In the event of a **TAILINGS LINE** break or malfunction the following action plan is to be initiated.

24-HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- Notify Mill Superintendent (or designate) immediately via radio, phone or in person;
- The senior mill person will direct the initiation of shut down procedures for the mill in order to **STOP** the flow through the tailings line;
- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- The flow shall be **CONTAINED** by dyking, barricading or blocking flow by any means available. This can include snow, sand or other available materials (geotex liner) in order to construct retaining structures. Use earth-moving equipment if nearby;
- If flow has reached a flowing natural stream, mobilize team to contain it from entering stream. Contact should be made with DIAND Water Resources and Environment Canada, Department of Fisheries and Oceans for further direction.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- the mill tailings contain chemicals used in the process and must be handled appropriately. The major chemical additive involved is sodium cyanide and is present in concentrations generally in the range of 200-300 mg/L. Because of this, solutions are slightly toxic by ingestion or aspiration; drying of skin can result on prolonged contact due to the presence of alkaline materials (lime and sodium cyanide); and
- avoid contact with acids, which would lower pH and liberate gaseous HCN.

ACTION FOR FIRE

- Non-flammable; and
- use dry chemical, foam or water spray (fog), although water may spread the contaminant.

RECOVERY

- **Ground contamination**; any tailings material that has escaped form the pipeline or dump station containment areas onto surrounding tundra shall be removed and disposed of at the tailings containment area;
- If required, esker material and/or crushed wasted rock shall be used to fill any depressions left after excavation of the spill material.
- **Water contamination**; these areas are difficult to mitigate as movement of contaminated material (and water) may continue long after initial incident; and
- Local authorities should be contacted regarding advice for cleanup or additional work to be carried out.

DISPOSAL

- Contaminated materials are to be disposed of at the Tailings Containment in an active tailings cell.

PROPERTIES

- The mill tailings contain a mixture of mill reagents and finely ground rock which has had the precious metal content removed. Reagents used included sodium cyanide, lime, lead nitrate, zinc metal and flocculent;
- Appearance is dark grey solids suspended in a clear water base solution;

ENVIRONMENTAL CONCERNS

- Solution may be mildly harmfully to fish, other aquatic organisms and wildlife;
- May be mildly harmful to waterfowl;
- Solids portion known to generate acid through oxidation processes if left exposed to weathering and open environment.

CONTAINERS

- N/A

SUPPLIER

- N/A

In the event of an **TAILINGS CONTAINMENT ENGINEERING FAILURE (DAMS)** the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- Notify Mill Superintendent (or designate) immediately via radio, phone or in person;
- If necessary, the senior mill person will direct the initiation of shut down procedures for the mill in order to **STOP** the flow of mine water through to the tailings containment area;
- If required, the tailings discharge point will be relocated to an area unaffected by the failure.
- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- The flow of tailings shall be **CONTAINED** by dyking, barricading or blocking flow by any means available. This can include snow, sand or other available materials (geotex liner) in order to construct retaining structures. Use earth-moving equipment if nearby. Tailings pond solutions can be pumped back to the containment area during repair work;
- Any of the tailings containment area "Cells" can be dewatered to Pond No.1 in the event flow cannot be controlled at the failure site.
- If tailings has reached a flowing natural stream, mobilize team to contain tailings from entering stream. Contact should be made with DIAND Water Resources and Environment Canada, Department of Fisheries and Oceans for further direction.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- The mill tailings contained chemicals used in the process and must be handled with these taken into account. The material would have been diluted with raw water during the care & maintenance period and should not be a hazard. Samples will be taken to check this assumption.

ACTION FOR FIRE

- Non-flammable
- use, dry chemical, foam or water spray (fog), although water may spread the contaminant;

RECOVERY

- **Ground contamination**; any tailings material that has escaped from the pipeline or containment areas onto surrounding tundra shall be removed and disposed of at the tailings containment area;
- Solutions, where contained shall be pumped back into the tailings containment area;
- If required, esker material and/or crushed wasted rock shall be used to fill any depressions left after excavation of the spill material.

