



Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region  
**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
Brooke's Point, Palawan

March 23, 2022

**MEMORANDUM**

**FOR :** The Regional Executive Director  
DENR MIMAROPA Region  
Roxas Boulevard, Ermita, Manila

The OIC – Regional Director  
MGB MIMAROPA Region  
Roxas Boulevard, Ermita, Manila

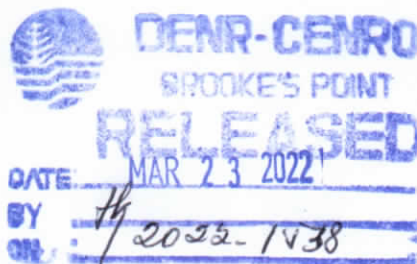
**THRU :** The OIC – PENRO  
Sta. Monica, Puerto Princesa, Palawan

**FROM :** The CENRO  
Brooke's Point, Palawan

**SUBJECT :** **FIELD INVESTIGATION REPORT ON THE INCIDENT OF SLURRY LEAK AT THE HIGH PRESSURE ACID LEACH PLANT OF CORAL BAY NICKEL CORPORATION DUE TO NORMAL WEAR (PRESENCE OF SMALL HOLE) OF THE DISCHARGE PIPE FROM THE AUTOCLAVE**

Respectfully endorsing the field investigation report dated March 21, 2022 regarding the above-cited subject for which this Office concurs with the recommendations stipulated herein.

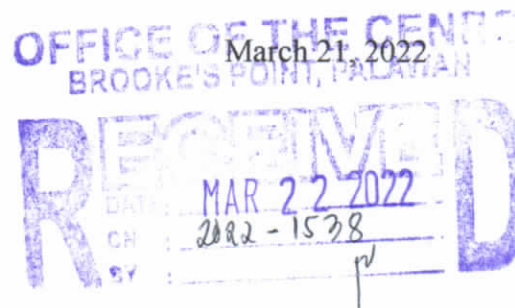
For information, record, and further instruction.



**CONRADO M. CORPUZ**



Republic of the Philippines  
Department of Environment and Natural Resources  
MIMAROPA Region  
**COMMUNITY ENVIRONMENT AND NATURAL RESOURCES OFFICE**  
**Brooke's Point, Palawan**



**MEMORANDUM**

**FOR** : The CENR Officer  
Brooke's Point, Palawan

**FROM** : Kate Gabrielle L. Castillo  
Science Research Specialist II/MGB-MIMAROPA Embedded Personnel  
Mines and Geosciences Bureau – MIMAROPA Region

**SUBJECT** : **FIELD INVESTIGATION REPORT ON THE INCIDENT OF SLURRY LEAK AT THE HIGH PRESSURE ACID LEACH PLANT OF CORAL BAY NICKEL CORPORATION DUE TO NORMAL WEAR (PRESENCE OF SMALL HOLE) OF THE DISCHARGE PIPE FROM THE AUTOCLAVE**

This refers to the memorandum dated March 17, 2022 of OIC – Regional Director Edwin M. Mojares, Ph.D. to the Provincial Environment and Natural Resources Office (PENRO) cc. Environment Management Bureau (EMB) – MIMAROPA Region and Community ENRO (CENRO) – Brooke's Point, Palawan which was received by this Office on March 18, 2022 with Document Reference No. 2022-1538.

The undersigned conducted a field inspection/investigation together with technical personnel from the Provincial Environment Management Unit (PEMU) – Palawan of the EMB – MIMAROPA Region on March 19, 2022 within the above-cited location to verify the actions and measures being undertaken by the company in response to the said incident.

