duty but no vehicle or heavy equipment operating before re-assessment at the medical clinic on ____/____/____at ____:____ AM/PM
- ☐ On site off work for ____ days starting re-assessment at the medical clinic on ____/____/____at ____:____ AM/PM
- ☐ Avoid exposure to cigarette smoke for 72h (smoking may increase sign and symptoms of cyanide exposure).
- ☐ Avoid drinking alcoholic beverage for at least 24-48h.
- ☐ Avoid taking the following medication:_____

Patient's Signature: _____ Date: _____

Health Care Provider Signature: _____ Date: _____

Appendix 4 Cyanide Incident Fact Gathering sheet

The following is derived from the CRISIS MANAGEMENT PLAN. Meliadine Division, December 2020

CYANIDE RELATED: INJURY / RELEASE / WILDLIFE / RESPONSE

• Has there been any cyanide exposure to hhuman(s) that requires an action by an emergency response team, such as decontamination or treatment.?

Yes _____ No _____

• If so describe:

_____

_____

_____

• Has there been an unpermitted release which enters natural surface waters, on or off-site? Yes _____ No _____

If so describe:

_____

_____

• Has there been an unpermitted release that occurs off-site or migrates off-site? Yes _____ No _____

If so describe:

_____

_____

• Has an onsite release required any action by an emergency response team?

Yes _____ No _____

If so describe:

_____

_____

• Has a transport incident occurred requiring emergency response for cyanide release? Yes _____ No _____

If so describe:

_____

_____

• Are any of the events of multiple wildlife fatalities related to or where cyanide is known or believed to be the cause of death? Yes _____ No _____

If so describe:

_____

_____

• Was there any theft of cyanide? Yes _____ No _____

If so describe:

_____

_____

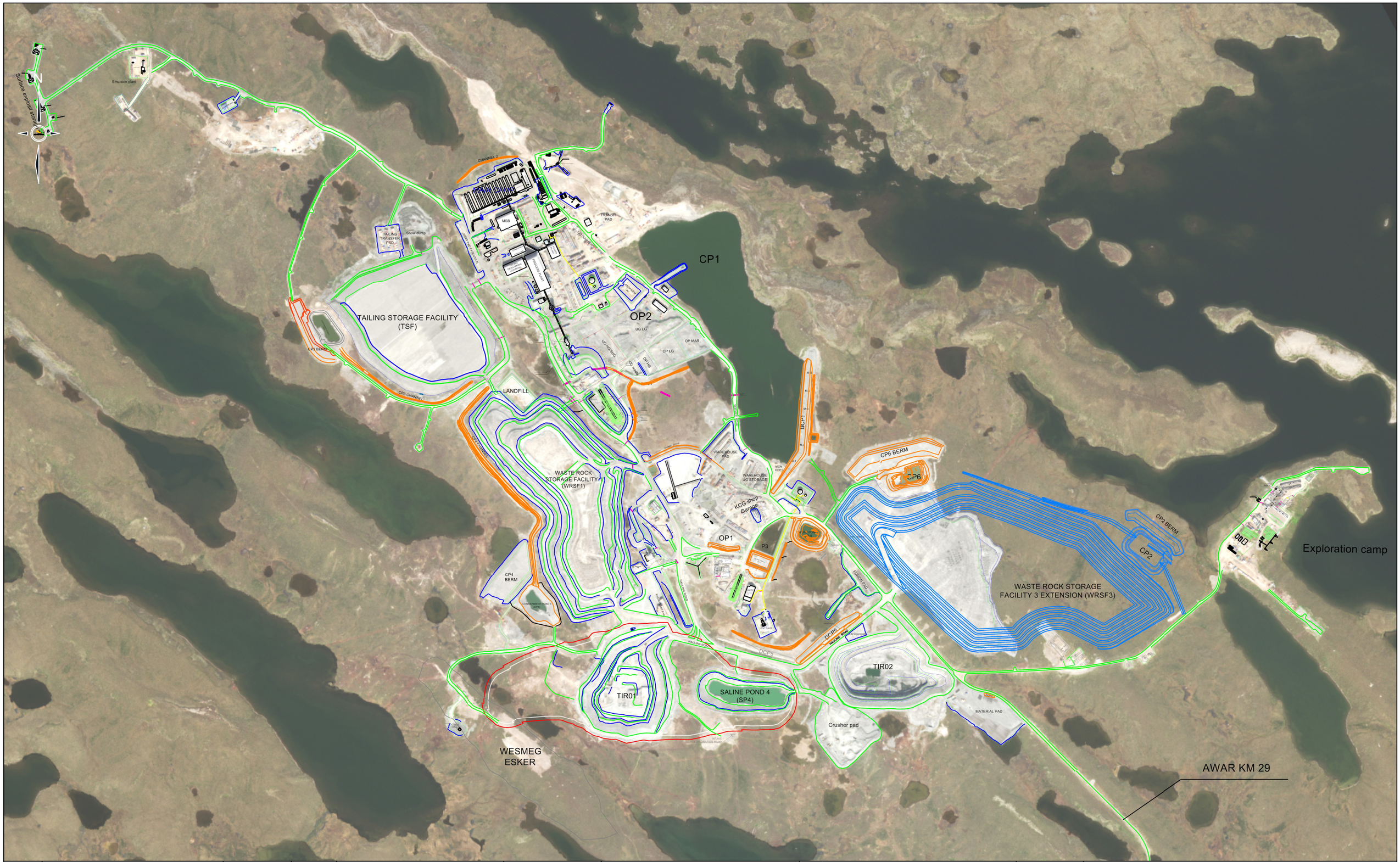
*****Note: If there is a "Yes" answer to any of these questions, then the ICMI (International Cyanide Management Institute) must be notified of a "Significant Cyanide Release" as per proper communication and protocol.** For more information on how to contact the ICMI, please refer to your local RMMS team on site or the Agnico corporate RMMS team.