RECOVERY cont.

- **Water contamination**: these areas are difficult to mitigate as movement of contaminated material (and water) may continue long after initial incident;
- local authorities should be contacted regarding advice for cleanup or additional work to be carried out.

DISPOSAL

- contaminated materials are to be disposed of at the Tailings Containment in an active tailings cell or solutions pumped directly to Pond No.1.

PROPERTIES

- the mill tailings contain a mixture of mill reagents and finely ground rock which has had the precious metal content removed. Reagents used included sodium cyanide, lime, lead nitrate, zinc metal and flocculent;
- appearance is of dark grey solids suspended in a clear water base solution:

ENVIRONMENTAL CONCERNS

- solution might be mildly harmful to fish, other aquatic organisms and wildlife;
- might be mildly harmful to waterfowl; Water samples will be taken in October to check this assumption.
- solids portion known to generate acid through oxidation processes if left exposed to weathering and open environment.

CONTAINERS

- N/A

SUPPLIER

- N/A

In the event of a **SEWAGE SYSTEM FAILURE (PIPELINE/DAMS)** the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- Notify Mill Superintendent (or designate) immediately via radio, phone or in person;
- If necessary, direct the initiation of shut down procedures for the pumping system in order to **STOP** the flow of sewage through to the sewage lakes containment area;
- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- If the failure is piping related, the sewage discharge will be redirected within the mill to either the tailings pumpbox (pump to TCA) or connected up with the mine water line to discharge to the second sewage lake. Both these options will be temporary until repairs are complete.
- If the failure is dam structure related, the sewage flow will be redirected to the TCA. Seepage from the second sewage lake will be contained within a constructed catchment basin, checked for water quality and pumped back to the containment if water quality is not consistent with License requirements. Seepage from the first sewage lake to the second lake will be monitored for water quality during repair activities.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- the sewage stream from the site contains grey water from all sources (mill and mine drys, all accommodation & shower facilities, kitchen and all washroom facilities on site.
- there are no chemicals used in the process;
- due to the nature of the source, health risks are associated with bacterial infections and disease that may be transmitted through exposure.

ACTION FOR FIRE

- Non-flammable
- use CO_2, dry chemical, foam or water spray (fog), although water may spread the contaminant;
- use water to cool other flammable materials;

RECOVERY

- **Ground contamination**; any sewage material that has escaped from the pipeline or containment areas onto surrounding tundra shall be removed, where possible and disposed of within the sewage lake or buried with esker if necessary;
- If required, esker material and/or crushed wasted rock shall be used to fill any depressions left after excavation of the spill material.
- Solutions, where contained shall be pumped back into the sewage lakes containment;
- **Water contamination**; these areas are difficult to mitigate as movement of contaminated material (and water) may continue long after the initial incident;
- Local authorities should be contacted regarding advice for cleanup or additional work to be carried out. DIAND Water Resources or Env. Can. Dept. of Fisheries and Oceans.

DISPOSAL

- contaminated materials are to be disposed of within the sewage lakes containment system or at the Tailings Containment in an active tailings cell.

PROPERTIES

- the mine site sewage system contains a mixture of camp waters (excluding those of the mill process and the mine dewatering). These include camp drys, accommodation washroom facilities and kitchen.
- water accounts for greater than 90% of the component which is used during day to day activities; the remainder is organic solids which readily settle in the disposal system.

ENVIRONMENTAL CONCERNS

- solution only mildly toxic to fish and other aquatic organisms due to the low dissolved oxygen that may occur at certain times of the year;
- effluents could contain minor amounts of nutrients (nitrogen components) that may promote plant growth in downstream water bodies.

