

**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER 1160-D34LE5  
Issue Date: June 3, 2024

Northern Sun Mining Corp.  
Post Office Box, No. 5114  
South Porcupine, Ontario  
P0N 1H0

Site Location: Redstone Mill  
South Porcupine  
Part 1300, 1301, and 1302, Plan 6R-3763  
Timmins City, District of Cochrane

*You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:*

**Description Section**

A nickel, copper and gold ore processing facility, consisting of the following processes and support units:

- Ore crushing
- Ore processing operations including grinding, floatation and dewatering;
- Material handling
- Tailings containment and management

including the Equipment and any other ancillary and support processes and activities, operating at a Facility Production Limit of up to 547,500 tonnes of ore processed per year, discharging to the air as described in the Original ESDM Report.

*For the purpose of this environmental compliance approval, the following definitions apply:*

1. "ACB list" means the document entitled "Air Contaminants Benchmarks (ACB) List: Standards, guidelines and screening levels for assessing point of impingement concentrations of air contaminants", as amended from time to time and published by the Ministry and available on a

Government website;

2. "Acceptable Point of Impingement Concentration" means a concentration accepted by the Ministry as not likely to cause an adverse effect for a Compound of Concern that,
  - a. is not identified in the ACB list, or
  - b. is identified in the ACB list as belonging to the category "Benchmark 2" and has a concentration at a Point of Impingement that exceeds the concentration set out for the contaminant in that document.

With respect to the Original ESDM Report, the Acceptable Point of Impingement Concentration for a Compound of Concern mentioned above is the concentration set out in the Original ESDM Report;

3. "Approval" means this entire Environmental Compliance Approval and any Schedules to it.;
4. "Best Management Practices Plan" means the document "Management of Fugitive Dust", Northern Sun Mining, Document Number EMS-PRO-005, revised on March 25, 2024, as amended, which describes the measures to minimize fugitive dust emissions from the Facility and/or Equipment.
5. "Basic Comprehensive User Guide" means the Ministry document titled "Basic Comprehensive Certificates of Approval (Air) User Guide" dated March 2011, as amended;
6. "Company" means Northern Sun Mining Corp. that is responsible for the construction or operation of the Facility and includes any successors and assigns in accordance with section 19 of the EPA;
7. "Compound of Concern" means a contaminant described in paragraph 4 subsection 26 (1) of O. Reg. 419/05, namely, a contaminant that is discharged from the Facility in an amount that is not negligible;
8. "Description Section" means the section on page one of this Approval describing the Company's operations and the Equipment located at the Facility and specifying the Facility Production Limit for the Facility;
9. "Director" means a person appointed for the purpose of section 20.3 of the EPA by the Minister pursuant to section 5 of the EPA;
10. "District Manager" means the District Manager of the appropriate local district office of the Ministry, where the Facility is geographically located;
11. "Emission Summary Table" means a table described in paragraph 14 of subsection 26 (1) of O. Reg. 419/05;

