BREAKING DOWN THE 2021 CEMS CODE

Effects of Monitoring Plans, Certification, and Recertification Requirements and Subsequent Reporting Implications

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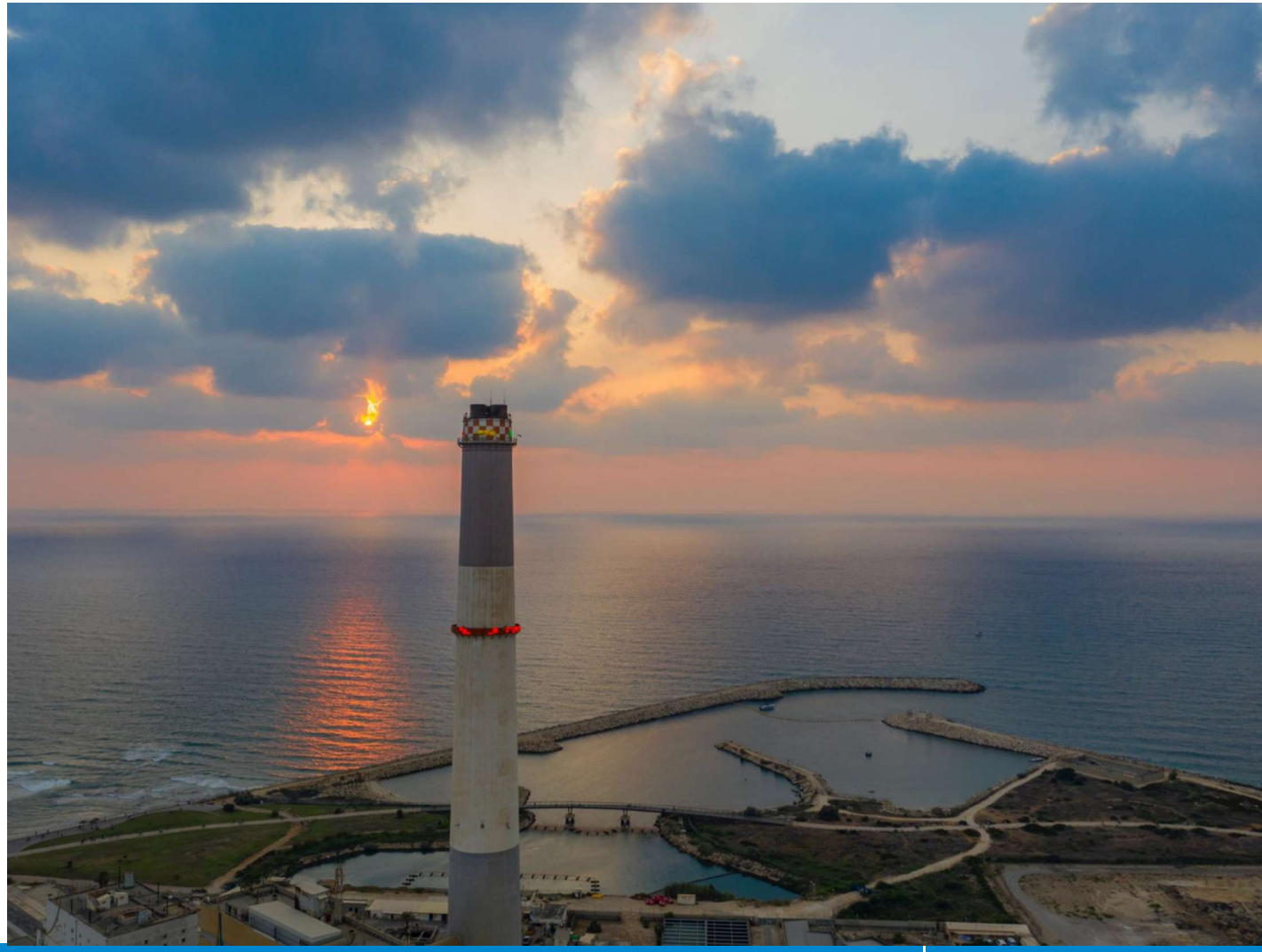
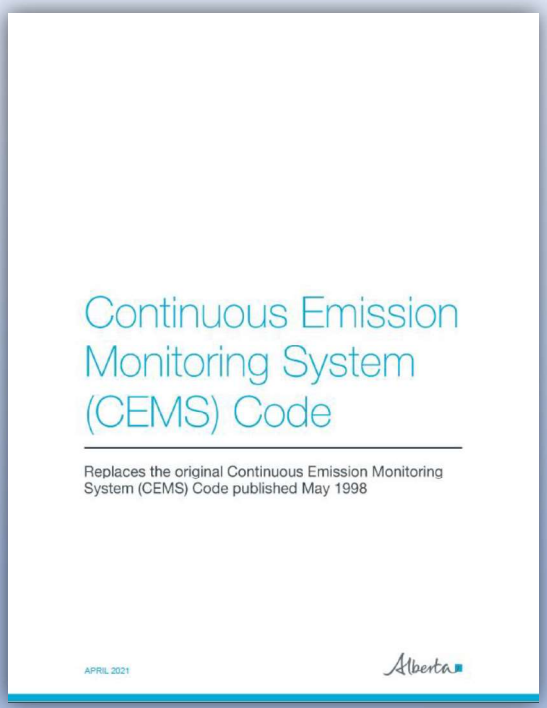
Key Topics

