

Contents

1. General Information
2. Summary of Releases, Disposals and Recycling
3. Releases to Air, Water and Land
4. On-site and Off-site Disposals
5. Recycling
6. Special Reports

General Information

Report Details

Report Year: 2022

Report Type(s)/Program(s): NPRI

Report Status: Completed

Submitted Date:

Report Creation Type: Prepopulated

Company Idm Id: 2109

Facility Idm Id: 1217

Company Information

Legal Name: Northern Sun Mining Corp.

Business Number: 891339566

Mailing Address: PoBox 5114 Post Office Box Stringers Road, South Porcupine, Ontario, P0N 1H0, Canada

Contacts

Contact Type	Name	Phone	Extension	Email	Position	Correspondence Language	Company Name
Technical Contact	Lonny Michel	705-240-6450	5020	lmichel@northern sunmining.ca	Superintendent of Health, Safety, Security and Environment	English	
Certifying Official	Tim Doskopch	705-240-6450	5003	tdoskopch@north ernsunmining.ca	Site Manager	English	
Public Contact	Lonny Michel	705-240-6450	5020	lmichel@northern sunmining.ca	Superintendent of Health, Safety, Security and Environment	English	
Contractor Contact	Madonna Campeau	705-562-8495		madonna_campe au@froskrcorp.co m	Air Quality Engineer	English	FROSKR Corp Inc

Facility Information

Facility Name: Redstone Mine and Mill

Physical Address: Stringers Road, South Porcupine, Ontario, P0N 1H0, Canada

Latitude and longitude: 48.361200, -81.116600

Primary NAICS Code: 212232

Secondary NAICS Code: 212232

Tertiary NAICS Code: 212232

Number of full-time employee equivalents: 19

Is this a portable facility?: No

Identifiers, Environmental Regulations, and Permit Numbers

Type of Identifier or Issuing Agency of Permit	Identifier or Permit Number
National Pollutant Release Inventory Identifier	11514

General Reporting Questions

Do you want to report any Part 1A substances?: Yes

Do you want to report any Part 1B substances?: Yes

Is the facility subject to the Chromium Electroplating, Chromium Anodizing and Reverse Etching Regulations (SOR/2009-162)?: No

Do you want to report any Part 2 substances?: No

Did wood preservation using creosote occur at the facility, and were PAHs released, disposed of, or transferred as a result of wood preservation using creosote?: No

Do any of the following activities take place at the facility, regardless of the number of employees at the facility?: None

Do employees at the facility work a total of 20 000 hours or more AND do any of the following activities take place at the facility?: None

Do you want to report any Part 4 substances?: Yes

Do you want to report any Part 5 substances?: No

Does the facility have a P2 Plan?: No

Did the facility complete any pollution prevention activities in the current NPRI reporting year?: No

Did the facility operate one or more electricity generating units that had a capacity of 25 MW or more and that distributed or sold to the grid 33% or more of its potential electrical output in the calendar year?: No

Facility Operating Schedule and Shutdown Periods

Usual operating day(s) of the facility: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday

Usual Number of Operating Hours per day in decimal number (hh.mm): 24.00

Usual Daily Start Time (hh:mm): 07:00

Was the facility shut down for more than one week during the year?: Yes

Shutdown Periods

Start date	End date	Will the shutdown period occur at or around the same time in future years	Was the shutdown period a partial or complete shutdown	Comments
2022-01-01	2022-02-13	No	Full	
2022-02-24	2022-09-05	No	Full	
2022-09-20	2022-10-03	No	Full	
2022-10-14	2022-12-31	No	Full	

Summary of Releases, Disposals and Recycling

Parts 1-3 Substances

CAS RN	Substance Name	Substance Part	Releases	Releases to All Media < 1 tonnes	Disposals	Recycling	Unit	Nature of activities	Required / Voluntary / NERM Only
NA - 06	Copper (and its compounds)	1A	0.001777		6.143098		tonnes	For sale/distribution, As a by-product, As a physical or chemical processing aid	Required
NA - 11	Nickel (and its compounds)	1A	0.000346		4.841345		tonnes	For sale/distribution, As a by-product	Required
NA - 02	Arsenic (and its compounds)	1B	0.008878		215.20751		kg	As a by-product	Required
NA - 03	Cadmium (and its compounds)	1B	0.000829		5.513316		kg	As a by-product	Required
NA - 05	Cobalt (and its compounds)	1B	0.005385		222.63009		kg	As a by-product	Required