12. "Environmental Assessment Act" means the *Environmental Assessment Act*, R.S.O. 1990, c.E.18;
13. "EPA" means the *Environmental Protection Act*, R.S.O. 1990, c.E.19;
14. "Equipment" means equipment or processes described in the ESDM Report, this Approval and in the Schedules referred to herein and any other equipment or processes;
15. "Equipment with Specific Operational Limits" means any Equipment related to the thermal oxidation of waste or waste derived fuels, fume incinerators or any other Equipment that is specifically referenced in any published Ministry document that outlines specific operational guidance that must be considered by the Director in issuing an Approval;
16. "ESDM Report" means the most current Emission Summary and Dispersion Modelling Report that describes the Facility. The ESDM Report is based on the Original ESDM Report and is updated after the issuance of this Approval in accordance with section 26 of O. Reg. 419/05 and the Procedure Document;
17. "Facility" means the entire operation located on the property where the Equipment is located;
18. "Facility Production Limit" means the production limit placed by the Director on the main product(s) or raw materials used by the Facility;
19. "Highest Ranking Person" means the highest ranking person regularly present at the Facility who has management responsibilities relating to the Facility;
20. "Log" means a document that contains a record of each change that is required to be made to the ESDM Report, including the date on which the change occurred. For example, a record would have to be made of a more accurate emission rate for a source of contaminant, more accurate meteorological data, a more accurate value of a parameter that is related to a source of contaminant, a change to a Point of Impingement and all changes to information associated with a Modification to the Facility that satisfies Condition 2;
21. "Minister" means the Minister of the Environment, Conservation and Parks or such other member of the Executive Council as may be assigned the administration of the EPA under the Executive Council Act;
22. "Ministry" means the ministry of the Minister;
23. "Modification" means any construction, alteration, extension or replacement of any plant, structure, equipment, apparatus, mechanism or thing, or alteration of a process or rate of production at the Facility that may discharge or alter the rate or manner of discharge of a Compound of Concern to the air or discharge or alter noise or vibration emissions from the Facility;
24. "Noise Screening Documents" means the completed Primary Noise Screening Method, or the completed Secondary Noise Screening Method, with supporting information and documentation, as

updated in accordance with Condition 5 of this Approval;

25. "O. Reg. 419/05" means Ontario Regulation 419/05: Air Pollution – Local Air Quality, made under the EPA;
26. "Original ESDM Report" means the Emission Summary and Dispersion Modelling Report which was prepared in accordance with section 26 of O. Reg. 419/05 and the Procedure Document by FROSKR Corp., and dated April 1, 2024 submitted in support of the application, and includes any changes to the report made up to the date of issuance of this Approval;
27. "Point of Impingement" has the same meaning as in section 2 of O. Reg. 419/05;
28. "Primary Noise Screening Method" means the Ministry Primary Noise Screening Method form as described in the "Primary Noise Screening Method Guide", January 31, 2017, as amended;
29. "Procedure Document" means Ministry guidance document titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated March 2018, as amended;
30. "Processes with Significant Environmental Aspects" means the Equipment which, during regular operation, would discharge one or more contaminants into the air in an amount which is not considered as negligible in accordance with section 26 (1) 4 of O. Reg. 419/05 and the Procedure Document;
31. "Publication NPC-207" means the Ministry draft technical publication "Impulse Vibration in Residential Buildings", November 1983, supplementing the Model Municipal Noise Control By-Law, Final Report, published by the Ministry, August 1978, as amended;
32. "Publication NPC-300" means the Ministry Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300", August 2013, as amended;
33. "Schedules" means the following schedules attached to this Approval and forming part of this Approval namely:
  - Schedule A - Supporting Documentation
34. "Secondary Noise Screening Method" means the Ministry Secondary Noise Screening Method form as described in the "Secondary Noise Screening Method Guide", January 31, 2017, as amended;
35. "Toxicologist" means a qualified professional currently active in the field of risk assessment and toxicology that has a combination of formal university education, training and experience necessary to assess contaminants; and
36. "Written Summary Form" means the electronic questionnaire form, available on the Ministry website, that documents whether Modifications were undertaken at the Facility and compliance with the Approval, in the previous calendar year.

*You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:*

## **TERMS AND CONDITIONS**

### **1. GENERAL**

1. Except as otherwise provided by this Approval, the Facility shall be designed, developed, built, operated and maintained in accordance with the terms and conditions of this Approval and in accordance with the following Schedules attached hereto:

- Schedule A - Supporting Documentation

### **2. OPERATIONAL FLEXIBILITY**

1. Pursuant to section 20.6 (1) of the EPA and subject to Conditions 2.2 and 2.3 of this Approval, future construction, alterations, extensions or replacements are approved in this Approval if the future construction, alterations, extensions or replacements are Modifications to the Facility that:
  - a. are within the scope of the operations of the Facility as described in the Description Section of this Approval;
  - b. do not result in an increase of the Facility Production Limit above the level specified in the Description Section of this Approval; and
  - c. result in compliance with the performance limits as specified in Condition 4.
2. Condition 2.1 does not apply to,
  - a. the addition of any new Equipment with Specific Operational Limits or to the Modification of any existing Equipment with Specific Operational Limits at the Facility; and
  - b. Modifications to the Facility that would be subject to the Environmental Assessment Act.
3. Condition 2.1 of this Approval shall expire ten (10) years from the date of this Approval, unless this Approval is revoked prior to the expiry date. The Company may apply for renewal of Condition 2.1 of this Approval by including an ESDM Report that describes the Facility as of the date of the renewal application.

### **3. REQUIREMENT TO REQUEST AN ACCEPTABLE POINT OF IMPINGEMENT CONCENTRATION**

1. Prior to making a Modification to the Facility that satisfies Condition 2.1.a and 2.1.b, the Company shall prepare a proposed update to the ESDM Report to reflect the proposed Modification.

2. The Company shall request approval of an Acceptable Point of Impingement Concentration for a Compound of Concern if the Compound of Concern is not identified in the ACB list as belonging to the category “Benchmark 1” and a proposed update to an ESDM Report indicates that one of the following changes with respect to the concentration of the Compound of Concern may occur:
  - a. The Compound of Concern was not a Compound of Concern in the previous version of the ESDM Report and
    - i. the concentration of the Compound of Concern exceeds the concentration set out for the contaminant in the ACB list; or
    - ii. the Compound of Concern is not identified in the ACB list; or
  - b. The concentration of the Compound of Concern in the updated ESDM Report exceeds the higher of,
    - i. the most recent Acceptable Point of Impingement Concentration, and
    - ii. the concentration set out for the contaminant in the ACB list, if the contaminant is identified in that document.
3. The request required by Condition 3.2 shall propose a concentration for the Compound of Concern and shall contain an assessment, performed by a Toxicologist, of the likelihood of the proposed concentration causing an adverse effect at Points of Impingement.
4. If the request required by Condition 3.2 is a result of a proposed Modification described in Condition 3.1, the Company shall submit the request, in writing, to the Director at least 30 days prior to commencing to make the Modification. The Director shall provide written confirmation of receipt of this request to the Company.
5. If a request is required to be made under Condition 3.2 in respect of a proposed Modification described in Condition 3.1, the Company shall not make the Modification mentioned in Condition 3.1 unless the request is approved in writing by the Director.
6. If the Director notifies the Company in writing that the Director does not approve the request, the Company shall,
  - a. revise and resubmit the request; or
  - b. notify the Director that it will not be making the Modification.
7. The re-submission mentioned in Condition 3.6 shall be deemed a new submission under Condition 3.2.
8. If the Director approves the request, the Company shall update the ESDM Report to reflect the Modification.

9. Condition 3 does not apply if Condition 2.1 has expired.

#### **4. PERFORMANCE LIMITS**

1. Subject to Condition 4.2, the Company shall not discharge or cause or permit the discharge of a Compound of Concern into the air if,
  - a. the Compound of Concern is identified in the ACB list as belonging to the category “Benchmark 1” and the discharge results in the concentration at a Point of Impingement exceeding the Benchmark 1 concentration; or
  - b. the Compound of Concern is not identified in the ACB list as belonging to the category “Benchmark 1” and the discharge results in the concentration at a Point of Impingement exceeding the higher of,
    - i. if an Acceptable Point of Impingement Concentration exists, the most recent Acceptable Point of Impingement Concentration, and
    - ii. the concentration set out for the contaminant in the ACB list, if the contaminant is identified in that document.
2. Condition 4.1 does not apply if the benchmark set out in the ACB list has a 10-minute averaging period and no ambient monitor indicates an exceedance at a Point of Impingement where human activities regularly occur at a time when those activities regularly occur.
3. The Company shall, at all times, ensure that the noise emissions from the Facility comply with the limits set out in Ministry Publication NPC-300.
4. The Company shall, at all times, ensure that the vibration emissions from the Facility comply with the limits set out in Ministry Publication NPC-207.
5. The Company shall operate any Equipment with Specific Operational Limits approved by this Approval in accordance with the Original ESDM Report.