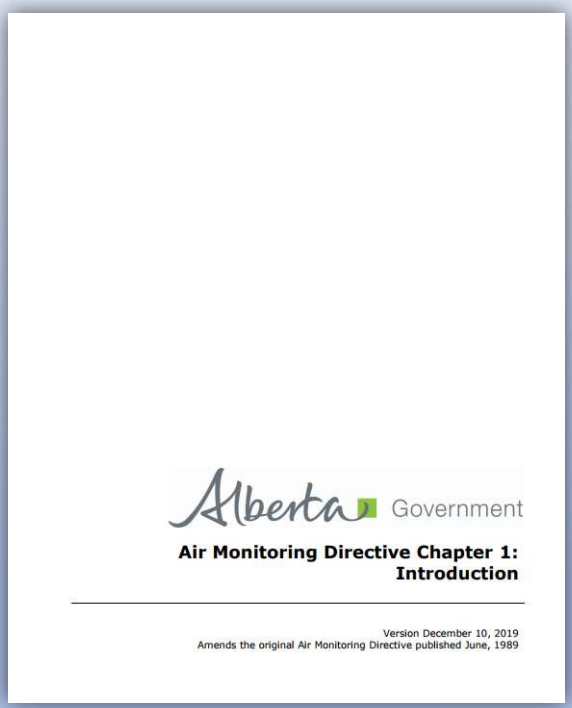
- What is the CEMS Code?
- Monitoring Plans
- Certification & Recertification Requirements
- Reporting Requirements
  - AMD Notification
  - Electronic Reporting

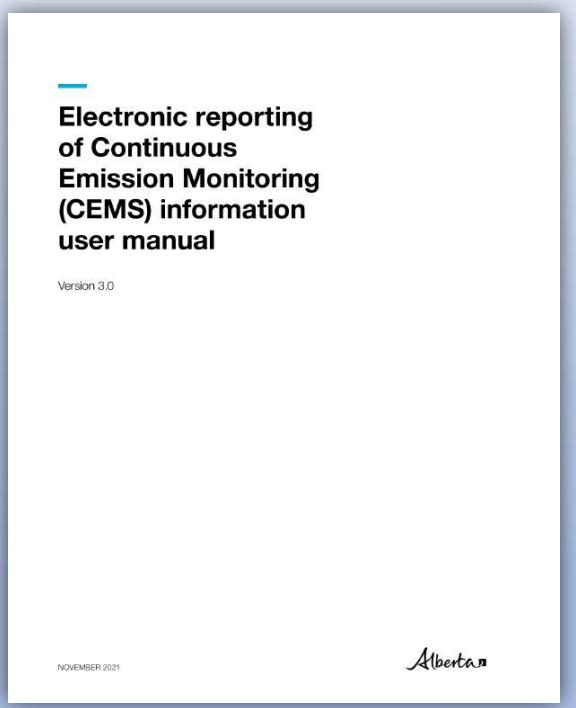


Overview (Regulatory Requirements)

