

2022

CODE OF PRACTICE FOR AGRICULTURAL  
ENVIRONMENTAL MANAGEMENT  
BOILER AND HEATER AUDIT

*ENVIRONMENTAL MANAGEMENT ACT*



Ministry of  
Environment and  
Climate Change Strategy

## Executive Summary

From May to December 2022, the Ministry of Environment and Climate Change Strategy's (ENV) Compliance and Environmental Enforcement Branch (CEEB) conducted an audit of boiler and heater registrations under the Code of Practice for Agricultural Environmental Management (AEM Code). The purpose of this audit was to update contact information for the 85 registrations, determine overall compliance within the industry, and identify opportunities for improving compliance. Registered facilities were inspected through a combination of office review and on-site inspections.

Of the 85 registrations, 84 (99%) inspections were conducted from June to December 2022.

- Inspections resulted in 58 notices of compliance (69%) and 26 advisories (31%).
- 37 (64%) facilities were no longer required to be registered under the AEM Code.
- Of the remaining 47 facilities, 20 (42%) had installed unregistered boilers, and seven failed to comply with biomass boiler particulate and opacity testing, and record-keeping requirements.

The key findings of this audit were:

- Many registration holders were not aware they had registrations since the new AEM Code had come into effect in February 28, 2019.
- Biomass boilers throughout the industry are being replaced with natural gas boilers.
- Boilers are being replaced with multiple small capacity heating units which are exempt from registration under the AEM Code.

Lack of awareness of the AEM Code requirements and difficulty completing related application, de-registration, and change forms were some of the key challenges encountered by boiler and heater registration holders. Registration holders indicated they were not fully aware of their AEM Code requirements for their boiler and heater registrations and did not meet the requirements. The process for altering registrations of boiler and heater registrations using the related change forms was also considered challenging to understand and was often misinterpreted.

The next steps to improve compliance and awareness of boiler and heater registrations under the AEM Code include the following:

- Continue conducting inspections to verify and ensure compliance.
- Distribute informational pamphlets and/or stickers outlining AEM Code requirements.
- Provide clear and accessible guidance materials on the ENV website for the related forms.
- Improve functionality of ENV's website to include options to update related forms online.
- Address language barriers encountered by facility operators by providing guidance materials in other languages.
- Collaborate with agencies such as Technical Safety BC to gather information about potentially unregistered facilities that require registration under the AEM Code.

It's also important to note that the majority of non-compliant facilities received an advisory, the lowest level of enforcement response. This demonstrates that most non-compliances were relatively minor in nature, and the majority of non-compliant facilities showed a desire to come back into compliance.

## Introduction

### Purpose of this Report

ENV CEEB regularly conducts audits under the *Environmental Management Act* (EMA) across different regulated industries to assess compliance and provide recommendations to amend authorizations, Regulations and Codes of Practice. Starting in May 2022, CEEB began conducting an audit of all boiler and heater registrations of the AEM Code. The majority of registrations under the AEM Code were originally registered with ENV in 2009-2011 under the Agricultural Waste Control Regulation (AWCR). All registrations under the AWCR were transferred to the AEM Code when it came into effect on February 28, 2019. It's important to note that not all facilities that operate boilers and heaters are known to ENV CEEB and that this audit focused on the known registration holders.

The AEM Code introduced several changes to how boilers and heaters are regulated and requirements for registration. These changes included a more specific definition for biomass, additional testing requirements for biomass boilers, and allows small capacity boilers to be exempt from registration with ENV. Given the recent transition from the AWCR to the AEM Code, an audit was conducted to verify compliance and ensure that the new requirements were being met by boiler and heater registration holders. Prior to this audit, only three of 85 registered facilities had been inspected since the introduction of the AEM Code.

The primary objectives of this audit were to:

- Locate and update contact information for the 85 registrations under the AEM Code.
- Determine overall AEM Code compliance rates for 85 registrations with the sections that specifically address boilers and heaters.
- Generate inspection records using the information provided by the registration holders and recommend de-registration (if warranted), based on boiler or heater capacity specifications or proximity and jurisdiction.
- Improve compliance within the industry by identifying opportunities for compliance promotion and education initiatives.
- Determine compliance-based trends using inspection results for all registrations.