#### **5. DOCUMENTATION REQUIREMENTS**

1. The Company shall maintain an up-to-date Log.
2. No later than March 31 in each year, the Company shall update the ESDM Report in accordance with section 26 of O. Reg. 419/05 and shall update the Noise Screening Documents so that the information in the reports is accurate as of December 31 in the previous year.
3. The Company shall make the Emission Summary Table (see section 27 of O. Reg. 419/05) and the Noise Screening Documents available for examination by any person, without charge, by posting it on the Internet or by making it available during regular business hours at the Facility.

4. The Company shall, within three (3) months after the expiry of Condition 2.1 of this Approval, update the ESDM Report and the Noise Screening Documents such that the information in the reports is accurate as of the date that Condition 2.1 of this Approval expired.
5. Conditions 5.1 and 5.2 do not apply if Condition 2.1 has expired.

## **6. WRITTEN SUMMARY FORM**

1. Subject to Condition 6.2, the Company shall prepare, and make available to the Ministry upon request, no later than June 30 of each year, a Written Summary Form signed by the Highest Ranking Person.
2. Condition 6.1 does not apply if:
  - a. Condition 2.1 has expired; and
  - b. the Written Summary Form has been completed for the year in which Condition 2.1 expired.

## **7. OPERATION AND MAINTENANCE**

1. The Company shall prepare and implement, not later than three (3) months from the date of this Approval, operating procedures and maintenance programs for all Processes with Significant Environmental Aspects, which shall specify as a minimum:
  - a. frequency of inspections and scheduled preventative maintenance;
  - b. procedures to prevent upset conditions;
  - c. procedures to minimize all fugitive emissions;
  - d. procedures to prevent and/or minimize odorous emissions;
  - e. procedures to prevent and/or minimize noise emissions; and
  - f. procedures for record keeping activities relating to the operation and maintenance programs.
2. The Company shall ensure that all Processes with Significant Environmental Aspects are operated and maintained in accordance with this Approval, the operating procedures and maintenance programs.

## **8. FUGITIVE DUST CONTROL**

1. The Company shall:
  - a. implement, at all times, the most recent version of the Best Management Practices Plan;
  - b. review and evaluate the Best Management Practices Plan on an annual basis;
  - c. record the results of each annual review and update as required the Best Management Practices Plan within two (2) months of the completion of the annual review; and



- d. maintain the updated Best Management Practices Plan at the Facility and provide a copy to the District Manager within one (1) month of the update.
2. The Company shall record, either electronically or in a log book, each time a specific preventative and control measure described in the Best Management Practices Plan is implemented. The Company shall record, as a minimum:
  - a. the date when each emission control measure is implemented, including a description of the control measure;
  - b. the date when each new preventative measure or operating procedure to minimize emissions is implemented, including a description of the preventative measure or operating procedure; and
  - c. the date, time of commencement, and time of completion of each periodic activity conducted to minimize emissions, including a description of the preventative measure/procedure and the name of the individual performing the periodic activity.

## **9. COMPLAINTS RECORDING AND REPORTING**

1. If at any time, the Company receives an environmental complaint from the public regarding the operation of the Equipment approved by this Approval, the Company shall take the following steps:
  - a. Record and number each complaint, either electronically or in a log book. The record shall include the following information: the time and date of the complaint and incident to which the complaint relates, the nature of the complaint, wind direction at the time and date of the incident to which the complaint relates and, if known, the address of the complainant.
  - b. Notify the District Manager of the complaint within two (2) business days after the complaint is received, or in a manner acceptable to the District Manager.
  - c. Initiate appropriate steps to determine all possible causes of the complaint, and take the necessary actions to appropriately deal with the cause of the subject matter of the complaint.
  - d. Complete and retain on-site a report written within five (5) business days of the complaint date. The report shall list the actions taken to appropriately deal with the cause of the complaint and set out steps to be taken to avoid the recurrence of similar incidents.