Overview of Alberta Regulatory Documents in regard to Continuous Emission Monitoring





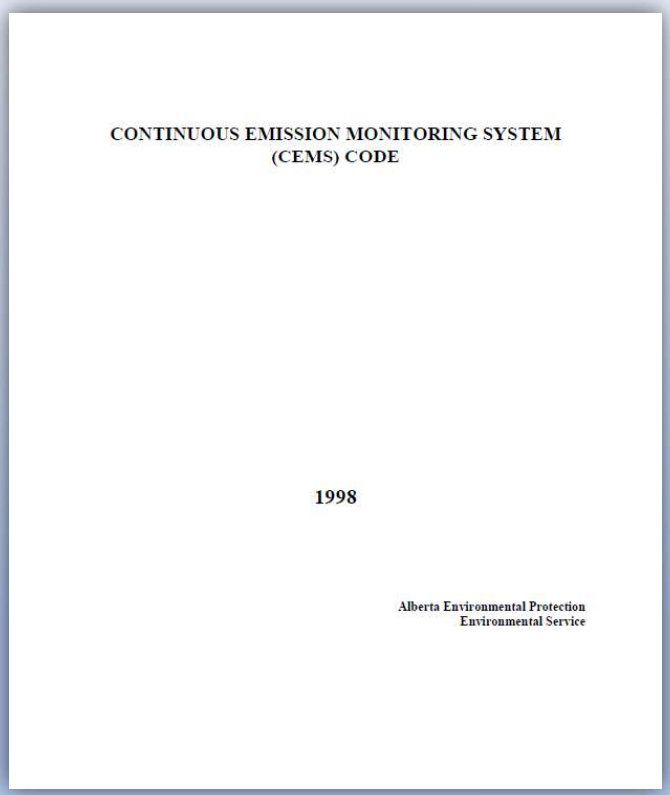


CEMS Code General Overview

The CEMS Code

Focus: *requirements for the installation, certification, operation, and maintenance of continuous emission monitoring systems.*

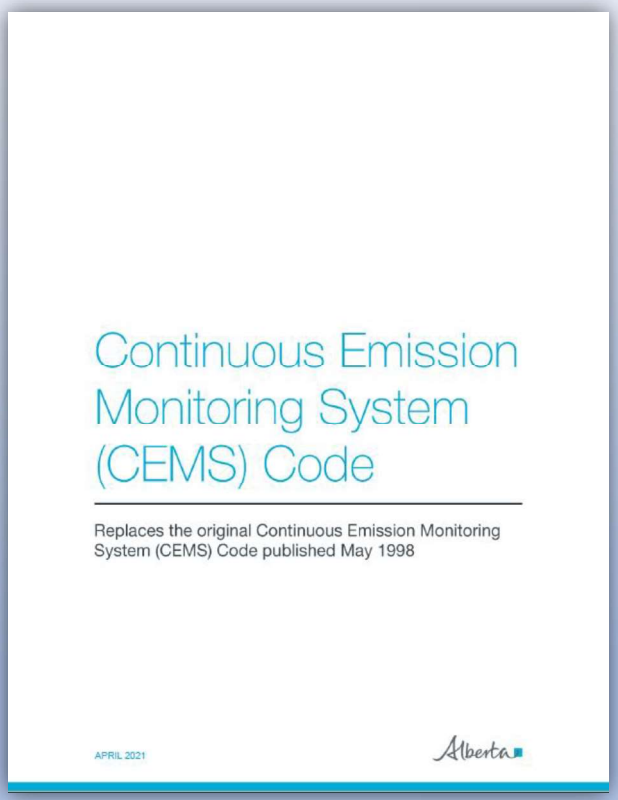
- These requirements ensure effective measurement, recording, and standardized reporting of specified emissions and other parameters.
- The CEMS Code is largely based on methodologies developed and used by both the U.S Environmental Protection Agency (EPA) and Environment Canada.