## Methods

Prior to conducting inspections, registrations were identified and separated into four categories. Eight facilities were located within the Metro Vancouver Area and thus under the jurisdiction of Metro Vancouver. A total of 14 facilities were operating only boilers and heaters under the small capacity threshold and could be de-registered. Natural gas boilers were being used for 41 facilities and the remaining 22 facilities were using biomass boilers and thus had more regulatory requirements under the AEM Code.

Registered facilities were inspected through office review inspections including file reviews, phone calls, and email correspondence. Some on-site inspections were conducted to observe facilities with more complex requirements under the AEM Code or to inspect facilities with outdated contact information.

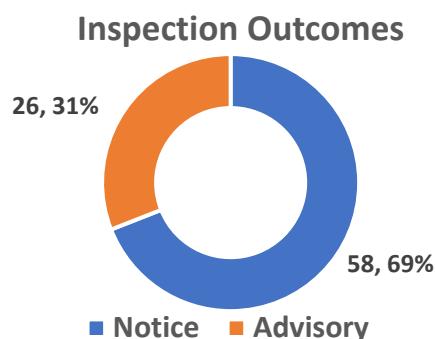
## Results

Of the 85 registrations, 84 (99%) inspections were completed from June to December 2022. Additionally, three unauthorized facilities were identified while conducting on-site inspections. Inspectors assessed compliance for 17 Sections of the AEM Code as applicable, consisting primarily of Part 3, Division 2 (Emissions from Boilers and Heaters) requirements, which are presented in Table 1.

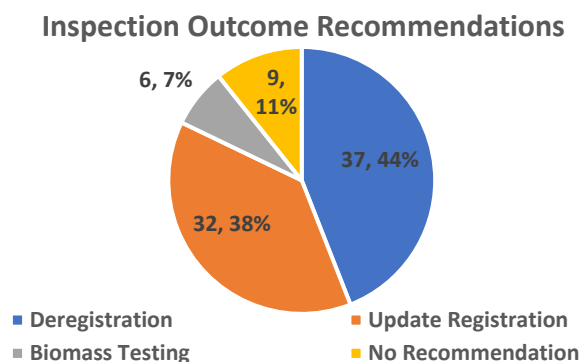
**Table 1.** Sections and categories of the AEM Code assessed for compliance.

AEM Code	
Section	Category
3(2)(a)	Registration
3(2)(b)	Registration
5(1)	Registration
9	Fuel Type
10(1)	Opacity Testing
10(2)	Opacity Testing
10(3)	Opacity Testing
11(1)(a)	Particulate Testing
11(1)(b)	Particulate Testing
11(1)(c)	Particulate Testing
11(1)(d)	Particulate Testing
11(1)(e)	Particulate Testing
11(2)(a)(i)	Particulate Testing
11(2)(a)(ii)	Particulate Testing
12	Corrective Action
14	Record-Keeping
79	Record-Keeping

Of the 84 inspections completed, 58 inspections resulted in a notice of compliance (69%) with the other 26 (31%) resulting in advisories (Figure 1.1). Four types of outcome recommendations resulted from the inspections: de-registration, biomass testing requirements, update the registration, or no recommendation (Figure 1.2). Of the 26 advisories issued, 20 facilities had installed unregistered boilers and heaters, and six facilities failed to comply with the record-keeping and biomass boiler particulate and opacity testing requirements.

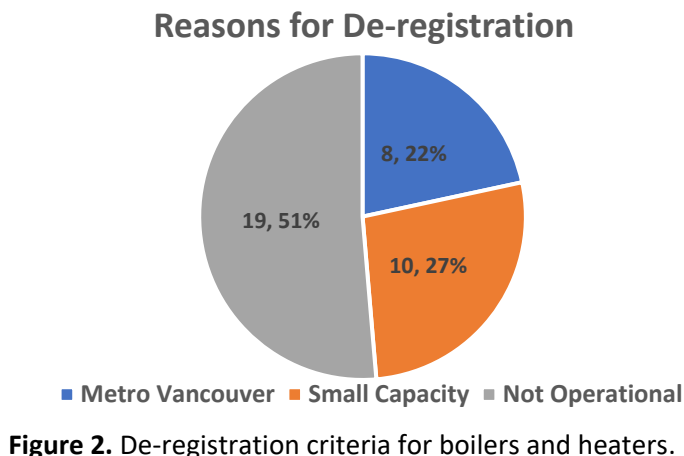


**Figure 1.1.** Overall compliance rate of boiler and heater registrations.



**Figure 1.2.** Four types of outcome recommendations provided in inspection reports.

Of the 58 notices of compliance issued, 37 (64%) facilities were no longer required to be registered under the AEM Code, 12 (20%) facilities were required to update their registration, and nine (16%) had up to date information. De-registration was recommended for three main reasons: the facility was under Metro Vancouver's jurisdiction for air emissions; the facility had boilers below the 0.15MW capacity threshold of the AEM Code; or the facility was no longer operating (Figure 2).



