

# DRAFT FOR DISCUSSION

## PROPOSED TECHNICAL STANDARD FOR ONTARIO'S CARBON BLACK SECTOR

### Context / background

- Sulphur dioxide (SO<sub>2</sub>) emitted from the Carbon Black industry is a serious health concern. There are two Carbon Black facilities in Ontario. These facilities are located in Sarnia and Hamilton and affect local air quality.
- As of July 1, 2023, new (annual) and updated (hourly) SO<sub>2</sub> air standards under O. Reg. 419/05 (Local Air Quality Regulation) will come into force, as set out in the decision notice in Environmental Registry of Ontario posting #013-0903.
- Ontario's Carbon Black facilities have indicated that they do not expect to be able to comply with the new and updated air standards.

### Purpose of this document

To outline key proposed requirements of a technical standard for the Carbon Black sector, to which Ontario's Carbon Black facilities ("Facilities") may apply for registration. If published and the Facilities register to the technical standard, the Facilities would need to comply with the applicable requirements in the technical standard. These proposed requirements are intended to minimize SO<sub>2</sub> emissions and the associated impact of these emissions from these Facilities on neighbouring communities.

### Proposed Requirements

This proposed technical standard applies to Ontario's Carbon Black Facilities (NAICS Code 325189) and for sulphur dioxide.

#### **1. Installation of Air Pollution Control Systems**

Facilities must select from Option A or B below:

**Option A:** By July 1, 2028, Facilities must install and continuously operate an air pollution control system(s) that is capable of achieving a 95% reduction in the emissions of SO<sub>2</sub>.

For Option A, the percent reduction is to be determined based on the comparison of the concentration of SO<sub>2</sub> measured at the inlet to the air pollution control system(s) (determined using inlet source testing pursuant to item 2.2) to the concentration of SO<sub>2</sub> at the outlet of the air pollution control system(s) (continuously monitored pursuant to item 2.3). Using this information, site-specific emission limits which reflect a 95% reduction in emissions will then be set as described items 3-6, and the facility will be required to comply with those limits.

**Option B:** Facilities must install and continuously operate an air pollution control system(s) that achieves the following in-stack concentrations expressed as parts per million SO<sub>2</sub>, dry basis (ppmvd):

By July 1, 2028, meet:

- 160 ppmvd and 0% oxygen (O<sub>2</sub>), calculated on a 7-day rolling average; and
- 130 ppmvd and 0% O<sub>2</sub>, calculated on an annual rolling average.

By January 1, 2030, meet:

- 120 ppmvd and 0% O<sub>2</sub>, calculated on a 7-day rolling average; and
- 80 ppmvd and 0% O<sub>2</sub>, calculated on an annual rolling average.

For both Option A and B Facilities, the installed air pollution control system(s) must control SO<sub>2</sub> emissions from all process sources necessary for the production of carbon black including but not limited to: feedstock heaters, pre-heaters, reactors, bag collectors, dryers, thermal oxidizers and boilers; excluding those sources that discharge a negligible amount of SO<sub>2</sub>, determined in accordance with section 8 of O. Reg. 419/05 and confirmed by the Director.

### **1.1 Interim Actions to reduce SO<sub>2</sub>**

As an interim measure to reduce SO<sub>2</sub> emissions prior to the operation of the system(s) set out in Item 1, Facilities must prepare a report on proposed actions to minimize SO<sub>2</sub> emissions.

The report shall set out measures and timeframes to reduce SO<sub>2</sub> emissions that include: (i) the use of feed stocks with a sulphur content lower than feedstocks used at the facility prior to July 1, 2023; (ii) the use of dry sorbent injection systems; and (iii) other methods to reduce the emission of SO<sub>2</sub> from the Facility's operations.

The report is to be submitted to the ministry by the date of registration to the technical standard. A draft of the report is to be submitted to the ministry as part of an application to register to the technical standard.

## **2. Monitoring Requirements for SO<sub>2</sub>**

### **2.1 Establishing baseline conditions - Option A**

**Facilities selecting Option A from Item 1.0** must complete source testing, no later than one year after registration to the technical standard, to determine the maximum and typical concentration of SO<sub>2</sub> that will be present at the inlet to the air pollution control system(s) described by Item 1. The source testing must be completed in

accordance with an approved pre-test plan that is submitted to the ministry for approval prior to the source testing. In order to ensure sufficient time for review of the plan, the Director would require the pre-test plan to be included as part of an application to register to the technical standard.