CONTINUOUS EMISSION MONITORING SYSTEM
(CEMS) CODE

1998

Alberta Environmental Protection
Environmental Service

2021 Alberta CEMS Code



The 2021 CEMS Code

- Supersedes the 1998 CEMS Code
- Monitoring Plan Structure
  - Section 2.0
- Certification Requirements
  - Section 5.1 & 6.1
- Recertification Requirements
  - Section 5.2 & Table 4
- Reporting Requirements
  - Chapter 9 of the Air Monitoring Directive (AMD)
  - Section 5.2, Clause 5.2-D

Monitoring Plans

2021 CEMS Code Changes: Must be submitted 90 days prior to NEW CEMS installation

What is a "New CEMS"
A new CEMS installation refers to no existing CEMS in place and therefore no monitoring plan history).

Examples: New source installations or complete replacement of source. Both instances involve new sources with no monitoring plan history.

How do Existing and Legacy CEMS fit in?
Industrial operations with existing CEMS are not required to submit or resubmit a monitoring plan.

Example: Legacy facility operating prior to the implementation of the 1998 CEMS Code.

New CEMS Certification

- **2021 CEMS Code Changes:**
  Certification required within 120 unit operating days or 180 consecutive calendar days (whichever occurs first) from date of first emissions
- **2021 CEMS Code Changes:**
  Must use EPA certified gases for 7-day calibration drift test
- **2021 CEMS Code Changes:**
  Flow correlation or correction factor must be established prior to, or at certification
- **Certification Requirements:**
  Stipulated within Section 5.1.1
  Must also meet performance specifications stipulated in Section 6.1

  Example: New source with no prior certification

Table 5 Minimum performance specifications for typical gas analyzers

Analyzer	Linearity	Relative accuracy[a]	Bias	Zero drift – 24 hr	Span drift – 24 hr	Availability per month
Sulphur dioxide	≤ ± 2.0% of FS	≤ ± 10.0%[b]	≤ ± 5.0% of FS	≤ ± 2.5% of FS	≤ ± 5.0% of FS	≥ 90.0%
Nitrogen oxides	≤ ± 2.0% of FS	≤ ± 10.0%[b]	≤ ± 5.0% of FS	≤ ± 2.5% of FS	≤ ± 5.0% of FS	≥ 90.0%
Carbon monoxide	≤ ± 2.0% of FS	≤ ± 10.0%[b]	≤ ± 5.0% of FS	≤ ± 2.5% of FS	≤ ± 5.0% of FS	≥ 90.0%
Oxygen	≤ ± 0.5% O_2 absolute	≤ ± 10.0% or ≤ 1% O_2[c]	≤ ± 5.0% of FS	≤ ± 0.5% O_2 absolute	≤ ± 0.5% O_2 absolute	≥ 90.0%
Carbon dioxide	≤ ± 0.5% CO_2 absolute	≤ ± 10.0% or ≤ 1% CO_2[c]	≤ ± 5.0% of FS	≤ ± 0.5% CO_2 absolute	≤ ± 0.5% CO_2 absolute	≥ 90.0%
Total reduced sulphur	≤ ± 5.0% of FS	≤ ± 20.0% or ≤ ± 2 ppm absolute average difference[c]	≤ ± 5.0% of FS	≤ ± 5.0% of FS	≤ ± 5.0% of FS	≥ 90.0%
Hydrogen sulphide	≤ ± 5.0% of FS	≤ ± 20.0% or ≤ ± 2 ppm absolute average difference[c]	≤ ± 5.0% of FS	≤ ± 5.0% of FS	≤ ± 5.0% of FS	≥ 90.0%

[a] Relative accuracy performance specifications apply to gas concentration only (i.e., units of the analyzer).
[b] Alternative relative accuracy performance specification is given in 6.1-D (only applicable when 6.1-C is met).
[c] Meeting either specification is adequate.