**Facts/Findings:**

Presented below are the compiled background information and actual field findings acquired by the undersigned throughout the course of the inspection/investigation:

**I. Background Information**

1. In a letter dated March 17, 2022 of Coral Bay Nickel Corporation (CBNC) addressed to OIC – Regional Director Mojares, Ph.D., it was reported that a minor safety and environmental incident occurred at the High Pressure Acid Leach (HPAL) Plant – Line 2 located at Brgy. Rio Tuba, Bataraza, Palawan on March 16, 2022 at around 1:21 p.m. wherein a small hole on the discharge pipe from the autoclave has caused the leaking of slurry from the said pipe. The incident was controlled at 1:30 p.m. and the operation of the HPAL Plant - Line 2 was safely shutdown.



It was reported that one (1) employee had minor injuries and was immediately brought to the company hospital to be administered by proper medical care. The company was able to confirm that no other person was injured or affected by the incident within and outside the plant complex. The spilled slurry was contained and treated in the Final Neutralization Plant and was not able to flow outside the plant complex.

Said letter was copy furnished to EMB – MIMAROPA Region, Palawan Council for Sustainable Development, Multi-Partite Monitoring Team Members, Local Government Unit (LGU) Rio Tuba, LGU Bataraza, and LGU Palawan.

2. On March 19, 2022, the undersigned, together with Ms. Mercedita B. Almorfe, Supervising Environment Management Specialist, and Mr. Ralph Nelson C. Navarro, Environmental Monitoring Officer, of PEMU – Palawan, was briefed on the safety protocols of the company prior to the site inspection by Mr. Mark Jayson Tabi, Safety Officer. Engr. Antonio O. Sanone, Environment, Quality and Safety Manager, and Engr. Jeb B. Badlon, Pollution Control Officer, provided detailed information on what had transpired during the incident. Field inspection was conducted to verify the actions and measures taken by the company to ensure the safety of working personnel and to contain the spilled slurry.

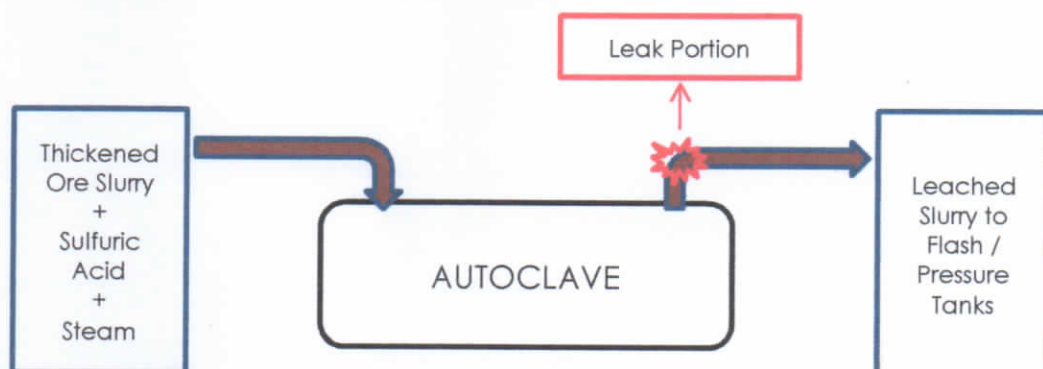
## II. Narrative of Events

### 1. Actions and measures taken by the company during the incident

The autoclave, which is considered by the company as the “heart” of the operation, is a machine used for the extraction process of nickel and cobalt from the low-grade nickel laterite ore that requires elevated temperature and pressure. The feed entering the autoclave is composed of thickened ore slurry composed of ore and water, sulfuric acid (chemical formula:  $H_2SO_4$ ) to leach nickel and steam to increase the temperature and pressure in the autoclave. The temperature and pressure inside the autoclave is at about 245-250°C and 4.5-4.8MPa, respectively. The leached slurry from the autoclave is then discharged to the flash/pressure tanks to return it to its atmospheric conditions.

On March 16, 2022 at 1:21 p.m., a slurry leak was observed at the discharge pipe, a pipe which transports leached slurry from the autoclave to the flash/pressure tanks of HPAL Plant - Line 2.

Figure 1. Diagram showing the slurry leak incident.