The pre-test plan is to be prepared in accordance with the latest version of the Ontario Source Testing Code and set out a source testing program that will satisfy the criteria for site-specific testing described in paragraph 2 of subsection 11(1) of O. Reg. 419/05 and must consider testing under conditions when maximum and typical SO<sub>2</sub> concentrations are expected to occur at the inlet to the air pollution control system described by Item 1. The pre-test plan is to consider testing during the use of a range of feedstocks including those with maximum and typical sulphur content(s) as well as when products with minimum and typical sulphur contents are produced by the Facility and other production factors that would lead to maximum and typical concentrations of SO<sub>2</sub> occurring at the inlet to the proposed air pollution control system(s).

Within three months of completing the source testing, the Facility must submit a source testing report to the Director for approval presenting: (i) results of the testing in accordance with the Ontario Source Testing Code; and (ii) the maximum and typical concentration of SO<sub>2</sub> that will be expected at the inlet to the air pollution control system(s).

## **2.2 Source testing for SO<sub>2</sub> - Option A**

**Facilities selecting Option A from Item 1.0** must submit a plan to the Director to conduct source testing for SO<sub>2</sub> on a recurring basis at the inlet to the air pollution control system described by Item 1. This plan must be submitted at least six months prior to the operation of the air pollution control system, be prepared in accordance with the latest version of the Ontario Source Testing Code and set out a schedule to conduct testing during the optimization and demonstration study required by Item 3 and on an annual basis thereafter. This testing program must be undertaken once the plan is approved and the equipment is operational, in accordance with the approved plan.

Within three months of completing each source testing program, the Facility must submit a source testing report to the Director and maintain copies of the report on-site presenting: (i) results of the testing in accordance with the Ontario Source Testing Code; and (ii) the maximum and typical concentrations of SO<sub>2</sub> measured at the inlet to the air pollution control system(s).

## **2.3 Continuous Emissions Monitoring System (CEMS)**

Beginning no later than the date at which the control technology specified in Item 1 is operational, Facilities must use Continuous Emissions Monitoring System(s) to

continuously monitor the outlet concentration of SO<sub>2</sub> from the air pollution control system(s) during the operation of the process sources necessary for the production of carbon black and to demonstrate compliance with the SO<sub>2</sub> emission reduction requirements and in-stack limits set out in Item 1.

The Continuous Emissions Monitoring System(s) must be installed, calibrated, certified, maintained and operated in accordance with an approved Continuous Emissions Monitoring plan. The technical standard would set out the information requirements for this plan. The Continuous Emissions Monitoring Plan would be required to be submitted to the Director no later than five days following registration to the technical standard.

Facilities will be required to retain records of SO<sub>2</sub> emissions data from the CEMS.

Facilities must at minimum, perform an annual Relative Accuracy Test Audit (RATA) on the continuous emission monitor(s) (CEMS) installed in the stack of the air pollution control system(s) and submit the results to the Director. Prior to undertaking this testing, the Facility must submit a plan for approval to the Director by January 1, 2028 and be prepared in accordance with the latest versions of the Ontario Source Testing Code and relevant Environment and Climate Change Canada guidance. This testing program must be undertaken once the plan is approved and the equipment is operational, in accordance with the approved plan.

Within three months of completing each RATA, the Facility must submit the RATA report to the Director and maintain copies of the RATA report on-site. In consideration of the RATA report findings, the Director may require that the frequency of RATA assessments be increased.

## **2.4 Ambient Air Monitoring**

Facilities must operate at least one SO<sub>2</sub> ambient air monitor, no later than sixteen months following registration to the technical standard, to assess SO<sub>2</sub> concentrations in the local community. The ambient air monitor(s) must be located in the vicinity of each Facility in location(s) determined by the Director. The ambient air monitor(s) must be installed, operated and maintained in accordance with an approved Ambient Air Monitoring plan.

A proposed Ambient Air Monitoring plan must be prepared and submitted to the Director for approval prior to installation of the ambient air monitor(s). The plan must be submitted to the Director no later than five days following registration to the technical standard. This plan must include methods to make collected data publicly accessible in real-time (similar to real-time air monitoring data available from [Clean Air Sarnia and Area](#), and [Hamilton Air Monitoring Network](#)), if being provided independently of existing monitoring networks. The proposed technical standard will set out the information requirements for this plan.