CEMS Recertification

- **2021 CEMS Code Changes:**
  Addition of the major components replacement table
- **2021 CEMS Code Changes:**
  Changes to CEMS generally require recertification
- **2021 CEMS Code Changes:**
  Recertification period = 90 days

Major Component Replacement

- Defined in Clause 5.2-A as being any item listed in Table 4
  - Impair the performance of the system
  - Impact the accuracy of measured or recorded readings

Performance Testing <u>Requirements</u>

- The minimum testing requirements in Table 4
  - As specified by the Manufacturer, and outlined in the QAP

Example: Non like for like analyzer replacement.

Table 4 Performance testing for major component replacement and recertification

Major component replacement or change	Testing requirement
Permanently replace gas analyzer, flow analyzer or temperature sensor with like-kind	CGA (alternate biannual audit or RATA if CGA is not possible)
Permanently replace gas analyzer, flow analyzer or temperature sensor, not like-kind	Recertification: RATA, CGA, full OTP, 7-day calibration drift test
Change to critical orifice size, path length, probe or system optics	Recertification: RATA, CGA, full OTP, 7-day calibration drift test
Change in flow analyzer correction factor (coefficient) or correlation equation of > ± 5% annually (see 5.1-J)	Flow RATA for diagnostic purposes
Change in system design, locations, elevations (e.g., analyzer location or measurement path)	Recertification: RATA, CGA, full OTP, 7-day calibration drift test
Change in process or operations, change to source or equipment, that could change emission profile, effluent composition or gas/flow stratification	Recertification: RATA, CGA, full OTP, 7-day calibration drift test
Third party short-term continuous monitoring operated for > 720 hours (see Section 8.0)	Recertification: RATA, CGA, full OTP, 7-day calibration drift test
Following source offline or shut down of > 180 days	Recertification as soon as possible: RATA, CGA, full OTP, 7-day calibration drift test

Certification vs Recertification

- **2021 CEMS Code Changes:**
  Replacement with a like-kind analyzer does not require recertification
- **2021 CEMS Code Changes:**
  Existing CEMS completely replaced = certification

Certification

- Changes to CEMS monitoring principles
  Example: Switching from in-situ to extractive dilution
- Must use EPA Protocol Gases

Recertification

- Able to use CEMS internal drift checks (if system capable)

Reporting Requirements

- **2021 CEMS Code Changes:**
  CEMS certification requires no additional reporting (no certification report)
- **2021 CEMS Code Changes:**
  AMD notificationis submitted within 30 days following recertification

AMD Notification Template Requirements:

- Summary of changes made to require recertification
  Example: Source down for greater than 180 days
- Listing of any changes made from the original monitoring plan*

*Note: If no existing monitoring plan is available for the CEMS, notification should document the current state of the CEMS → Providing a baseline for future changes

Electronic Reporting Requirements

- **2021 CEMS Code Changes:**
  Exemption of up to two months of CEMS availability for pre-planned analyzer replacement
- **2021 CEMS Code Changes:**
  New codes for electronic reporting

CEMS Availability Exemption:

- Clause 3.4-K allows for two consecutive months of availability exemption, provided;
- Pre-planned analyzer replacement completed in 30 days or less
- Availability is still reported

CEMS User Manual Updates

- CLA coding for CEMS availability when following Clause 3.4-K
- RCP coding for the recertification period