Distributive Control System (DCS) operator announced to all personnel to evacuate and stay away from the vicinity of HPAL Plant - Line 2, considering that the wind is coming from northeast going to southwest. Other DCS personnel and plant operations personnel conducted emergency shutdown to contain the slurry leak. Roll calling and head counting was conducted to account all personnel working in the area.

It was found that one (1) employee was splashed by the leaking slurry and was immediately administered with flushing of water through the emergency shower. Said employee was brought to the hospital by an ambulance and was given medical attention by the attending physician.

The ditch gates were immediately closed to prevent the slurry to go out the plant complex. The company's Emergency Response Team (ERT) conducted inspection to check the environmental condition outside the plant perimeter.

At 1:30 p.m., the slurry leak was deemed to be contained through the closing of Autoclave Line 2 discharge valve and emergency shutdown of the Line 2 – HPAL Operation to eliminate the source of pressure. The ERT convened again for a post-incident meeting to reconfirm the safety of all personnel and the condition of one (1) personnel that was brought to the hospital.

## **2. Post-incident assessments conducted by the company**

### **a. Assessment of the damage in the HPAL Plant – Line 2**

Based on the assessment, the leak is located on the discharge pipe elbow. Although the said discharge pipe is replaced every six (6) months during preventive maintenance shutdown which is scheduled every May and November of the year, the discharge pipe elbow wore prematurely that caused the slurry leak. The contributing factors to the normal wear of the discharge pipe are:

1. the accumulation of scales inside the pipe that causes the jet motion of slurry which is in effect, concentrating the stress on the portion of the discharge pipe elbow; and
2. the abrasive property of the slurry flowing through the pipe.

Figure 2. Diagram showing the effect of accumulated scales in discharge pipe elbow.

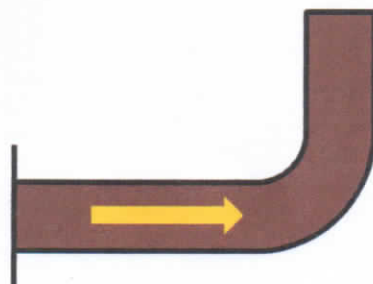


Fig. 2.a. Discharge pipe elbow without accumulated scales

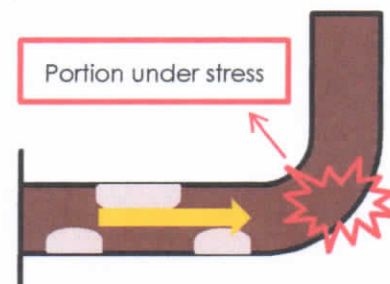


Fig. 2.b. Discharge pipe elbow with accumulated scales



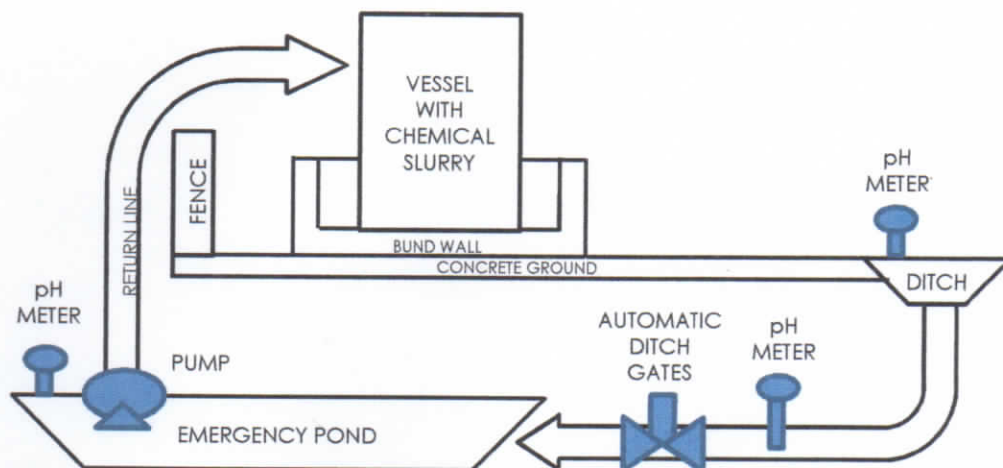
**b. Assessment of the condition of HPAL Plant – Line 1**

The incident has no effect to the HPAL Plant – Line 1 based on the assessment. Therefore, the said line still continued its operation.