NA - 08	Lead (and its compounds)	1B	0.013375		754.83165		kg	As a by-product	Required
NA - 12	Selenium (and its compounds)	1B	0.003469		13.490957		kg	As a by-product	Required

Parts 4-5 Substances

CAS RN	Substance Name	Substance Part	Releases to air (tonnes)	Required / Voluntary / NERM Only
NA - M09	pm10 - particulate matter <= 10 microns	4	1.920842	Required
NA - M10	pm2.5 - particulate matter <= 2.5 microns	4	0.43717	Required

Releases to Air, Water and Land

Releases to Air, Water and Land

CAS RN	Substance Name	Substance Part	Type	Release Category	Basis of Estimate	Detail Code	Quantity	Unit
NA - 06	Copper (and its compounds)	1A	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.001554	tonnes
NA - 06	Copper (and its compounds)	1A	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.000223	tonnes
NA - 11	Nickel (and its compounds)	1A	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.000307	tonnes

NA - 11	Nickel (and its compounds)	1A	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.000039	tonnes
NA - 02	Arsenic (and its compounds)	1B	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.008777	kg
NA - 02	Arsenic (and its compounds)	1B	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.000101	kg
NA - 03	Cadmium (and its compounds)	1B	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.000752	kg
NA - 03	Cadmium (and its compounds)	1B	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.000077	kg
NA - 05	Cobalt (and its compounds)	1B	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.005076	kg
NA - 05	Cobalt (and its compounds)	1B	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.000309	kg
NA - 08	Lead (and its compounds)	1B	Releases to air	Stack or Point Releases	E2 - Published Emission		0.012494	kg

NA - 08	Lead (and its compounds)	1B	Releases to air	Stack or Point Releases	Factors		0.012494	kg
NA - 08	Lead (and its compounds)	1B	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.000881	kg
NA - 12	Selenium (and its compounds)	1B	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.003361	kg
NA - 12	Selenium (and its compounds)	1B	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.000108	kg
NA - M09	pm10 - particulate matter <= 10 microns	4	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.060264	tonnes
NA - M09	pm10 - particulate matter <= 10 microns	4	Releases to air	Fugitive Releases	E2 - Published Emission Factors		0.001476	tonnes
NA - M09	pm10 - particulate matter <= 10 microns	4	Releases to air	Unpaved road dust	E2 - Published Emission Factors		1.859102	tonnes
NA - M10	pm2.5 - particulate matter <= 2.5 microns	4	Releases to air	Stack or Point Releases	E2 - Published Emission Factors		0.032643	tonnes
NA - M10	pm2.5 - particulate matter <=	4	Releases to	Fugitive	E2 -		0.000223	tonnes

NA - M10	2.5 microns	4	air	Releases	Published Emission Factors		0.000223	tonnes
NA - M10	pm2.5 - particulate matter <= 2.5 microns	4	Releases to air	Unpaved road dust	E2 - Published Emission Factors		0.404304	tonnes

Reasons for Change, Releases to Air and Land Comments, and Substance Release Comments

CAS RN	Substance Name	Substance Part	Reasons for Change	Nature of "Other Non-Point Releases" release comments	Nature of "Other" land release comments	Substance Release Comment
NA - 06	Copper (and its compounds)	1A	Not applicable			
NA - 11	Nickel (and its compounds)	1A	Not applicable			
NA - 02	Arsenic (and its compounds)	1B	Other			No release to water in 2022. Updated material assays.
NA - 03	Cadmium (and its compounds)	1B	Not applicable			
NA - 05	Cobalt (and its compounds)	1B	Other			No release to water in 2022. Updated material assays.

NA - 08	Lead (and its compounds)	1B	Not applicable			
NA - 12	Selenium (and its compounds)	1B	Not applicable			
NA - M09	pm10 - particulate matter <= 10 microns	4	Changes in estimation methods, including changes in emission factors			Site specific road dust sampling.
NA - M10	pm2.5 - particulate matter <= 2.5 microns	4	Changes in estimation methods, including changes in emission factors			Site specific road dust sampling.