## Discussion

### Low Awareness, Low Compliance

Of the 58 (69%) facilities that received a notice of compliance, 37 (64%) of the notices resulted from facilities no longer requiring registration under the AEM Code. Many Registration holders were not aware they had boiler and heater registrations with ENV and that the AEM Code had come into effect in February 2019, which resulted in non-compliances throughout the industry. Greenhouses were also observed during on-site inspections that were not registered with ENV under the AEM Code. Removing the 37 de-registered facilities from the list of inspections results in a compliance rate of 48% for facilities requiring a registration under the AEM Code.

The 40 facilities that were not de-registered and using only natural gas boilers had the highest rate of compliance (50%). The higher rate of compliance seen for natural gas boiler registrations is due to limited requirements under the AEM Code. Only two sections of the AEM Code apply to facilities operating natural gas boilers; Sections 3(2)(a) and 9. Section 9 describes what fuels can be used for running a boiler or heater, which had a 100% compliance rating. Using fuels other than the intended fuel to run a boiler would result in damage to the boiler, costing facilities money, and at this time, natural gas is an accessible fuel in British Columbia. Section 3(2)(a) requires that all boilers and heaters are required to be registered under the AEM Code, before they are used in an agricultural operation. Non-compliances for facilities with natural gas boiler registrations were due to adding unregistered boilers to their facility. All natural gas facilities that were out of compliance and those that needed to de-register were issued inspection records detailing required actions. Included with each inspection record were the AEM Code Boiler and Heater Registration Change Form, or The Abandonment, Cancellation and De-Registration Request Form (Related Forms) that are required to be completed by the registration holder to change or de-register their registration. However, some registration holders expressed having difficulty completing the Related Forms and required additional guidance.

### Biomass Boilers

Facilities using biomass boilers have the most requirements of any of the fuel sources listed in the AEM Code. Requirements include keeping records of fuel use, maintenance, and test results for five years. Of the 84 facilities inspected, 22 facilities were registered with biomass boilers. During the audit however, it was determined that only seven of the 22 inspected facilities were still operating biomass boilers. All



seven facilities were out of compliance for either not conducting opacity testing (57%), not conducting particulate matter testing (100%), or failing to keep the required records (14%). The lack of testing and record-keeping resulted in Not Applicable (N/A) or Not Determined (ND) determinations for sections 10, 11, 12, 14, and 79 of the AEM Code. It should be noted that the AEM Code has no requirement for Registration Holders to be certified to assess opacity; hence, opacity observations by facilities who did the assessment were not made to any specific standard.

### Shift to Natural Gas and Low-Capacity Models

A key finding in this audit was that biomass boilers are generally being replaced with natural gas boilers throughout the industry. Many facilities using biomass boilers also had natural gas boilers. Facilities that had both types of boilers would only use the biomass boilers during malfunctions or natural gas service interruptions. Facility operators and registration holders cited several reasons for replacing the biomass boilers including:

- Biomass boilers are more difficult to operate.
- Biomass boilers require more physical space for the unit.
- Biomass boilers require more storage space for fuel.
- Increased maintenance requirements and cost for biomass boilers.
- More frequent malfunction of biomass boilers.
- Lower efficiency compared to natural gas.
- Inability to acquire wood chips or pellets for fuel.
- High cost of wood chips.

Some facilities were also found to have replaced their natural gas boilers and biomass boilers with multiple natural gas heating units. These smaller, localized heating units were scattered around facilities and maintain capacities below the 0.15MW threshold for registration. Section 5(1) of the AEM Code specifies that a facility is not required to be registered if the facility only uses boilers and heaters with a capacity of 0.15MW or less. As such, 10 facilities that utilized these heaters instead of boilers were able to de-register from the AEM Code. A higher degree of efficiency was also cited as a reason by registration holders for shifting to multiple lower capacity natural gas heating units.

