

State of California
AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,
Including Summary of Comments and Agency Response**

**PUBLIC HEARING TO CONSIDER AMENDMENTS TO THE REGULATION FOR
LIMITING OZONE EMISSIONS FROM INDOOR AIR CLEANING DEVICES**

Public Hearing Date: December 12, 2019
Agenda Item No.: 19-12-5

I. GENERAL

The Staff Report: Initial Statement of Reasons for Rulemaking (staff report), entitled “Public Hearing to Consider the Proposed Amendments to the Regulation for Limiting Ozone Emissions from Indoor Air Cleaning Devices,” released October 22, 2019, is incorporated by reference herein. The staff report contained a description of the rationale for the proposed amendments. On October 22, 2019, all references relied upon and identified in the staff report were made available to the public.

On December 12, 2019, the California Air Resources Board (the Board or CARB) conducted a public hearing to consider amendments to the Regulation for Limiting Ozone Emissions from Indoor Air Cleaning Devices, title 17, California Code of Regulations (CCR), sections 94800 – 94810. At the hearing, the Board approved Resolution 19-33, which initiated steps towards final adoption of the proposed amendments.

A 15-day Notice was posted on January 13, 2020, which included revisions to the amended regulations text, and the comment period for this Notice ended on January 28, 2020. A second 15-day Notice was posted on March 2, 2020, thus opening a new comment period with a closing date of March 17, 2020; the second 15-day Notice included further revisions to the amended regulations text and incorporated a new version of a test standard. This Final Statement of Reasons (FSOR) for Rulemaking summarizes the written and oral comments received during the rulemaking process and contains CARB’s responses to those comments

**A. MANDATES AND FISCAL IMPACTS TO LOCAL GOVERNMENTS AND
SCHOOL DISTRICTS**

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, title 2 of the Government Code.

B. CONSIDERATION OF ALTERNATIVES

For the reasons set forth in the Staff Report, in staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the action taken by the Board.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

A. MODIFICATIONS APPROVED AT THE BOARD HEARING AND PROVIDED FOR IN THE FIRST 15-DAY COMMENT PERIOD

1. **Section 94801(a)(38):** Staff clarified the definition of "UVGI" for the purposes of this regulation to remove redundant language and delete the term "coated", as well as the requirement for lamps to emit light with a spectral peak at 254 nanometers. The key requirement that the lamp not produce ozone at a measurable level is retained.

The original definition specified that UVGI light was emitted from a "coated lamp" that only emits light greater than 240 nanometers in wavelength and has a spectral peak of 254 nanometers, as 240 nanometers is the upper limit for ozone generation. Manufacturers expressed concern that this definition of UVGI was too narrow and would exclude UV lamps that do not have a spectral peak at 254 nm, but still do not produce ozone. The revised definition includes uncoated LED UV lamps that emit at 240 nanometers or higher and emit no measurable ozone. The definition was expanded to address manufacturer's concerns by being more inclusive, while still protecting California consumers from exposure to ozone from indoor air cleaning devices.

2. **Section 94802:** Staff added clarifying language to specify that portable air cleaners manufactured after the 12 month-period following the effective date of the amendments must comply with new labeling and safety mark requirements. The change added in "manufactured" to clarify that portable air cleaners made before that time can be sold. This addition was requested by a manufacturers' trade association and is intended to provide a sell-through period for portable air cleaners subject to new requirements.
3. **Section 94804(b):** Staff added clarifying language to specify that only portable air cleaners with UVGI lamp(s) are held to the requirements for the electrical safety reports to include the wavelength(s) of the UV lamp(s) used, the lamp manufacturer, and the lamp model number. This language was added in response to a concern from a manufacturers' trade association that the original amendment implied that all portable air cleaners must include such information.

B. MODIFICATIONS APPROVED AT THE BOARD HEARING AND PROVIDED FOR IN THE SECOND 15-DAY COMMENT PERIOD

1. **Section 94801(a)(9):** the reference was updated to reflect the current version of the Canadian Standards Association (CSA) “Standard for Electrostatic Air Cleaners,” C22.2 no. 187-20, as revised by CSA on January 21, 2020.

2. **Section 94801(a)(17):** parentheses were added around “including but not limited to, rooms, houses, apartments, stores, offices, vehicles” for grammatical clarity.