Parts 1-3 Substances Quarterly Percentage Breakdown

CAS RN	Substance Name	Substance Part	January - March %	April - June %	July - September %	October - December %
NA - 02	Arsenic (and its compounds)	1B	34	0	33	33
NA - 05	Cobalt (and its compounds)	1B	34	0	33	33
NA - 06	Copper (and its compounds)	1A	34	0	33	33
NA - 11	Nickel (and its compounds)	1A	34	0	33	33
NA - 03	Cadmium (and its compounds)	1B	34	0	33	33
NA - 08	Lead (and its compounds)	1B	34	0	33	33
NA - 12	Selenium (and its compounds)	1B	34	0	33	33

Parts 4-5 Substances Monthly Percentage Breakdown

CAS RN	Substance Name	Substance Part	Jan %	Feb %	Mar %	Apr %	May %	Jun %	Jul %	Aug %	Sep %	Oct %	Nov %	Dec %
NA - M09	pm10 - particulate matter	4	0	34	0	0	0	0	0	0	33	33	0	0

NA - M09	<= 10 microns	4	0	34	0	0	0	0	0	0	33	33	0	0
NA - M10	pm2.5 - particulate matter <= 2.5 microns	4	0	34	0	0	0	0	0	0	33	33	0	0

Condensable Particulate Matter

CAS RN	Substance Name	Reported Quantities Include Condensable Particulate Matter
NA - M09	pm10 - particulate matter <= 10 microns	Unknown
NA - M10	pm2.5 - particulate matter <= 2.5 microns	Unknown

On-site and Off-site Disposals

On-site and Off-site Disposals

CAS RN	Substance Name	Substance Part	Type	Disposal Category	Basis of Estimate	Detail Code	Quantity	Unit
NA - 06	Copper (and its compounds)	1A	On-site Disposal of Tailings and Waste Rock	Tailings Management	C - Mass Balance		6.143098	tonnes
NA - 11	Nickel (and its compounds)	1A	On-site Disposal of Tailings and Waste Rock	Tailings Management	C - Mass Balance		4.841345	tonnes
NA - 02	Arsenic (and its compounds)	1B	On-site Disposal of Tailings and	Tailings Management	C - Mass Balance		215.20751	kg

NA - 02	Arsenic (and its compounds)	1B	Waste Rock	Tailings Management	C - Mass Balance		215.20751	kg
NA - 03	Cadmium (and its compounds)	1B	On-site Disposal of Tailings and Waste Rock	Tailings Management	C - Mass Balance		5.513316	kg
NA - 05	Cobalt (and its compounds)	1B	On-site Disposal of Tailings and Waste Rock	Tailings Management	C - Mass Balance		222.63009	kg
NA - 08	Lead (and its compounds)	1B	On-site Disposal of Tailings and Waste Rock	Tailings Management	C - Mass Balance		754.83165	kg
NA - 12	Selenium (and its compounds)	1B	On-site Disposal of Tailings and Waste Rock	Tailings Management	C - Mass Balance		13.490957	kg

On-Site Disposal of Tailings and Waste Rock

CAS RN	Substance Name	Substance Part	Disposal Category	Basis of Estimate	Detail Code	Quantity	Unit
NA - 06	Copper (and its compounds)	1A	Tailings Management	C - Mass Balance		6.143098	tonnes
NA - 11	Nickel (and its compounds)	1A	Tailings Management	C - Mass Balance		4.841345	tonnes
NA - 02	Arsenic (and its compounds)	1B	Tailings Management	C - Mass Balance		215.20751	kg
NA - 03	Cadmium (and its compounds)	1B	Tailings	C - Mass		5.513316	kg

NA - 03	Cadmium (and its compounds)	1B	Management	Balance		5.513316	kg
NA - 05	Cobalt (and its compounds)	1B	Tailings Management	C - Mass Balance		222.63009	kg
NA - 08	Lead (and its compounds)	1B	Tailings Management	C - Mass Balance		754.83165	kg
NA - 12	Selenium (and its compounds)	1B	Tailings Management	C - Mass Balance		13.490957	kg