Facilities must track and notify the MECP district manager, as described in Item 8.1, the following information, to the extent available:

- 1-hour exceedances of 120 ppb SO<sub>2</sub> occurring at the ambient air monitor(s), which is above the Ambient Air Quality Criterion of 40 ppb (100 µg/m<sup>3</sup>) but lower than the Upper Risk Threshold of 250 ppb (690 µg/m<sup>3</sup>).
- 5-minute exceedances of 200 ppb SO<sub>2</sub> at these monitors, which is above the short-term Ambient Air Quality Criterion of 67 ppb (~180 µg/m<sup>3</sup>).

Short-term exposures to 200 ppb can cause asymptomatic reductions in lung function for some asthmatics.

### **3. Optimization and Demonstration Study for SO<sub>2</sub> Air Pollution Control Systems – Option A**

**For facilities selecting Item 1.0 Option A**, beginning on the date the Facility begins to operate the air pollution control systems described under Item 1, Facilities must conduct, for a period of 18 months, an “Optimization and Demonstration Study” (Study) in accordance with an approved work plan. By April 1, 2028, Facilities must submit a work plan for the Study to the Director for review and approval. The proposed technical standard will set out the information requirements for this work plan.

Within 30 days of the completion of the first 3 months of the Study, Facilities must submit to the Director an interim written report that includes detailed data on operating conditions and emissions, an assessment of collected data, and conclusions as to whether or not the system described by Item 1 Option A, has achieved the required reduction in SO<sub>2</sub> emissions based on an analysis of the data from that period as well as the relevant information to support the conclusions. If the required reduction in SO<sub>2</sub> emissions has not been achieved, this report should also set out the corrective actions implemented and timelines for any subsequent actions required to achieve the reductions in SO<sub>2</sub> emissions set out by Item 1, Option A.

During the last 15 months of the Study, Facilities must operate in a manner consistent with the conclusions set out in the interim written report with the objective of managing SO<sub>2</sub> emissions to at least meet the reduction requirements set out by Item 1, Option A.

### **4. Optimization and Demonstration Report – Option A**

**For Facilities selecting Item 1.0 Option A**, no later than 60 days after concluding the Study, facilities must submit to the Director the results of the Study in a written “Study Report” that must include the following information:

- Hourly average concentrations of SO<sub>2</sub> and O<sub>2</sub> at the point of emission to air from the air pollution control system, as measured by CEMS during the Study and each hourly average value of air pollution control system operating parameters (to be listed in detail).

- An evaluation of the reduction of SO<sub>2</sub> emissions by the air pollution control systems installed as required by Item 1 and an identification of the optimum range of each of the air pollution control system operating parameters as determined by inlet source testing and CEMS.
- The proposed SO<sub>2</sub> emission limit(s) at the point of emission to air that correspond to a 95% reduction in SO<sub>2</sub>, in ppmv (dry, at 0% oxygen) at the averaging times specified by the ministry.
- Any other information that the Director identifies as relevant to its evaluation of the Study.

## **5. Compliance with Proposed Emission Limits – Option A**

**For Facilities selecting Item 1.0 Option A**, immediately after submitting the Study Report as per Item 4 above, and until the final emission limit(s) at the point of emission to air are established by the Director pursuant to Item 6, Facilities will be required to comply with the proposed SO<sub>2</sub> emission limit(s) listed in the Study Report.

## **6. Ministry Established Final Emission Limits – Option A**

**For Facilities selecting Item 1.0 Option A**, the Director will establish the final SO<sub>2</sub> emission limit(s) at the point of emission to air, to correspond to a 95% reduction in SO<sub>2</sub> emissions, based on the level of performance of the air pollution control system during the Study and other available and relevant information. Facilities will be required to comply with the final SO<sub>2</sub> emission limit(s) beginning on and after the date the Director notifies the Facility regarding the established final emission limit(s).

### **6.1 Short Term Action Levels - Options A and B**

For Option A and B Facilities, the ministry will also specify a short term SO<sub>2</sub> action level concentration on a dry basis (ppmvd) and 0% oxygen for the occurrence of elevated 1-hour in-stack concentrations that may lead to levels exceeding 120 ppb SO<sub>2</sub> off-property.

## **7. Compliance with the Emission Limits and Potential Corrective Actions**

The Facilities must notify the ministry as soon as practicable whenever the emission limits described in Item 1 or by Items 5 and 6 (if applicable) or the short term action level concentrations described in Item 6.1 are exceeded.