3. **Section 94801(a)(18):** the definition of an in-duct air cleaner was clarified by removing language that provides examples of the types of enclosed spaces where in-duct air cleaners may be used, including buildings, vehicle cabins, and boat cabins. The inclusion of only a few locations created confusion because these are the same locations where other types of air cleaners are commonly used. Including a few locations in the definition of an in-duct air cleaner focused the definition on types of enclosed spaces instead of on the placement of an air cleaning device within a heating, air-conditioning, and/or ventilation (HVAC) system.

4. **Section 94802:** CARB is clarifying that in-duct air cleaners used in vehicles are subject to the amended regulation upon its effective date. The previous draft of the amendments provided a 24-month period following the effective date of the amended regulation before in-duct air cleaners sold in California must be CARB certified. For reasons outlined below, CARB has determined that in-duct air cleaners used in vehicles should not be provided this 24-month period and should be required to be certified by the effective date of the amended regulation. The original regulation exempted in-duct air cleaners that were integrated into central heating, air conditioning, or ventilating systems, such as those used in buildings. In-duct devices were exempted due to a lack of data on ozone emission from such devices, as well as a lack of market data on their use by the California public. There was also a need for a more suitable standardized ozone emission test method for in-duct air cleaners other than UL867.

There is now an updated method available for testing of in-duct air cleaners used in buildings, as described in Sections 7.5 and 7.6 of CSA C22.2 no.187-20, which has been incorporated into the amended regulation. A 24-month phase-in period was included to provide adequate time for manufacturers of in-duct air cleaning devices that will be tested using the CSA method to obtain certification. Due to the number of in-duct devices that would need to be tested for ozone emissions and the amount of time it takes to complete the relatively intensive CSA testing, these devices would not all be able to be tested and certified by the effective date of the amended regulation.

In contrast, air cleaners used in vehicle ductwork have been previously certified by CARB after being tested for ozone emissions using UL867. In-duct devices used in vehicles were not considered exempt under section 94803(b) of the current regulation and are subject to the certification requirement. The devices can be tested to UL867, so providing manufacturers of these devices a 24-month period following the effective dates of the amendments before they must obtain certification would be inconsistent with the implementation of the current regulation.

C. NON-SUBSTANTIAL MODIFICATIONS

Subsequent to the second 15-day public comment period mentioned above, staff identified the following additional non-substantive changes to the regulation:

- Spaces have been added or deleted accordingly throughout the regulation text where language has been added or deleted, respectively, for accurate formatting. The originally proposed regulation text had several instances where language was added but did not also note that a space had been added before or after to properly format the amendments. Conversely, there were several instances of language being deleted but not also deleting the corresponding space. These edits have been made throughout the document for accuracy during publication.
- Section 94801: Updated the Authority and Reference note to further specify the subsection of the United States Code cited. Originally we cited 21 U.S.C. § 321 and now for greater clarity we are identifying the relevant subsection by citing 21 U.S.C. § 321(h).
- Section 94803(a): Moved a period from outside parenthesis to inside for proper punctuation. Also reworded the second paragraph to move the language, “must be included in the owner’s or operations manual” to the beginning of the sentence to improve readability.
- Section 94806(d): Updated the proposed regulatory text to clarify, consistent with the Initial Statement of Reasons, that the last sentence in the subsection regarding “Dual-function devices” is being proposed as part of this rulemaking. Due to typographical error, this last sentence was not underlined accurately in previous iterations of the proposed regulation text. Specifically, the last sentence of the proposed regulation text, as released during the Notice phase of this rulemaking and explained in page 34 of the Initial Statement of Reasons (ISOR), erroneously copied language from the previous sentence that was being proposed for amendment. The proposed regulation text copied the words, “shall display the” from the previous sentence but failed to underline those words. (The proposed regulation text also erroneously copied strikethroughs from the previous sentence even though the language was new and no strikethrough was necessary.) The words “shall display the” relate to displaying the certification or listing mark. The ISOR makes clear that this last sentence, including the words “shall display the,” is part of the regulatory proposal (rather than existing text in the regulations). Section 94805(b) addresses the requirement that appliances

with a primary purpose other than air cleaning; therefore, meeting the definition of a “dual-function” device in section 94801(13), are required to meet the applicable electrical safety standard, which are being incorporated in the amended regulation. The regulation has required that all devices include a label that signifies the electrical safety test conducted, in accordance with existing testing laboratory protocols. In the case of dual-function air cleaning devices, this commonly accepted labelling practice is made explicit with the added language.