**c. Assessment of the area affected by the leaked slurry**

The slurry leak was contained immediately due to the safety and environmental controls that was being implemented and installed by the company. The bundwalls that surround the vessel with slurry served as the secondary containment of the spilled slurry. The plant complex and ditch system is concrete paved which prevented the seepage of slurry on the ground. The ditch system has automatic gates and pH probes that can be monitored on site and at the DCS. An emergency pond will also cater the spilled slurry if it will escape the above-cited mitigating measures and said slurry will be recovered through a pump system.

Figure 3. Diagram showing the series of mitigating measures.



The company immediately conducted the recovery of spilled slurry and clean-up of the area affected by the incident. The concrete ditch where the slurry accumulated was isolated and dumped with limestone. Recovered slurry was pumped and brought to the Final Neutralization Plant for its treatment and discharge to the Tailings Storage Facility No. 2.

Splashes of slurry from the discharge pipe were estimated to reach 50-60 meters from the said pipe. The amount of slurry spilled in the area is not yet available as of the date of field inspection.

**d. Re-assessment of the environment surrounding the CBNC Plant Complex**

Based on the company's evaluation, the slurry did not reach the outside of the plant perimeter fence. No personnel outside the plant complex were affected by the slurry leak based on their interview.

### **3. One employee injured during the incident**

The employee that was injured during the incident was identified to Mr. Ronald Tan. Upon assessment, it was found that he has minor bruises and first-degree chemical burn. RTN Foundation, Inc. Hospital issued a medical certificate dated March 16, 2022 to Mr. Tan, can resume to work, and was advised to return to the hospital for monitoring.

### **III. Actual Field Findings**

1. During the field inspection, it was observed that the company is conducting on-going clean-up of stains on the concrete access roads, structures, and equipment that was affected by the slurry leak. The damaged discharge pipe of the HPAL Plant – Line 2 is undergoing replacement with new pipe.
2. The inspection team randomly checked the present reading of the pH meters installed by the company which ranges from pH 5-7.2. The team paid a visit in the DCS wherein CBNC personnel continuously monitor the pH level, hydrogen sulfide gas level (chemical formula: H<sub>2</sub>S), wind direction, etc.
3. The team inspected the emergency pond that will cater the spilled slurry if it will escape the level of controls implemented in the plant complex. Said slurry will be recovered through a pump system for treatment.

#### **Recommendations:**

In view of the foregoing findings, the undersigned respectfully recommends the following actions:

1. The incident should be referred to the Mines and Geosciences Bureau (MGB), and the Environmental Management Bureau, specifically Metallurgical and Safety Engineers, and environmental experts for a more comprehensive and scientific assessment.
2. Said experts should, among others, find out whether some protocols were overlooked and recommend possible amendment or modification to avoid another leak incident.
3. CBNC should immediately conduct a health assessment of all workers, as well as the team who conducted the rapid assessment, to ensure that there are no negative effects on their health.
4. CBNC should immediately conduct thorough assessment of its HPAL Plant – Line 2 facilities prior to its resumption of operation.
5. CBNC should report to MGB and this Office the mitigating measures and repairs undertaken.

For the CENRO's information, reference, and further instruction.