CONTAINERS

- N/A

SUPPLIER

- N/A

In the event of a **PASTE BACKFILL LINE FAILURE** the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- Notify Mill Superintendent (or designate) immediately via radio, phone or in person;
- When safe to do so, initiate shut down procedures for the pumping system in order to **STOP** the flow of paste material through the line;
- The General Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- The Mine Superintendent is notified regarding the potential need for disruption to the pumping system;
- Necessary manpower and equipment deployed to contain/clean-up spill area;
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- The residual cyanide may be hazardous if pH levels drop allowing HCN gas to be liberated.
- A more likely scenario may be the (un)intentional use of mine water near the backfilled stopes combining the high pH moisture of the backfill with the water containing ammonia, liberating ammonia gas.

ACTION FOR FIRE

- Non-flammable
- Dry chemical, foam or water spray (fog), although water may spread the contaminant;
- Use water to cool other flammable materials;
- DO NOT use CO_2 as weak acids can be formed favoring the release of HCN gas.

RECOVERY In general the paste material when released from the pipeline does not travel or flow due to its minimal moisture and cement addition. Some minor amount of moisture seeps from the paste during the set-up which may need control during a large spill situation.

- **Ground contamination**; any paste that has escaped from the pipeline onto prepared ground (no natural tundra is crossed with the pipeline) shall be removed to the greatest extent possible, and disposed of within the TCA;
- If required, esker material and/or crushed wasted rock shall be used to fill any depressions left after excavation of the spill material and return the natural grade.
- Solutions (if any), where contained, shall be pumped to the paste building sump or to the tailings sump;

- **Water contamination**; these areas are difficult to mitigate as movement of contaminated material (and water) may continue long after the initial incident;
- Every effort should be made to prevent contamination of any natural water;
- local authorities should be contacted regarding advice for cleanup or additional work to be carried out. DIAND Water Resources or Env. Can. Dept. of Fisheries and Oceans.

DISPOSAL

- All contaminated materials (including the paste) are to be disposed of within the Tailings Containment in an active tailings cell.

PROPERTIES

- The mill paste plant provides backfill material for underground utilizing mill tailings. The process is composed of the tailings solids, and between 10-20% water. Residual process reagents are present including cyanide, lime, zinc, lead nitrate and flocculent.
- Appearance is dark grey solids suspended in enough water to allow pumping with high pressure pumps. Described as having the consistency of toothpaste prior to set;
- The pH is generally greater than 10.

ENVIRONMENTAL CONCERNS

- small amount of solution within the paste would be comparable to tailings solution an regarded with the same toxicity to fish and other aquatic organisms due to the residual cyanide and complexed metals present;
- solids portion known to generate acid through oxidation if left exposed to weathering and open environment.

CONTAINERS

- N/A

SUPPLIER

- N/A

The MINE WATER LINE is now completely contained within the headframe and mill buildings. Mine Water is no longer discharged into the sewage ponds. All spills of Mine Water would be confined to the headframe and mill areas, and spilled water would flow by gravity into the shaft or into the mill sumps.

In the event of a **MINE WATER PIPELINE FAILURE** the following action plan is to be initiated.

INITIAL SPILL RESPONSE

- Notify Mill Superintendent (or designate) immediately via radio, phone or in person;
- The Operations Manager or designate shall be informed of the incident and the response team action initiated.
- If necessary, direct the initiation of shut down procedures for the mine water pumping system in order to **STOP** the flow of mine water;
- If the failure is piping related, the mine water discharge will be collected in the mill sumps and redirected to either the tailings pump box (pump to TCA) or milling circuit.

HAZARDS

- the mine water stream from underground contains water from all mining activities and a small amount of infiltration water.
- due to the nature of activities underground (explosives use), there is ammonia contained in the water from dissolution at active mining areas. Recirculation of water underground for reduced volume usage increases the concentration of ammonia (and other minor contaminants) over time.

ACTION FOR FIRE

- Non-flammable
- use CO_2, dry chemical, foam or water spray (fog), although water may spread the contaminant;
- use water to cool other flammable materials;

RECOVERY

- Solutions, where contained shall be pumped to the tailings sump;

DISPOSAL

- Any contaminated materials are to be disposed of within the Tailings Containment in an active tailings cell.