## Audit Findings and Next Steps

### Audit Findings

Some of the key challenges that were encountered by boiler and heater registration holders during this audit included: lack of awareness and understanding of the AEM Code requirements, and difficulty in completing the Related Forms. Many boiler and heater registration holders were unaware of AEM Code requirements that came into effect in February 2019, and many did not meet the requirements. The process for the application, de-registration, or altering registrations of boiler and heater registrations was also considered unclear to registration holders and they required more guidance.

Another key finding of this audit was that ENV learned that registration holders were confused by the fact that they required a registration for their boiler and heaters by both ENV under the AEM Code and by Technical Safety BC. Technical Safety BC is responsible for actively ensuring the proper the design,

construction, installation, and operation of boilers throughout BC and is well informed of boiler and heater registrations throughout the province.

### Next steps to improve compliance

During this audit, on-site and office review inspections allowed Environmental Protection Officers (EPOs) to inform registration holders of the requirements of the AEM Code and obtain information about additional, unauthorised facilities. The inspections conducted as part of this audit are the best tool for increasing the awareness of the AEM Code requirements and increasing compliance within the industry; however, more outreach is still required to ensure that compliance is maintained, until inspections are conducted again. ENV will look at ways at other ways to improve awareness of the AEM Code requirements such as informational pamphlets or stickers detailing requirements for different boilers to improve the rate of compliance throughout the industry.

Another consideration for improving compliance is reviewing and providing better access to the Related Forms. A clearer outline of the process and guidance materials on ENV website for completing these Related Forms will assist boiler and heater registration holders in completing these documents. Language barriers can also impede understanding of the AEM Code and the facility requirements, as many facility operators speak English as a second language and rely on coworkers or family members to translate for them. Compliance could be improved by providing guidance materials and AEM Code requirements in other languages. Collaboration with Technical Safety BC could also be a good starting place for ENV to obtain a more comprehensive list of potentially unregistered facilities that require boiler and heater registrations under the AEM Code. ENV EPO staff could use information from Technical Safety BC on boiler and heater registrations to better distribute promotional information about the AEM Code and registration process and/or could potentially work with them to distribute compliance information.

## Appendices

**Appendix A:** List of registered facilities and compliance determinations under the AEM Code in 2022.

Authorization	Name	Outcome	Recommendation
105504	Little Mountain Greenhouses Inc.	Notice	None
105505	Green Flora Greenhouses Ltd.	Advisory	Update Registration
105507	Mount Lehman Fruit Growers Ltd.	Notice	De-registration
105508	Blossom View Gardens Ltd.	Notice	De-registration
105510	Daily Fresh Produce Ltd.	Notice	De-registration
105513	Van Saane Greenhouses Inc.	Advisory	Start Biomass Testing
105515	Qualitree Propagators Inc.	Advisory	Update Registration
105517	Frico Flowers Inc.	Notice	Update Registration
105518	Inline Nurseries (2010) Inc.	Notice	De-registration
105519	Berlo Farms Ltd.	Notice	De-registration
105520	Droogendyk Hothouses Inc.	Notice	De-registration
105522	Emerald Valley Plants Ltd.	Notice	De-registration
105523	Tomas Persson	Notice	Update Registration
105527	Quik's Farm Limited	Advisory	Update Registration
105529	Arie Pannekoek doing business as Meadowland Flowers	Notice	De-registration
105530	Vandermeulen Greenhouses Inc.	Notice	De-registration
105532	G R T Nursery Inc.	Notice	De-registration
105533	Genesis Plant Propagation Ltd.	Notice	De-registration
105534	Rainbow Greenhouses Inc.	Advisory	Update Registration
105536	Bent Kristensen doing business as Kristensen's Greenhouses	Notice	De-registration
105540	Cassidy Nurseries Inc.	Notice	De-registration
105542	Don and Carmela McCarthy	Notice	None
105543	Nordic Nurseries Ltd.	Notice	None
105544	Jorge Gomes	Advisory	Update Registration
105545	Calais Farms Ltd.	Advisory	Update Registration
105546	Cannor Nurseries Ltd.	Notice	De-registration
105547	0717260 B.C. Ltd. doing business as Cheam View Greenhouse	Advisory	Start Biomass Testing
105548	Georama Holdings Ltd. doing business as Georama Growers	Notice	Update Registration
105549	Fairfield Island Nursery Ltd. doing business as Wholesale Tree Nursery	Notice	De-registration