- Section 94806(e): Updated this section to accurately underline/note the language “and is not exempt from certification according to Section 94803.” This language has been in the proposed regulation text since the Notice phase of this rulemaking and was made clear in the ISOR on page 35 that this language is part of the regulatory proposal; however, it was erroneously not underlined in previous iterations of the proposed regulation text. The added phrase refers directly to air cleaning devices “for non-industrial use”, which was struck through in the first line of the section. Air cleaning devices for non-industrial use are the same devices that are not exempt from certification according to Section 94803. This section is not creating the exemption, but merely referring to the exemption as already being amended in Section 94803 for increased clarity.
- Section 94807: Updated the last paragraph of this section to accurately underline/note the addition of “annually” to the requirement. This language has been in the proposed regulation text since the Notice phase of this rulemaking and was made clear in the ISOR on page 36 that this language is part of the regulatory proposal; however, it was erroneously not underlined in previous iterations of the proposed regulation text.

The above described modifications constitute non-substantial changes to the regulatory text because they correct spelling, grammatical, and formatting errors, but do not materially alter the requirements or conditions of the proposed rulemaking action.

III. DOCUMENTS INCORPORATED BY REFERENCE

The regulation and the incorporated test procedures adopted by the Executive Officer incorporate by reference the following documents (in Cal. Code Regs., tit. 17, § 94805):

- “Canadian Standards Association (CSA), 2020. “Standard for Electrostatic Air Cleaners,” C22.2 no. 187-20, as revised by CSA on January 21, 2020. Copyrighted.
- American National Standards Institute/Underwriters Laboratory (ANSI/UL), 2018. “Standard 73 for Safety for Motor-Operated Appliances,” as revised by ANSI/UL on August 8, 2018. Copyrighted.
- ANSI/UL, 2018. “Standard 153 for Safety for Portable Electric Luminaires,” as revised by ANSI/UL on July 27, 2018. Copyrighted.

- ANSI/UL, 2018. “Standard 484 for Safety for Room Air Conditioners,” as revised by ANSI/UL on September 6, 2018. Copyrighted.
- ANSI/UL, 2018. “Standard 507 for Safety for Electric Fans,” as revised by ANSI/UL on November 15, 2018. Copyrighted.
- ANSI/UL, 2018. “Standard 867 for Safety for Electrostatic Air Cleaners,” as revised by ANSI/UL on August 7, 2018. Copyrighted.
- ANSI/UL, 2016. “Standard 998 for Safety for Humidifiers,” as revised by ANSI/UL on April 4, 2016. Copyrighted.
- ANSI/UL, 2018. “Standard 1017 for Safety for Vacuum Cleaners, Blower Cleaners, and Household Floor Finishing Machines,” as revised by ANSI/UL on July 19, 2018. Copyrighted.
- ANSI/UL, 2018. “Standard 1278 for Safety for Movable and Wall- or Ceiling-Hung Electric Room Heaters,” as revised by ANSI/UL on August 20, 2018. Copyrighted.
- ANSI/UL, 2018. “Standard 1993 for Safety for Self-Ballasted Lamps and Lamp Adapters,” as revised by ANSI/UL on August 6, 2018. Copyrighted.
- ANSI/UL, 2018. “Standard 1995 for Safety for Heating and Cooling Equipment,” as revised by ANSI/UL on August 17, 2018. Copyrighted.
- ANSI/UL, 2018. “Standard 1598 for Safety for Luminaires,” as revised by ANSI/UL on August 28, 2018. Copyrighted.
- ANSI/UL, 2017. “Standard 499 for Electric Heating Appliances,” as revised by ANSI/UL on February 23, 2017. Copyrighted.

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods and engineering documents that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not needed because the interested audience for these documents is limited to the technical staff at a portion of reporting facilities, most of whom are already familiar with these methods and documents. Also, the incorporated documents were made available by CARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries or may be purchased directly from the publishers.