PROPERTIES

- the mine site mine water contains a mixture of many naturally occurring elements from the ground being developed. As a result, various metals are present (nickel, iron, copper, zinc, arsenic) in very low concentrations giving the water a high conductivity from the dissolved solids. The pH is neutral at 7-7.5.

ENVIRONMENTAL CONCERNS

- the solution may be toxic to fish and other aquatic organisms due to the low dissolved oxygen that may occur and considerable dissolved solids present;
- effluents could contain minor amounts of nutrients (nitrogen components) that may promote plant growth in downstream water bodies. Ammonia is present from residual blasting agents.

CONTAINERS

- N/A

SUPPLIER

- N/A

In the event of a **DIESEL FUEL** spill or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130
INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** the flow of diesel fuel if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available. Use earth-moving equipment if nearby;
- if flow has reached flowing natural stream, mobilize team to deploy river boom, skimmer and absorbent booms.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- slightly toxic by ingestion, highly toxic if aspirated, drying of skin on contact;
- flammable, treat as combustible.

ACTION FOR FIRE

- use CO_2, dry chemical, foam or water spray (fog), although water may spread the fire;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface of tanks;
- divert the diesel fuel to an open area and let it burn off under control;
- if the fire is put out before all diesel fuel is consumed, beware of re-ignition;
- where diesel fuel is running downhill, try to contain it as quickly as possible;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

RECOVERY

- Recovered soils from contaminated fuel can be soaked up by sand and peat moss or snow if available, or by synthetic absorbents such as 3M Brand, Graboil or Conwed;
- if necessary, contaminated soil should be excavated;
- diesel fuel entering the ground can be recovered by digging sumps or trenches;
- diesel fuel on a water surface should be recovered by skimmers and absorbent booms (See Section on Recovery of Oil Spills).

DISPOSAL

- incineration under controlled conditions; obtain prior approval.
- burial at an approved site.

PROPERTIES

- chemical composition: mixture of hydrocarbons in the range C_9 to C_{18};
- clear to yellow, bright oily liquid with hydrocarbon odour;
- not soluble, floats on water.

ENVIRONMENTAL CONCERNS

- moderately toxic to fish and other aquatic organisms;
- harmful to waterfowl;
- may create unsightly film on water.

CONTAINERS

- transported by tanker truck and transferred to various storage tanks in the tank farm. See inventory in appendix.

SUPPLIER

- As per annual tendering. (eg: Petro-Canada)
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

In the event of a **GASOLINE OR AVIATION FUEL** spill or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130
INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** the flow of gasoline or aviation fuel if possible;
- ELIMINATE all possible sources of IGNITION, eg. extinguish cigarettes, shut off motors (from a remote location if surrounded by vapours);
- EVACUATE personnel from danger area;
- CAREFULLY CONSIDER the hazards and merits of trying to contain the spill. Contain only if safe to do so, and obvious benefit of containment is apparent (ie. contain if flowing towards a creek or water body). Otherwise leave gasoline to spread and evaporate. Do not attempt to contain a gasoline spill on water. Allow it to spread and evaporate;
- if spilled in an enclosed area, VENTILATE vapours.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- **EXTREME FIRE HAZARD** (Jet A, MODERATE), highly flammable;
- forms explosive mixture with air; is heavier than air and can migrate considerable distances to sources of ignition and flashback;
- easily ignited by flame or spark;
- avoid contact with oxidizing materials (eg. Lead Nitrate, acids);
- moderately toxic by ingestion, highly toxic if aspirated.
- Note: Jet B contains a small amount of Benzene which is a suspect human carcinogen.