105551	Sidhu & Sons Nursery Ltd.	Notice	De-registration
105552	Sidhu & Sons Nursery Ltd.	Notice	None
105553	Vaandrager Nurseries Ltd.	Advisory	Update Registration
105555	Taisuco Canada Agriculture Corporation	Advisory	Update Registration
105556	Klahanie Greenhouses Ltd.	Notice	De-registration
105557	DeVry Greenhouses Ltd.	Notice	Update Registration
105558	DeVry Greenhouses Ltd.	Notice	Update Registration
105559	DeVry Greenhouses Ltd.	Notice	De-registration
105561	Onos Greenhouses Ltd.	Advisory	Update Registration
105577	Kato's Nursery (2007) Ltd.	Notice	De-registration
105578	Vandenbosch Trading Company Ltd.	Notice	De-registration
105579	Peppertree Farms Ltd.	Advisory	Update Registration
105580	MB Greenhouse Ltd.	Advisory	Update Registration
105581	Robinson Farms Inc.	Notice	Update Registration
105582	Can-Am Nurseries Ltd.	Notice	De-registration
105606	Triple Swaan Nursery Ltd.	Notice	De-registration
105607	Canadian Valley Growers Ltd.	Notice	Update Registration
105608	Randhawa Farms Ltd.	Notice	Update Registration
105609	Randhawa Farms Ltd.	Notice	Update Registration
105610	Windsor Greenhouse Ltd.	Notice	Update Registration
105611	Mt. Lehman Greenhouses (1999) Ltd.	Notice	Update Registration
105612	Gerald & Debra Steadman doing business as Centre Road Farms	Notice	None
105614	Dutch Heritage Greenhouse Limited	Advisory	Update Registration
105615	Jagrajbir Kaur Uppal & Bhalwinder Kaur Thandi doing business as BJ Farms	Advisory	Update Registration
105616	Richard W. & June L. Ross	Notice	De-registration
105618	Windset Farms (Canada) Ltd.	Advisory	Start Biomass Testing
105624	Merom Farms Ltd.	Advisory	Start Biomass Testing
105626	Jan Klop doing business as Pacific Northwest Propagators	Notice	De-registration

105627	Raymond Mackay doing business as Greenway Nurseries	Notice	De-registration
105629	Cornelius Guliker doing business as Shadow Nursery	Notice	De-registration
105630	Denise & Leonard Smit doing business as Bradner's Growing Concern	Notice	De-registration
105634	Palminder Singh Atwal doing business as Atwal Farms	Notice	None
105636	Holland Avenue Nursery Ltd.	n/a	n/a
105848	Randhawa Farms Ltd.	Notice	None
105849	Alaska Farms Ltd.	Notice	De-registration
105850	Paul Visscher doing business as Visscher Green Houses	Notice	De-registration
105925	Devan Greenhouses Ltd.	Advisory	Update Registration
105948	Odyssey Ventures Ltd. doing business as Sage Greenhouses	Advisory	Update Registration
106350	Island Hothouse Inc.	Advisory	Start Biomass Testing
106354	Arbutus Grove Nursery Ltd.	Advisory	Update Registration
106355	Ronald Downey And Maureen Jamison doing business as Kilipi Road Greenhouses	Notice	None
106488	Out of Ashes BioEnergy Inc.	Notice	De-registration
108457	Eurosa Farms Ltd.	Advisory	Start Biomass Testing
109197	Michael Thelitz doing business as Sunset Pines Greenhouse	Notice	De-registration
109764	BC Tweed Joint Venture Inc. doing business as Canopy Growth	Notice	De-registration
109781	BC Tweed Joint Venture Inc. doing business as Canopy Growth	Notice	De-registration
109935	Champ's Fresh Farms Inc.	Notice	None
110303	M. Van Noort & Sons Bulb Company Limited	Notice	Deregistration
110636	0778158 B.C. Ltd. doing business as Fraser Valley Refrigeration	Notice	Update Registration
110701	Paul Quach	Notice	De-registration
110857	Highline Mushrooms West Limited	Advisory	Update Registration
110858	Highline Mushrooms West Limited	Advisory	Update Registration
110859	Highline Mushrooms West Limited	Advisory	Update Registration
110861	Highline Mushrooms West Limited	Advisory	Update Registration
110876	Highline Mushrooms West Limited	Notice	De-registration
110877	Highline Mushrooms West Limited	Notice	De-registration