A Facility exceeding the SO<sub>2</sub> emission limit(s) described by Item 1 or Items 5 and 6 or the short term action level concentrations described in Item 6.1 will need to prepare a “Root Cause Analysis, Corrective and Preventive Action Report” (RCA Report) and submit this report to the ministry. The RCA Report shall include an evaluation of the ambient monitoring data during the averaging period to assess the potential facility

contribution to the measured concentrations. The RCA Report shall detail the root causes contributing to the event, the corrective actions implemented or to be implemented with timelines and an assessment of the effectiveness or expected effectiveness of the corrective actions. This report is to be submitted within 60 days of the SO<sub>2</sub> emission limit(s) being exceeded. Depending on the circumstances of the exceedance, Facilities may also be requested to submit incident-specific emissions information and/or air dispersion modelling of the exceedance period.

## 8. Reporting Requirements

In order to assess environmental outcomes and facility compliance, Facilities will be required to assess monitoring data and provide reports to the ministry and the public in a ministry approved format in accordance with the below proposed intervals.

### 8.1 Quarterly reporting

**For Facilities selecting Item 1.0 Option A**, on a quarterly basis starting at a date specified by the ministry after the final SO<sub>2</sub> emission limit(s) are established, Facilities shall submit to the ministry a report with the following information in an approved format:

- a summary of all exceedances of the final SO<sub>2</sub> emission limits.
- a summary of all 1-hour monitored values over 120 ppb or 5-minute monitored values over 200 ppb at any of the ambient SO<sub>2</sub> monitoring stations.

Facilities shall make these quarterly reports available to the public by posting them on their website.

**For Facilities selecting Item 1.0 Option B**, on a quarterly basis starting January 1, 2030, Facilities shall submit to the ministry a report with the following information in an approved format:

- a summary of all exceedances of the applicable SO<sub>2</sub> emission limits set out in Item 1.0.
- a summary of all 1-hour monitored values over 120 ppb or 5-minute monitored values over 200 ppb at any of the ambient SO<sub>2</sub> monitoring stations.

Facilities shall make these quarterly reports available to the public by posting them on their website.

### 8.2 Annual reporting

**For Facilities selecting Item 1.0 Option A**, on an annual basis starting at a date specified by the ministry after the final SO<sub>2</sub> emission limit(s) are established, Facilities shall submit to the ministry a report with the following information in an approved format:

- SO<sub>2</sub> emissions measured at the outlet of the air pollution control system.

- summary of any generated RCA Reports and the assessed effectiveness of the identified and timely implemented corrective and preventive actions according to proposed implementation schedules in the RCA Reports.

Facilities shall make these annual reports available to the public by posting them on their website.

**For Facilities selecting Item 1.0 Option B**, starting on an annual basis after January 1, 2030, Facilities shall submit to the ministry a report with the following information in an approved format:

- SO<sub>2</sub> emissions measured at the outlet of the air pollution control system.
- summary of any generated RCA Reports and the assessed effectiveness of the identified and timely implemented corrective and preventive actions according to proposed implementation schedules in the RCA Reports.

Facilities shall make these annual reports available to the public by posting them on their website.

### **8.3 Public reporting on an ongoing basis**

**Facilities selecting Item 1.0 Option A**, shall make the most recent five years of SO<sub>2</sub> emissions data from the CEMS at the outlet of the air pollution control systems available to the public by posting the data on their facility website. Data must be posted to the website within 60 days of the data collection. This reporting requirement would apply to all CEMS data collected after the date when the final SO<sub>2</sub> emission limits are established in accordance with Item 6.

**Facilities selecting Item 1.0 Option B**, shall make the most recent five years of SO<sub>2</sub> emissions data from the CEMS at the outlet of the air pollution control systems available to the public by posting the data on their facility website. Data must be posted to the website within 60 days of the data collection. This reporting requirement would apply to all CEMS data collected after January 1, 2030.

Facilities shall also make the most recent five years of data from the ambient SO<sub>2</sub> monitors described in Item 2.4 publicly available in accordance with the facility's Ambient Air Monitoring plan.

## **9. Operation Requirements for the Air Pollution Control System(s)**

Facilities shall implement operation and maintenance procedures for the air pollution control systems required under Item 1. The operation and maintenance procedures shall be such that the reduction in SO<sub>2</sub> emissions set out by Item 1 can be achieved.

Monitoring, reporting and record keeping of operating parameters and maintenance requirements for the installed air pollution control systems will also be required.



## 10. Other Requirements

Procedures to manage complaints and notifications to the ministry will be required.