ACTION FOR FIRE

- use CO_2, dry chemical, foam or water spray (fog), although water may spread the fire;
- use jet streams to wash away burning gasoline;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface of tanks;
- divert the gasoline to an open area and let it burn off under control;
- if the fire is put out before all gasoline is consumed, beware of re-ignition;
- where gasoline is running downhill, try to contain it at the bottom prior to reaching lakes or streams;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

RECOVERY

- unburned gasoline can be soaked up by sand and peat moss and snow when available, or by synthetic absorbents such as 3M Brand, Graboil or Conwed;
- if necessary, contaminated soil should be excavated;
- gasoline entering the ground can be recovered by digging sumps or trenches.

DISPOSAL

- evaporation;
- incineration under controlled conditions; obtain prior approval.
- burial at an approved site.

PROPERTIES

- chemical composition: mixture of hydrocarbons; Gasoline C_4-C_{12}, Jet B C_6-C_{14} and Jet A C_9-C_{16}
- light green, clear, amber coloured liquids;
- volatile;
- not soluble, floats on water

ENVIRONMENTAL CONCERNS

- moderately toxic to fish and other aquatic organisms;
- may create unsightly film on water.

CONTAINERS

- Gasoline is transported by tanker trucks and pumped into a storage tank in the satellite tank farm. Bulk shipping via tanker truck of Aviation fuel (Jet A) occurs with tank storage at the main tank farm. Drum shipping and storage is in limited quantities.

SUPPLIERS

- As per annual tendering. (eg. Petro-Canada)
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

In the event of a **LUBRICATING OIL OR HYDRAULIC OIL** spill or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130
INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** the flow of oil if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of oil by dyking, barricading or blocking flow by any means available. Use earth-moving equipment if nearby;
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- low toxicity by ingestion, mildly irritating to eyes
- combustible, low fire hazard;
- avoid contact with oxidizing materials (eg. Lead Nitrate, acids).

ACTION FOR FIRE

- use CO_2, dry chemical, foam or water spray (fog), although water may spread the fire;
- use fog streams to protect rescue team and trapped people;
- use water to cool surface fire exposed containers;
- divert the oil to an open area and let it burn off under control;
- if the fire is put out before all oil is consumed, beware of re-ignition;
- rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

RECOVERY

- after containment, recover as much oil as possible by pumping into drums;
- residual oil may be burned in-situ, upon approval;
- remaining unburned oil can be soaked up by sand, peat moss and snow when available, or by synthetic absorbents such as 3M Brand, Graboil or Conwed;
- if necessary, contaminated soil should be excavated;
- oil on a water surface should be recovered by skimmers and absorbent booms.

DISPOSAL

- incineration under controlled conditions, prior approval required;
- burial at an approved site.
- ship to licensed waste reclaiming facility

PROPERTIES

- chemical composition: mixture of hydrocarbons and conventional industrial oil additives; C_{20}-C_{66}
- generally viscous liquids, light to dark amber colours;
- not soluble, floats on water.

ENVIRONMENTAL CONCERNS

- moderately toxic to fish and other aquatic organisms;
- harmful to waterfowl;
- may create unsightly film on water and shorelines.

CONTAINERS

- transported and stored in steel drums or cubes (these are self-contained units with an 8 drum capacity).

SUPPLIER

- As per annual tendering.
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

In the event of an **ANTIFREEZE (GLYCOL)** spill or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** the flow of Antifreeze at source if possible;
- ELIMINATE open flame ignition sources;
- CONTAIN flow of liquid by dyking, barricading or blocking flow by any means available;
- **PREVENT** antifreeze from entering any flowing streams.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- inhalation of mist may cause irritation of nose, throat and headache;
- moderately toxic by ingestion, can be fatal;
- avoid contact with strong oxidizing agents
- flammable, decomposition products include carbon dioxide and/or carbon monoxide.

ACTION FOR FIRE

- use alcohol type or all purpose foam for large fires; CO_2, dry chemical or water spray (fog) for small fires. Do not force solid streams into the burning liquid.

RECOVERY

- ethylene glycol antifreeze can be soaked up by peat moss or snow when available, or by synthetic absorbents such as Hazorb;
- small spills may be washed with copious amounts of water for dilution;
- access to spilled or recovered ethylene glycol by mammals should be prevented.