IV. SUMMARY OF COMMENTS AND AGENCY RESPONSE

One written comment was received during the 45-day comment period in response to the December 12, 2019, public hearing notice. Two oral comments were presented at the Board Hearing, and two written comments were received during the subsequent 15-day comment period. Listed below are the organizations and individuals that provided comments during the 45-day comment period, at the Board Hearing, and during the subsequent comment period following issuance of the 15-day Notice on January 13, 2020. No comments were received during the second 15-day Notice period, which concluded on March 17, 2020.

Written Comment Received During the 45-Day Comment Period. Oral Comment Presented at the Board Hearing, and Written Comments Received During the First 15-Day Comment Period

Number	Commenter	Affiliation
1	Michael Hudon (letter - 12/09/2019)	Intertek
2	Messner, Kevin (oral – 12/12/2019)	Association of Home Appliance Manufacturers (AHAM)
3	Barrett, Will (oral – 12/12/2019)	American Lung Association
4	Engel, Aaron (letter – 1/21/2020)	
5	Willette, Chris (letter – 1/24/2020)	

Comment 1: Intertek comments that it is positioned to provide support to manufacturers of in-duct air cleaners with necessary testing. **[Hudon – 1]** With respect to the 240 nm wavelength exception, Intertek requests consideration of alignment with UL507, section 223.1 requirement that “lamps emitting ultraviolet radiation generating wavelengths less than 250 nm shall comply with the ozone test requirements of the UL867, Sections 40 and 41.” **[Hudon – 2]** Also, the requirement that owner’s or operations manuals for a device must state that replacement lamps must be UVGI or the device will no longer be CARB compliant, as it may produce harmful ozone, is unclear and specific text required should be clarified. **[Hudon – 3]**

Agency Response: CARB accepts Intertek’s statement that it will be able to provide the required ozone emissions testing for in-duct air cleaners in the near future.

[Hudon – 1] In regard to aligning ozone testing requirements for specific UV lamps with the UL507 test standard, CARB reviewed the UL requirement, and found that there are small but potentially significant differences, in part due to emissions at various wavelengths. The revised CARB requirement better accounts for the normal spread of emitted wavelengths from bulbs and is more consistent with comments received from bulb manufacturers. CARB modified the definition of UVGI in section 94801(38) to specify UV lamps that only emit light above 240 nm, which is the upper limit for ozone generation, and included the additional requirement that lamps emit no measurable ozone. **[Hudon – 2]**

Regarding the requirement for information on replacement bulbs in the manuals, CARB added language in Section 94804(b) clarifying which devices will require the specified replacement bulb language in their owner's and operations manuals. Originally, CARB added the requirement that "instructions in the owner's or operations manual must state that replacement lamp(s) must be UVGI, as defined in Section 94801(a)(38), or the device will no longer be CARB compliant, as it may produce harmful ozone". This provision was clarified by adding that it only applies to portable air cleaners that use UVGI. Additionally, the clearest language for specific air cleaners may vary, so CARB will provide samples of text online that manufacturers can use in their manuals. **[Hudon – 3]**

Comment 2: AHAM supports the clarifications proposed for the amended regulation as outlined for the 15-day Notice. Indoor air quality is very important because people spend most of their time indoors. AHAM represents manufacturers of portable indoor air cleaners. We have worked really well with CARB over the years. **[Messner – 1]**

Agency Response: Comment noted. The 15-day Notice modifications discussed at the Board meeting and supported by AHAM have been made. **[Messner – 1]**

Comment 3: The American Lung Association supports the amendments to the regulation, as we have supported the regulation over time. **[Barrett – 1]**

Agency Response: Comment noted.

Comment 4: The commenter suggests that section 94805 of the regulation does not state the UVGI lamps used in in-duct air cleaners are exempted from the ozone testing requirement. If they are exempted, it should be stated in that section. **[Engel – 1]** Also, the wavelengths of UV light that produce ozone are between 100-240 nm. By stating that only UVGI lamps emitting light with a spectral peak of 254 nm will be exempted, it would unfairly exclude manufacturers that use other UV wavelengths that are not ozone emitting. The commenter suggested that the exemption definition be broadened to include all wavelengths of light except the 100-240 ozone-producing wavelengths. The language also assumes that the only UV light source is a conventional coated lamp, as stated in section 94801(38). LEDs also produce UV light and are not coated, so the language should reflect any lighting source. **[Engel – 2]**