Appendix 5 Cyanide Readiness Plan

Cyanide Transportation Readiness Plan				
Action	**Details/Comments**	**Responsible**	**DUE DATE**	**PROGRESS**
Communication Team				
Early notifications to Rankin Community Stakeholders	A communication need to be sent month before to inform them of the approximate date of the delivery. (RCMP, Fire Dept, Dept of Health, Hamlet, HTO)			
Notification to community of day of transportation	3 methods of doing this - emails, fakebook, radio, pamphlets,			
Road closure from the bypass south entry to site (community awareness)	proper communication - consistent information - pamphlet			
Medical clinic				
Cyanokit & protocol	Make sure we have Cyanokit & review the protocol			
Complimentary list of medications (ambulance and clinic)	Complimentary list of meds to be reviewed (ambulance and clinic)			
Ensure medical coverage on site during the cyanide transportation				
Emergencies plan- No access to RIHC	Plan enough O2 in the ambulance to ensure we can take the patient back to the mine in time			
H&S Security				
Coordinate with Sarliaq security coverage on the road and beach laydown	Contact Richard Connelly to get 3 security guard for road intersection			
Notification to Armed Forces group	Signage prior to road closure - 3 days before with date of activity			
Coordinate with RCMP day of road closure	2020 contact Cpl. Travis Collins : 867-645-0123 or travis.collins@rcmp-grc.gc.ca			
Coordinate with Fire Department day of road closure	2020 contact Chief Mark Wyatt : 867-645-2598 or rifirechief@northwestel.net			
H&S				

Notification to site to day before transfer	Send a e-mail meliadine site wide to advise of the transportation and road closure			
Emergency response				
Identify ERT qualified members (3)	ERT and supervisors to be advise the they are part of the cyanide transport			
Dangerous Goods Equipment	prepare in advance list of needed equipment (Water, pool, brush,…)			
Prepare 4 SCBA to be response ready				
Review availability of PPE needed				
Update cyanide convoy checklist				
Coordination with ENV, warehouse, and E&I and security				
Determine the window of transportation with the logistic				
IC to do a public announcement at KM 25 before arriving to site				
Established plan for road closure (people & signage)				
Logistics				
Manpower- Driver	Identify drivers for cyanide transport			
Training	All driver trained on cyanide awareness, respiratory protection (fit tested) and review the cyanide transportation procedure			
Equipment	they will only need respiratory protection + regular PPE			
Storage at Itivia	ensuring that cyanide containers are secured & the area is identified and guard 24hrs			
Load capacity rating of equipment	All equipment forklifts, trailers etc. are rated for the anticipated weights of the se cans			
Maintenance AGNICO EAGLE				
Equipment audit before transportation	Vehicles to be inspected by maintenance			

Appendix 6 Site Map



REV	DESCRIPTION	DATE	PAR/BY

REVISIONS

AGNICO EAGLE
MELIADINE

DESSINÉ PAR/DRAWN BY		DATE 2022/03/08	TITRE / TITLE: AGNICO EAGLE - MELIADINE DIVISION
VÉRIFIÉ PAR/CHECKED BY		DATE 2022/03/08	
APPROUVÉ PAR/APPROVED BY		DATE 2022/03/08	
	ÉCHELLE/SCALE 1:13000	FEUILLE/SHT 1/1	No. DESSIN/DRAWING NO.: Meliadine Site Plan — REVISION: A

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