DISPOSAL

- only incinerate in a furnace under controlled conditions where approved by appropriate federal, provincial and local regulations;
- burial at an approved site.

PROPERTIES

- chemical composition: 96% ethylene glycol (CH_2OHCH_2OH)
- 4% water and rust inhibitors
- clear, syrupy liquid normally contains a dye for identification in water sources;
- 100% soluble in water;
- flammable.

ENVIRONMENTAL THREAT

- low to moderate toxicity for fish and other aquatic organisms;
- attractive smell and taste to some mammals, and toxic by ingestion.

CONTAINERS

- transported and stored in steel drums or cubes (which are a self-contained unit with an 8 drum capacity).

SUPPLIER

- DOW Chemical of Canada Ltd., Van Waters & Rogers Ltd.
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

In the event of a **CYANIDE** spill (of solid or solution) or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130
INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **Dupont Emergency Response Centre; 24 hour access - (613) 348-3616, Maitland, ON.**
- Evacuate any non-essential personnel:
- **ALERT** the Heath Services Registered Nurse as to the nature of the emergency;
- **TEST** for the presence of hydrocyanic acid (HCN) gas;
- **DO NOT ENTER** an area containing sodium cyanide (NaCN) dust or HCN gas without self-contained breathing apparatus. In the winter solid NaCN may be difficult to visually detect because of its white appearance;
- **STOP** spill at source if possible;
- **PREVENT** solid NaCN from contacting acid, acid salts or water as it will liberate HCN gas;
- if sodium cyanide does contact water, **CONTAIN** solution to as small an area as possible. Consider dyking with sand or snow;
- if HCH gas is being produced, **WEAR PROTECTIVE CLOTHING AND BREATHING APPARATUS, VENTILATE and ADD HYDRATED LIME** to slow the reaction;
- **ISOLATE** area of spill, preferably by roping off affected area and posting appropriate hazard signs.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- extremely toxic (rapidly fatal) by ingestion or inhalation (of gas or dust); **Prompt Treatment** is essential in cases of cyanide poisoning;
- corrosive to skin, due to strong alkalinity;
- liberates highly toxic, flammable HCN gas if sodium cyanide comes in contact with water, any acid or acid salts;
- contact with carbon dioxide (CO_2) produces HCN gas in lesser, but possibly dangerous quantities. **DO NOT USE CO_2 EXTINGUISHERS**;
- HCN gas can be absorbed through the skin;
- being very alkaline, NaCN may cause burns to the eyes or open skin abrasions;
- avoid contact with strong oxidizing agents (ie: Lead Nitrate).
- **ALWAYS HAVE CYANIDE ANTIDOTE KITS ON HAND**

ACTION FOR FIRE

- sodium cyanide is not flammable and will not support combustion, and will not be destroyed in an ordinary fire involving combustible materials such as paper and wood.
- DO NOT USE CARBON DIOXIDE (CO_2) extinguishers to fight a fire involving Sodium Cyanide; this may produce toxic HCN gas if moisture is present for the reaction;
- if water must be used to fight a fire involving sodium cyanide, limit the amounts to that which is necessary and treat runoff as though it was a spill of sodium cyanide solution.
- Do not allow runoff to reach a flowing stream or river, contain and dispose of properly.