## **10. RECORD KEEPING REQUIREMENTS**

1. Any information requested by any employee in or agent of the Ministry concerning the Facility and its operation under this Approval, including, but not limited to, any records required to be kept by this Approval, shall be provided to the employee in or agent of the Ministry, upon request, in a timely manner.
2. Unless otherwise specified in this Approval, the Company shall retain, for a minimum of five (5) years from the date of their creation all reports, records and information described in this Approval, including,

- a. a copy of the Original ESDM Report and each updated version;
- b. supporting information used in the emission rate calculations performed in the ESDM Reports;
- c. the records in the Log;
- d. copies of each Written Summary Form prepared under Condition 6.1 of this Approval;
- e. records of maintenance, repair and inspection of Equipment related to all Processes with Significant Environmental Aspects; and
- f. records related to fugitive dust control as required by Condition 8 of this Approval; and
- g. records related to environmental complaints made by the public as required by Condition 9 of this Approval.

## **11. CHANGE OF OWNERSHIP**

1. The Company shall notify the Director in writing, and forward a copy of the notification to the District Manager, within thirty (30) days of the occurrence of any of the following changes to Facility operations:
  - a. the ownership of the Facility;
  - b. the operator of the Facility;
  - c. the address of the Company;
  - d. the partners, where the Company is or any time becomes a partnership and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c. B.17, shall be included in the notification; or
  - e. the name of the corporation where the Company is or at any time becomes a corporation, other than a municipal corporation, and a copy of the most current information filed under the Corporations Information Act, R.S.O. 1990, c. C.39, shall be included in the notification.
2. In the event of any change in ownership of the Facility, the Company shall notify the successor of the existence of this Approval and provide the successor with a copy of this Approval, and the Company shall provide a copy of the notification to the District Manager and the Director.

## **12. REVOCATION OF PREVIOUS APPROVALS**

1. This Approval replaces and revokes all Certificates of Approval (Air) issued under section 9 EPA and Environmental Compliance Approvals issued under Part II.1 EPA to the Facility in regards to the activities mentioned in subsection 9(1) of the EPA and dated prior to the date of this Approval.

## SCHEDULE A

### Supporting Documentation

1. Environmental Compliance Approval Application, dated June 14, 2023, signed by Tim Doskotch and submitted by the Company;
2. Emission Summary and Dispersion Modelling Report, prepared by FROSKR Corp. and dated April 1, 2024;
3. Clarifications and air emissions and modelling information provided by Northern Sun Mining Corp by emails dated February 27, 2024, March 5, 2024 and April 2, 2024.
4. Primary Noise Screening Method, prepared by Tim Doskotch, Site Manager, Northern Sun Mining Corp, and dated June 14, 2023.

*The reasons for the imposition of these terms and conditions are as follows:*

#### **1. GENERAL**

Condition No. 1 is included to require the Approval holder to build, operate and maintain the Facility in accordance with the Supporting Documentation in Schedule A considered by the Director in issuing this Approval.

#### **2. OPERATIONAL FLEXIBILITY, REQUIREMENT TO REQUEST AN ACCEPTABLE POINT OF IMPINGEMENT CONCENTRATION AND PERFORMANCE LIMITS**

Conditions No. 2, 3 and 4 are included to limit and define the Modifications permitted by this Approval, and to set out the circumstances in which the Company shall request approval of an Acceptable Point of Impingement Concentration prior to making Modifications. The holder of the Approval is approved for operational flexibility for the Facility that is consistent with the description of the operations included with the application up to the Facility Production Limit. In return for the operational flexibility, the Approval places performance based limits that cannot be exceeded under the terms of this Approval. Approval holders will still have to obtain other relevant approvals required to operate the Facility, including requirements under other environmental legislation such as the Environmental Assessment Act.