Summary

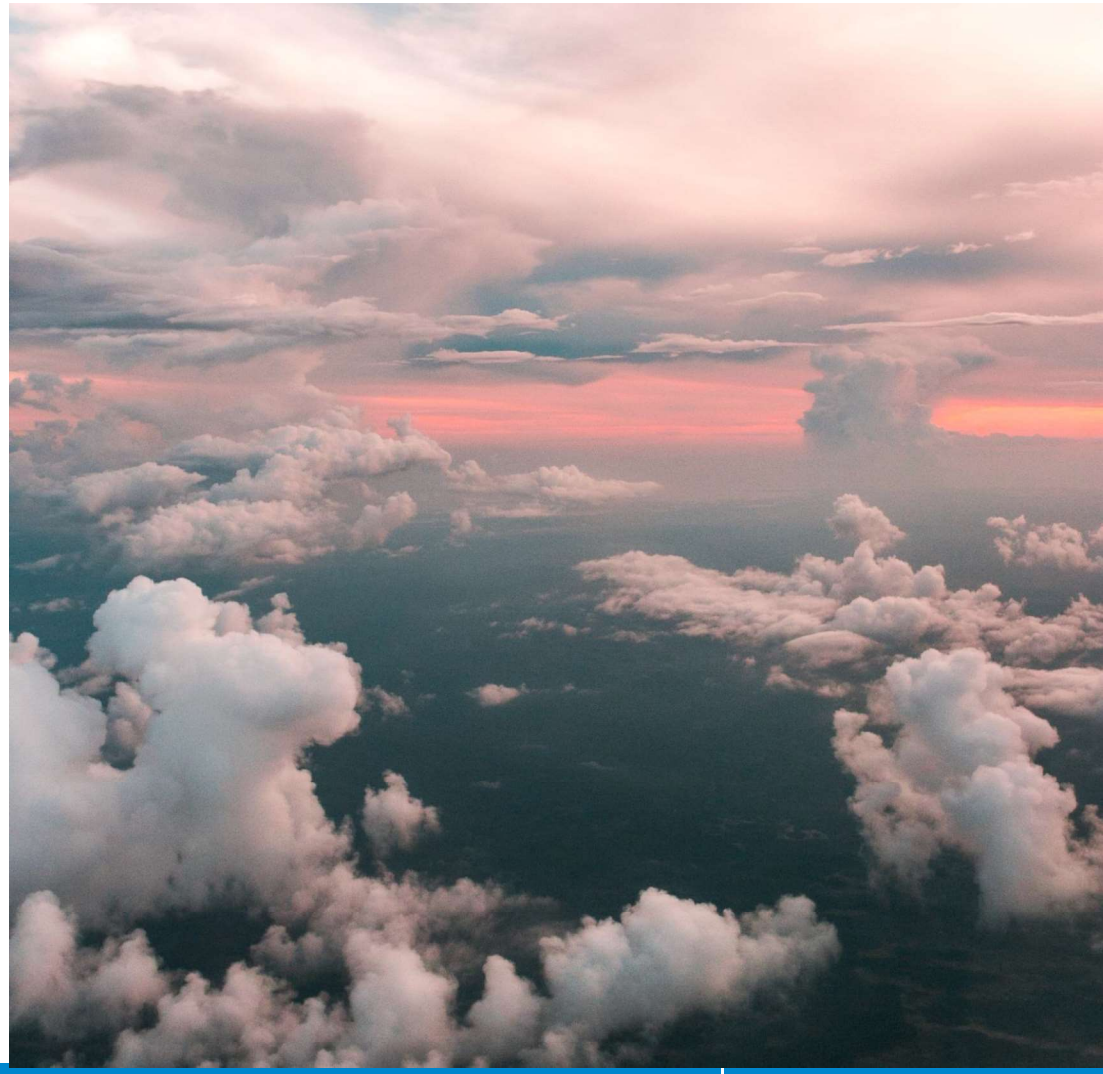
- **2021 CEMS Code Summary:**
  Code nuances can surface with many situations

What Can Go Wrong?

- Using internal check cycle for 7 day drifts during a certification
  - need EPA Protocol gas

- Improper coding of electronic data leading to availability contraventions
  - CEMS does not produce quality-assured data until recertification is completed

- Failure to meet timeframe
  - Improper understanding of timeframes required for activities




QUESTIONS?