

New regulation to help manage sulphur dioxide emissions from the Sudbury area nickel smelting and refining industry

Introduction

The Ministry is proposing a sector-based regulation for sulphur dioxide emissions from the two nickel smelting and one nickel refining facilities in the Sudbury area (Glencore and Vale).

The companies have already made significant investments to improve their environmental performance under their site-specific standard action plans for sulphur dioxide (Vale's Atmospheric Emissions Reduction project and Glencore's Process Gas Project) and have significantly reduced sulphur dioxide emissions. These investments ensure sulphur dioxide from significant sources are captured and treated. While more improvements are expected, short-term peak concentrations of sulphur dioxide are still of concern. The proposed regulation provides both certainty and flexibility to the two companies while allowing them time to optimise and then assess the performance of their recently completed investments in control technologies.

The regulation would set out what companies must do to maintain and further improve the investments in technology made in recent years, and either implement best available technology on uncontrolled sources or submit and implement a plan for equivalent actions to reduce sulphur dioxide emissions. The Ministry will consider these plans and community monitoring data to determine what more needs to be done, including whether more investment is needed.

Air standards are used to assess the performance of regulated facilities against benchmarks that protect public health and the environment, and to identify facilities that may need to do more to reduce their emissions to protect local communities. Due to technical and economic limitations, nickel smelting and refining facilities in the Sudbury area will not meet the new more stringent sulphur dioxide air standards that comes into effect July 1, 2023 under O. Reg. 419/05. The proposed regulation and related environmental compliance approval amendments will set out what else companies will be required to do. The proposed regulation would exempt the facilities from the sulphur dioxide air standards under O.Reg.419/05 and would replace Glencore's site-specific standard for sulphur dioxide that expires in 2022.

Overview of proposed new regulation

The proposed new regulation would apply to the three existing nickel smelting and refining facilities in the Sudbury area and it would set out sector-specific technical requirements, detailed below.

In addition to the proposed regulation, the Environmental Protection Act continues to apply, including the prohibition on causing or permitting the discharge of a contaminant into the environment that causes, or is likely to cause, an adverse effect.

Application

The proposed regulation would apply to the existing three nickel smelting and refining facilities in the Sudbury area. The proposed regulation would begin to apply immediately to one nickel smelting facility, operated by Glencore. The nickel smelting and refining facilities operated by Vale would be required to comply with the proposed new regulation in 2023 when the new air standards for sulphur dioxide comes into force.

Exemption

The proposed regulation would exempt facilities that are subject to the regulation from Part II of the Local Air Quality Regulation, except for sections 24, 24.1 and 27.1, in respect of sulphur dioxide. Facilities would be exempt from the sulphur dioxide air standards, Upper Risk Threshold (URT) requirements in respect of sulphur dioxide and certain modelling requirements in Emission Summary and Dispersion Modelling (ESDM) reports for sulphur dioxide. This aligns with the exemption from the application of air standards that is provided when a facility is registered to a technical standard under the Local Air Quality Regulation.

The proposed regulation would ensure the continued application of section 24, 24.1 and 27.1 of the Local Air Quality Regulation, which means that the Ministry would still have the authority to require an Emission Summary and Dispersion Modelling Report or incident-specific Emission Summary and Dispersion Modelling Reports to be prepared for the facility or require a technology report be prepared in respect of the facility and sulphur dioxide.

Although the proposed regulation would exempt the facility from Upper Risk Threshold notification requirements, facilities will have to track exceedences of 120 ppb at community monitors, which is much lower than the Upper Risk Threshold of 240 ppb. Facilities will also have to submit a report on an annual basis of the events causing the

exceedances, their root cause and corrective and preventive actions. Additionally, further abatement action may be required as appropriate under the Environmental Protection Act.

New requirements for the Sudbury area nickel smelting and refining industry

The new requirements are intended to help better manage emissions of sulphur dioxide and will be implemented through a new regulation.

The following is an overview of the proposed regulatory requirements for affected facilities:

Operating requirements and emission control

- Continue to properly operate and optimise existing air pollution control equipment used to capture and control sulphur dioxide emissions

Sulphur dioxide emissions reduction

- Install and operate best available controls such as baghouses with lime injection or wet scrubbers on key sources of sulphur dioxide within two years of the regulations applying to a facility or facilities submit and implement a plan for equivalent methods to reduce sulphur dioxide emissions that consider cost effectiveness within 8 years of the regulation applying to the facility.

Report on the concentration of ambient sulphur dioxide

- Submit annual reports to the Ministry of monitored sulphur dioxide concentrations at specific monitors identified by the Ministry to measure fugitive emissions (i.e., emissions that were not captured and emitted from a stack) and stack emissions.

Sulphur dioxide, capture efficiency report

- Conduct and submit a study to determine how effective controls are at capturing fugitive emissions from the converter aisle within two years of the regulation applying.
- The study must accurately determine the concentration of sulphur dioxide in the fugitive emissions and how efficiently the fugitive emissions from the smelter converter aisle are captured.

Sulphur dioxide, root cause analysis and corrective and preventive action report

- Facilities will be required to submit an annual report with root cause analysis, corrective and preventive actions to address when sulphur dioxide in the community exceeds a monitored hourly average concentration of 120 ppb from the previous calendar year.

Sulphur dioxide reduction projects, action plan effectiveness report

- Facilities will be required to submit a report one year after the regulation applies that assesses the effectiveness of air pollution control equipment installed after January 1, 2016 to control sulphur dioxide emissions.

These proposed regulatory requirements account for the specific operations of the individual nickel smelting and refining facilities and their specific circumstances.

Summary Reports

- Annually by March 31st the facility will be required to prepare an Implementation Summary Report that records the requirements that apply to the facility and when they must be met as well as the date the facility met the requirements.

Other actions

Assessing Environmental Performance

In 2021, air dispersion modelling of the three facilities will be carried out by the Ministry to develop a better understanding of ambient concentrations of sulphur dioxide that could occur across the Sudbury area under different industrial emissions scenarios and meteorological conditions and to help determine the locations of ambient air monitors that will be used to assess the environmental performance of the Sudbury area nickel smelting and refining facilities.

ECA Requirements to Support the Proposed Regulation

The ministry will be proposing amendments to the facilities' environmental compliance approvals to support the proposed regulation including:

- the addition or relocation of ambient air monitors that are under the environmental compliance approval
- the addition of new Continuous Emissions Monitors on key sources of sulphur dioxide to collect information on emission levels following recent investments in pollution control equipment
- improving public accessibility of monitoring data and the interpretation of associated health risks

- updating requirements for annual reporting to the ministry on sulphur dioxide peaks measured at the air monitors

Questions for consultation

1. Should the Ministry consider more than the submitted reports, monitoring and modelling data to make decisions on what else should be done by facilities? If so, what else should be considered?
2. Are there different or additional exemptions to the Local Air Quality Regulation that should be considered?
3. What should the Ministry do to improve air quality in Sudbury considering the recent industry investments?