RECOVERY

- spills of sodium cyanide on dry surfaces can be shoveled into containers. Crews should wear dust masks while shoveling or sweeping up spills. Beware of contacting the skin with solid NaCN because it can be readily absorbed (enhanced with moisture; sweating);
- spills of solid sodium cyanide on wet surfaces or exposed to rain should be shoveled into waterproof containers as soon as possible to minimize the quantity of sodium cyanide being dissolved. Affected area should be sprayed with solution of calcium hypochlorite to neutralize the cyanide, avoiding the formation of HCN gas as this gas is highly toxic. Personnel so employed shall be required to utilize a self-contained breathing apparatus;
- sodium cyanide, as a solid or in solution, must not be allowed access to any flowing stream, as its recovery from such a stream outside the plant site area is virtually impossible. Inside the mill, solution spills of concentrated cyanide solution are pumped back into the mixing system. Spills outside this area will be directed to the main floor sumps which are pumped back into the mill circuit.
- soil contaminated with sodium cyanide should be excavated if the affected groundwater threatens to travel to an adjacent flowing stream;
- solutions of sodium cyanide which are not recovered can be neutralized by addition of lime and a dilute solution of calcium hypochlorite;
- Absorbents may be used to contain and recover spilled solutions.

DISPOSAL

- solid sodium cyanide recovered from a spill may be used in the mill if it is of acceptable quality;
- solid sodium cyanide, all sodium cyanide solutions recovered from the spills, and soil containing sodium cyanide can be added to the mill circuits under the direction of the Mill Superintendent, or direct disposal at the Contaminated Materials Disposal location in the tailings pond.

PROPERTIES

- chemical formula NaCN;
- white solid, briquettes or granular;
- very soluble in water, 37 WT % at 20 C;
- aqueous solution is strongly alkaline and decomposes rapidly;
- solid sodium cyanide absorbs moisture from the air, and tends toward a liquid state.

ENVIRONMENTAL CONCERN

- much more toxic to fish and other forms of aquatic life than terrestrial life; concentrations considerably less than 1 mg/l are of concern;
- contain and prevent from entering natural water course

CONTAINERS

- transported and stored in 1360 kg steel FloBins.

SUPPLIER

- Dupont
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION

In the event of a **LIME** spill (of solid or solution) or where there is reasonable likelihood of a spill occurring, the following action plan is to be initiated.

24 HOUR SPILL REPORT LINE (867) 920-8130

INITIAL SPILL RESPONSE

- The Operations Manager or designate shall be informed of the incident and the response team action initiated. **Spill reported via 24 hour emergency spill line**, above;
- **STOP** spill of lime/lime slurry at source if possible;
- **PREVENT** hydrated lime from contacting water;
- if lime does contact water, **CONTAIN** solution to as small an area as possible.
- A detailed spill report shall be submitted as per Section 2.3

HAZARDS

- dry chemical prone to dusting
- skin irritant and mild burns - alkaline; dusts and mists may cause irritation of mouth, nose throat and possibly lungs;
- unslaked lime (CaO) reacts with water to form hydrated lime, releasing heat.

ACTION FOR FIRE

- no special precautions;
- use extinguishing media appropriate for surrounding fires.

RECOVERY

- spills of hydrated lime on dry surfaces can simply be shovelled into containers and re-used if appropriate;
- spills of lime on wet surfaces or exposed to rain should be shovelled into waterproof containers as soon as possible to minimize the quantity of lime being dissolved;
- pump liquids into containers and use sorbents to contain and recover spilled solutions.

DISPOSAL

- hydrated lime recovered from a spill may be used in the mill if it is of acceptable quality;
- solid lime and all lime solutions (where use is inappropriate) should be disposed of in the mill tailings sump, or directly to the tailings pond.

PROPERTIES

- chemical formula $Ca(OH)_2$;
- unslaked lime (pebble lime, CaO) also used which is not hydrated, therefor reacts with water to form slaked lime
- white or white/grey solid, crystalline powder, odorless;
- strong alkaline;
- slightly soluble in water, less than 1%.

ENVIRONMENTAL CONCERNS

- toxic to fish and other aquatic life at higher concentrations in the order of 50 mg/l and greater.

CONTAINERS

- transported and stored in lined paper bags (25kg) which are palletized and double stretch wrapped (54 bags/pallet);
- also available in 1.4 tonne tote bag.

SUPPLIER

- Continental Lime
- SEE ATTACHED MSDS FOR ADDITIONAL INFORMATION on Both $Ca(OH)_2$ and CaO