Reasons for Disposal, Reasons for Change and Substance Disposal Comments

CAS RN	Substance Name	Substance Part	Reasons for Disposal	Reasons for Change	Substance Disposal Comments
NA - 06	Copper (and its compounds)	1A	Production Residues	Not applicable	All samples above detection limit
NA - 11	Nickel (and its compounds)	1A	Production Residues	Not applicable	All samples above detection limit
NA - 02	Arsenic (and its compounds)	1B	Production Residues	Decrease in production levels; Changes in composition of materials released/disposed of/transferred	All samples above detection limit
NA - 03	Cadmium (and its compounds)	1B	Production Residues	Not applicable	All samples above detection limit
NA - 05	Cobalt (and its compounds)	1B	Production Residues	Decrease in production levels; Changes in composition of materials released/disposed of/transferred	All samples above detection limit
NA - 08	Lead (and its compounds)	1B	Production Residues	Not applicable	All samples above detection limit
NA - 12	Selenium (and its compounds)	1B	Production Residues	Not applicable	All samples above detection

NA - 12	Selenium (and its compounds)	1B	Production Residues	Not applicable	limit
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Tailings Concentration Information

CAS RN	Substance Name	Substance Part	Average annual concentration (ppm)	Sampling and Detection Limits	Half detection limit	Method Detection Limit (ppm)	More than one method detection limit applies	Comments
NA - 06	Copper (and its compounds)	1A	504	All samples above detection limit	No		Yes	4795 tonnes at 27ppm; 4973 tonnes at 5ppm and 2400 tonnes at 2400ppm
NA - 11	Nickel (and its compounds)	1A	398	All samples above detection limit	No		Yes	4795 tonnes at 74ppm; 4973 tonnes at 130ppm and 2400 tonnes at 1600ppm
NA - 02	Arsenic (and its compounds)	1B	17.7	All samples above detection limit	No		Yes	4795 tonnes at 11ppm; 4973 tonnes at 29ppm and 2400 tonnes at 7.6ppm
NA - 03	Cadmium (and its compounds)	1B	0.453	All samples above detection limit	No		Yes	4795 tonnes at 0.05ppm; 4973 tonnes at 1.7ppm and 2400 tonnes at

NA - 03	Cadmium (and its compounds)	1B	0.453	All samples above detection limit	No		Yes	2400ppm
NA - 05	Cobalt (and its compounds)	1B	18.3	All samples above detection limit	No		Yes	4795 tonnes at 15ppm; 4973 tonnes at 11ppm and 2400 tonnes at 4ppm
NA - 08	Lead (and its compounds)	1B	62	All samples above detection limit	No		Yes	4795 tonnes at 6ppm; 4973 tonnes at 35ppm and 2400 tonnes at 230ppm
NA - 12	Selenium (and its compounds)	1B	1.1	All samples above detection limit	No		Yes	4795 tonnes at 0.2ppm; 4973 tonnes at 0.3ppm and 2400 tonnes at 4.6ppm

Recycling

Reasons for Recycling, Reasons for Change and Substance Recycling Comments

CAS RN	Substance Name	Substance Part	Reasons for Recycling	Reasons for Change	Substance Recycling Comments
NA - 06	Copper (and its compounds)	1A		Not applicable	

NA - 11	Nickel (and its compounds)	1A		Not applicable	
NA - 02	Arsenic (and its compounds)	1B		No significant change	
NA - 03	Cadmium (and its compounds)	1B		Not applicable	
NA - 05	Cobalt (and its compounds)	1B		No significant change	
NA - 08	Lead (and its compounds)	1B		Not applicable	
NA - 12	Selenium (and its compounds)	1B		Not applicable	

Special Reports

Pollution Prevention Plan

Plan was prepared or implemented for another government jurisdiction: No

Plan was prepared or implemented on a voluntary basis: No

Reasons no pollution prevention activities were completed: Activities were implemented in a previous year; additional activities are either unnecessary or unfeasible at this time

Reasons for not completing pollution prevention activities Comments: Not part of the Pollution Prevention program, however NSM implements a fugitive dust program within the tailings area including silt fencing (installed in 2022) and using water suppression in dry summer months.