#### **3. DOCUMENTATION REQUIREMENTS**

Condition No. 5 is included to require the Company to maintain ongoing documentation that demonstrates compliance with the performance limits as specified in Condition 4 of this Approval and allows the Ministry to monitor on-going compliance with these performance limits. The Company is required to have up to date Noise Screening Documents and an up to date ESDM Report that describes the Facility at all times and make the Emission Summary Table from that report and the Noise Screening Documents available to the public on an ongoing basis in order to maintain public communication with regard to the emissions from the Facility.

**4. WRITTEN SUMMARY FORM**

Condition No. 6 is included to require the Company to prepare, and make available to the Ministry upon request, a yearly Written Summary Form, to assist the Ministry with the review of the site's compliance with the EPA, the regulations and this Approval.

**5. OPERATION AND MAINTENANCE**

Condition No. 7 is included to require the Company to properly operate and maintain the Processes with Significant Environmental Aspects to minimize the impact to the environment from these processes.

**6. FUGITIVE DUST CONTROL**

Condition No. 8 is included to emphasize that the Equipment and Facility must be maintained and operated in accordance with a procedure that will result in compliance with the EPA, Regulation 419/05 and this Approval and to require the Company to keep records and to provide information to staff of the Ministry so that compliance with the EPA, Regulation 419/05 and this Approval may be verified.

**7. COMPLAINTS RECORDING AND REPORTING PROCEDURE**

Condition No. 9 is included to require the Company to respond to any environmental complaints regarding the operation of the Equipment, according to a procedure that includes methods for preventing recurrence of similar incidents and a requirement to prepare and retain a written report.

**8. RECORD KEEPING REQUIREMENTS**

Condition No. 10 is included to require the Company to retain all documentation related to this Approval and provide access to employees in or agents of the Ministry, upon request, so that the Ministry can determine if a more detailed review of compliance with the performance limits as specified in Condition 4 of this Approval is necessary.

**9. CHANGE OF OWNERSHIP**

Condition No. 11 is included to require the Company to notify/report to the Ministry so that compliance with the EPA, the regulations and this Approval can be verified.

**10. REVOCATION OF PREVIOUS APPROVALS**

Condition No. 12 is included to identify that this Approval replaces all Section 9 Certificate(s) of Approval and Part II.1 Approvals in regards to the activities mentioned in subsection 9(1) of the EPA and dated prior to the date of this Approval.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s).  
3613-A2KPR7 issued on December 1, 2015**

In accordance with Section 139 of the *Environmental Protection Act*, you may by written notice served upon me, the Ontario Land Tribunal and in accordance with Section 47 of the *Environmental Bill of Rights*, 1993, the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this notice, require a hearing by the Tribunal. The Minister of the Environment,

Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act*, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar\*  
Ontario Land Tribunal  
655 Bay Street, Suite 1500  
Toronto, Ontario  
M5G 1E5  
OLT.Registrar@ontario.ca

and

The Minister of the  
Environment, Conservation  
and Parks  
777 Bay Street, 5th Floor  
Toronto, Ontario  
M7A 2J3

and


The Director appointed for the purposes  
of Part II.1 of the *Environmental  
Protection Act*  
Ministry of the Environment,  
Conservation and Parks  
135 St. Clair Avenue West, 1st Floor  
Toronto, Ontario  
M4V 1P5

**\* Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or [www.olt.gov.on.ca](http://www.olt.gov.on.ca)**

This instrument is subject to Section 38 of the *Environmental Bill of Rights*, 1993, that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek leave to appeal within 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry at <https://ero.ontario.ca/>, you can determine when the leave to appeal period ends.

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act*.

DATED AT TORONTO this 3rd day of June, 2024



Bijal Shah, P.Eng.

Director

appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

SA/

c: District Manager, MECP Timmins

Tim Dosckotch, Northern Sun Mining Corporation