  
Kate Gabrielle L. Castillo  
Science Research Specialist II

## **LIST OF ANNEXES**

- Annex A Memorandum dated March 17, 2022 from OIC – Regional Director Edwin M. Mojares, Ph.D. to the PENRO cc. EMB – MIMAROPA Region and CENRO – Brooke's Point, Palawan
- Annex B Photo Documentation during Field Inspection/Investigation
- Annex C Location Map showing Areas Visited during Field Inspection/Investigation
- Annex D Medical Certificate of Mr. Ronald Tan



**Annex A.** Memorandum dated March 17, 2022 from OIC – Regional Director Edwin M. Mojares, Ph.D. to the PENRO cc. EMB – MIMAROPA Region and CENRO – Brooke's Point, Palawan


	<p>Republic of the Philippines Department of Environment and Natural Resources <b>MINES AND GEOSCIENCES BUREAU</b> <b>MIMAROPA Region</b> 7/F DLSNR Building, 1515 Moras Boulevard, Ermita, Manila Telefax No. (+832) 536-0215 / (+832) 310-1588 Email: region4@denr.gov.ph</p>	
<b>MEMORANDUM</b>		
<b>For :</b>	<b>The PENRO</b> Provincial Environment and Natural Resources Office Province of Palawan	
<b>From :</b>	<b>The Regional Director</b> This Office	
<b>Subject :</b>	<b>Incident of Slurry Leak at the High Pressure Acid Leach (HPAL) Plant of CBNC Due to Normal Wear (presence of small hole) of the Discharge Pipe from the Autoclave</b>	
<b>Date :</b>	March 17, 2022	

This has reference to the Letter of even date from Coral Bay Nickel Corporation (copy attached) informing this Office on the above subject incident.

The slurry leak happened on March 16, 2022 at the HPAL Plant of CBNC in Brgy. Rio Tuba, Bataraza, Palawan at around 1:21 p.m. and was totally controlled by the company at 1:30 p.m. One employee sustained minor injuries due to the leak and was immediately given medical care at the company hospital.


In this regard, this Office is requesting a personnel from the Palawan Provincial Environmental Management Unit (PEMu) together with the **MGB MIMAROPA Embedded Personnel assigned at CENRO Brooke's Point to conduct an immediate investigation on the incident.**


For the PENRO's information and appropriate action.

  
**EDWIN M. MOJARES, Ph.D.**

Enc's: As stated

Cc: EMB MIMAROPA Region  
Ermita, Manila  
  
CENRO - Brooke's Point  
Brooke's Point Palawan





MINES AND GEOSCIENCES BUREAU  
MIMAROPA Region

**"MINING SHALL BE PRO-PEOPLE AND PRO-ENVIRONMENT  
IN SUSTAINING WEALTH CREATION AND IMPROVED QUALITY OF LIFE."**



Form 01-QC-2007 Rev. 05

March 17, 2022

**DIRECTOR EDWIN M. MOJARES, Ph.D.**  
OIC – Regional Director  
Mines and Geosciences Bureau  
MIMAROPA Region

**Subject: Report on Minor Leak Incident**

Dear Director Mojares:

Greetings,

This is to respectfully report a minor safety and environmental incident that occurred at the Line 2 High Pressure Acid Leach Plant (HPAL Plant L-2) of Coral Bay Nickel Corporation (CBNC) in Rio Tuba, Bataraza, Palawan. A discharge pipe from the autoclave suffered a small hole and caused the leaking of the slurry from the said pipe. The leak incident happened on March 16, 2022. It started at around 1:21 PM and was totally controlled at 1:30 PM. The operations of the whole HPAL Plant L-2 was then safely shutdown, and as of March 17, 2022, it remains in shutdown mode until a thorough assessment and needed repairs are done.

No personnel were seriously injured, although one employee had minor injuries and was immediately given the proper medical care at the company hospital. All personnel working within the area of the incident were able to go to a safe place unharmed.

CBNC was able to confirm that there was no other person injured or affected by the incident within and outside of the plant complex. The spilled slurry was just within the immediate vicinity of the HPAL Plant and was effectively contained and treated in the Final Neutralization Plant. No trace of the spilled slurry was able to flow outside of the plant complex.