**Timing of Requirements, including reports and plans that the Ministry will expect to be included with an application to register to the technical standard if applicable**

Item	Description	Timing
1	Install and operate air pollution control system(s) described by Item 1	No later than July 1, 2028
1.1	Submit report on interim actions to reduce SO <sub>2</sub>	Draft submitted when applying to register to the technical standard.
2.1	<b>For Facilities selecting Option A from Item 1.0</b> , submit SO <sub>2</sub> source testing pre-test plan to determine baseline inlet SO <sub>2</sub> concentrations.	Included with application to register.
2.1	<b>For Facilities selecting Option A from Item 1.0</b> , Conduct baseline SO <sub>2</sub> source testing	No later than one year after registration.
2.1	<b>For Facilities selecting Option B from Item 1.0</b> , meet the initial SO <sub>2</sub> in-stack limits.	No later than July 1, 2028
2.1	<b>For Facilities selecting Option B from Item 1.0</b> , meet the final SO <sub>2</sub> in-stack limits.	No later than January 1, 2030
2.2	<b>For Facilities selecting Option A from Item 1.0</b> , Submit plan for recurring SO <sub>2</sub> testing at the inlet to the air pollution control system(s).	Six months prior to operation of system(s) described by Item 1
2.2	<b>For Facilities selecting Option A from Item 1.0</b> , Conduct inlet source testing.	As set out in the Director approved plan.
2.2	<b>For Facilities selecting Option A from Item 1.0</b> , Submit inlet SO <sub>2</sub> source testing report.	Within three months of completing each testing program.
2.3	Submit CEM monitoring plan for the air pollution control system described by Item 1	No later than five days following registration to the technical standard.
2.3	Begin operation of CEM system for air pollution control system(s) described by Item 1	No later than July 1, 2028
2.3	Submit a plan to conduct recurring RATA Source testing for SO <sub>2</sub> .	No later than January 1, 2028

Item	Description	Timing
2.3	Conduct recurring RATA Source testing for SO <sub>2</sub> .	As set out in the Director approved plan.
2.3	Submit RATA source testing report.	Within three months of completing each testing program.
2.4	Submit an ambient SO <sub>2</sub> monitoring plan	No later than five days following registration to the technical standard.
2.4	Commence ambient SO <sub>2</sub> monitoring	No later than sixteen months following registration to the technical standard
3.0	<b>For Facilities selecting Option A from Item 1.0</b> , submit a workplan for a Optimization and Demonstration Study	No later than April 1, 2028
3.0	<b>For Facilities selecting Option A from Item 1.0</b> , commence the Optimization and Demonstration Study	No later than July 1, 2028
3.0	<b>For Facilities selecting Option A from Item 1.0</b> , Submit interim report for air pollution control system(s) described by Item 1	Within 30 days of the completion of the first 3 months of operation of air pollution control system(s)
4.0	<b>For Facilities selecting Option A from Item 1.0</b> , Submit Optimization and Demonstration Report for air pollution control system(s) described by Item 1	Within 60 days of the completion of the first 18 months of operation of air pollution control system(s)
5.0	<b>For Facilities selecting Option A from Item 1.0</b> , Compliance with Proposed Interim Limits	Beginning on the date the Optimization and Demonstration Report is submitted and until notification by the ministry regarding final emission limits
6.0	<b>For Facilities selecting Option A from Item 1.0</b> , compliance with Ministry Established Final Emission Limits	Upon notification by the ministry
6.1	Response to Short Term Action Levels - Options A and B	Starting July 1, 2028.
8.1	Quarterly exceedance reports for CEM and ambient SO <sub>2</sub> data.	<b>Option A Facilities</b> quarterly, starting at a date specified by the ministry after the final SO <sub>2</sub> emission limit(s) are established.
		<b>Option B Facilities</b> , quarterly starting after January 1, 2030.
8.2	Annual reports for CEM and summaries of RCA reports.	<b>Option A Facilities</b> , annually, starting at a date specified by the ministry after the final SO <sub>2</sub> emission limit(s) are established.

Item	Description	Timing
		<b>Option B Facilities</b> , annually starting after January 1, 2030.
8.3	Ongoing public reporting of ambient SO <sub>2</sub> data.	As set out in the Director approved Ambient Air Monitoring plan.
8.3	Ongoing public reporting of CEMS SO <sub>2</sub> data.	<b>Option A Facilities</b> , beginning 60 days after the date when the final SO <sub>2</sub> emission limit(s) are proposed. <b>Option B Facilities</b> , beginning 60 days after January 1, 2030.