CBNC Management will ensure due diligence and implement corrective measures to prevent the recurrence of the same incident.

For your information,

Respectfully Yours,

**ANTONIO O. SANONE**  
MEPED Manager

**KOICHI NAKAMURA**  
Deputy Plant Manager

**TAKAO OISHI**  
Plant Manager

**BENJAMIN ARMAND A. TANSINGCO**  
VP-Environmental Management

Copy furnished: EMB MIMAROPA, PCSDS, MMT Members, LGU Rio Tuba, LGU Bataraza, LGU Palawan

Principal Office: Rio Tuba Export Processing Zone (RTXZ)  
Riz: Rio Tuba, Bataraza, Palawan, Philippines 5106  
Tel.: (09) 8348-7128 and (09) 8348-7121

Main Office Address: c/o Serrano Social Mining Programs  
Holladay's Corporation, 24th-25th Floor, N/A Tower, 2nd Street  
San Roque Global City, Taguig City, Philippines 1634



## Annex B. Photo Documentation during Field Inspection/Investigation

### Safety Orientation and Discussion on the Slurry Leak Incident



The inspection team was briefed on the safety protocols of the company prior to the site inspection and was provided detailed information on what had transpired during the incident.

### On-going Clean-up of Affected Areas and Replacement of Discharge Pipe



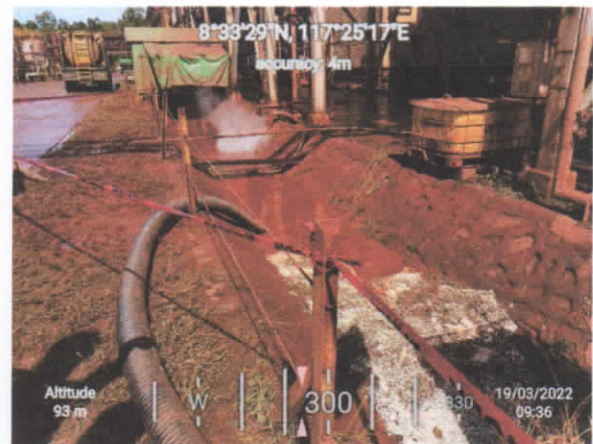
On-going clean-up of stains on the concrete access roads, structures, and equipment that was affected by the slurry leak was observed and the damaged discharge pipe of the HPAL Plant – Line 2 is undergoing replacement.



## Mitigating Measures in Containing Slurry Leak



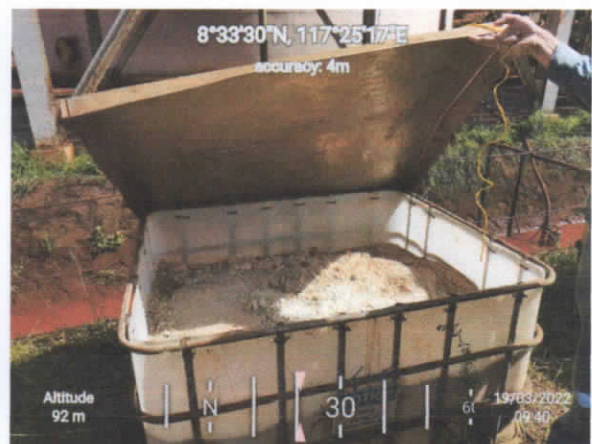
Bund walls surround the vessel containing chemical slurry.



The ditch where the slurry accumulated was isolated and dumped with limestone.



A pH meter is near the ditch system to monitor its level.



A container with limestone is also near the ditch system.



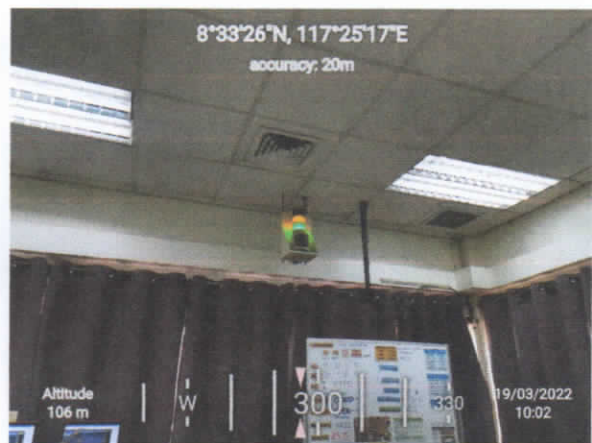
The emergency shower used by the employee that was exposed to the spilled slurry.



Another PH meter is installed near the ditch system.



## Distributive Control System of CBNC

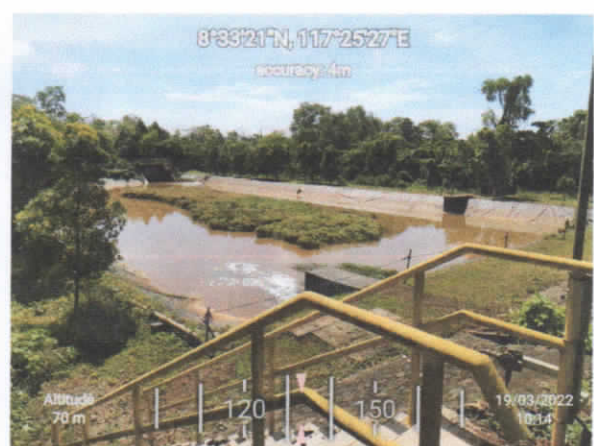


DCS personnel continuously monitor the pH level, hydrogen sulfide gas level (chemical formula:  $\text{H}_2\text{S}$ ), wind direction, etc.

## Emergency Pond



Another PH meter is installed near the emergency pond.



The emergency pond will cater the spilled slurry if it will escape the series of controls.


**Annex C. Location Map showing Areas Visited during Field Inspection/Investigation**



M. Rodriguez St. Poblacion District I, Brooke's Point Palawan 5305  
Mobile Phone: Globe: 0917-502-8916; Telephone No. (048) 726-4101  
Email/Gmail: cenrobrookespoint@denr.gov.ph



**Annex D. Medical Certificate of Mr. Ronald Tan**

 <b>RTN</b> FOUNDATION, INC. HOSPITAL	<h2 style="margin: 0;">MEDICAL CERTIFICATE</h2>	Date: <u>March 16, 2022</u>
---	---	--------------------------------

**To whom it may concern:**

I hereby certify that \_\_\_\_\_ Ronald Tan \_\_\_\_\_ 40/M  
(Patient's Name) (Age)

came in for consult due to \_\_\_\_\_ Chemical Burn \_\_\_\_\_ last March 16, 2022  
(Chief complaint) (Date)

and had undergone thorough physical and medical examination by the undersigned.

**Clinical Impression:**

\_\_\_\_\_ First Degree Chemical Burn \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_


**Recommendation:**


\_\_\_\_\_ Can resume to work \_\_\_\_\_  
\_\_\_\_\_ To come back anytime for monitoring \_\_\_\_\_  
\_\_\_\_\_ Patient well advised \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

This medical certificate is issued for \_\_\_\_\_ Medical \_\_\_\_\_ purpose only and not intended for medico-legal or court use.

\_\_\_\_\_  
**ROMMEL Q. DE LEON,** \_\_\_\_\_ **M. D.**  
License No. 097288

RTNFI is supported by:

  
**RIO TUBA NICKEL**

  
**Coral Bay Nickel Corporation**

Nickel Avenue, RTN Townsite  
Rio Tuba, Bataraza, Palawan  
[rtnfi.hospital@rtnfi.nickelasia.com](mailto:rtnfi.hospital@rtnfi.nickelasia.com)  
+63-97-668-590 / +63-98-206-693

RTNFIH-Forms 2019-MC010