Agency Response: In-duct air cleaning devices using UV lamps, including those that emit wavelengths of light considered UVC or UVGI, are subject to the ozone testing requirement in the amended regulation. The amended regulation provides an exemption from ozone testing for portable air cleaners with UVGI lamps, and no other electronic air cleaning technology. Over the last 10 years, many UVC and UVGI types of air cleaners have been CARB certified through submission of testing

results that document no or very low ozone emissions. Because the certification of in-duct systems using UVGI lamps is a new CARB requirement, their ozone emissions have not been documented by CARB as meeting the regulatory emissions limit of no more than 50 ppb ozone. Additionally, UV lamps used in in-duct systems can be larger and more variable in order to clean the larger quantities of air used in larger commercial and industrial systems, and their ozone emissions are not fully known but can be greater than those from portable devices. **[Engel – 1]**

CARB recognizes that the proposed definition of “UVGI”, in section 94801(38), was overly narrow and exclusive by requiring that UV light be emitted from a coated lamp and have a spectral peak of 254 nm. We changed the definition to include UV light from a light source that only emits wavelengths greater than 240 nm and produces no measurable ozone, with the goal of including manufacturers of air cleaners using UV lamp(s) that emit light of higher wavelengths which also are known not to emit measurable ozone. **[Engel – 2]**

Comment 5 (I): The commenter states that the requirement for in-duct air cleaners with UV systems that do not emit light in the 185-240 nm ozone generating realm to be tested for ozone emissions is a financial burden on manufacturers. Many manufacturers of in-duct systems have different sized bulbs for their different systems, which could be overwhelming to test. The commenter believes it is puzzling that CARB is exempting portable air cleaners with non-ozone UV lamps from ozone testing, but in-duct units would require testing even though they use non-ozone UV lamps. This will put a burden on manufacturers who will ultimately pass those costs on to the consumer. It is my suggestion that in-duct ozone testing requirements should be the same as for portable devices. **[Willette – 1]**

Agency Response to 5 (I): In-duct air cleaning devices using UV lamps, including those that emit wavelengths of light considered UVC or UVGI, are subject to the ozone testing requirement in the amended regulation. The amended regulation provides an exemption from ozone testing for portable air cleaners with UVGI lamps, and no other electronic air cleaning technology, because, over the last 10 years, many of these types of air cleaners have been CARB certified through submission of testing results that document no or very low ozone emissions. The certification of in-duct systems using UVGI lamps is a new CARB requirement and documentation of their ozone emissions have not been previously reviewed or approved by CARB as meeting the regulatory emissions limit of no more than 50 ppb ozone. Regarding the burden due to the need to test multiple in-duct devices, manufacturers of multiple air cleaning devices are able, in many cases, to certify multiple air cleaners on the basis of only one ozone test report, if the devices meet the definition of belonging to a “model group.” This reduces the financial impact on manufacturers of meeting the testing requirement. The estimated cost of an ozone emissions test is \$5,000, which is a one-time cost because future re-testing of a device is not required unless the device is altered. **[Willette – 1]**

Comment 5 (II): The commenter states that some air cleaners use photocatalytic oxidation (PCO), which includes the use of UV light to induce a redox reaction on the surface of a semiconductor material or photocatalyst. The photocatalyst does not emit ozone. If a PCO air cleaner uses a UV lamp that does not generate ozone, the device should not be subject to the ozone test requirement. **[Willette – 2]**

Agency Response to 5 (II): CARB has certified many portable air cleaners using PCO technology, with ozone test reports for these air cleaners routinely showing that small and variable amounts of ozone can be created by PCO devices. PCO technology is also variable in that manufacturers use different materials as a photocatalyst. The reaction products that are emitted vary due to many factors, including the substances collected and adsorbed onto the reactive surface from the air, the type of PCO surface, and the specific bulb used. Thus, the ozone emissions can vary. For these reasons, CARB requires that both portable and in-duct air cleaners using PCO be tested for their ozone emissions. **[Willette – 2]**

V. Peer Review

Health and Safety Code Section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including CARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process.

CARB determined that this rulemaking does not contain scientific basis or a scientific portion subject to peer review, and thus no peer review as set forth in Health and Safety Code Section 57004 was or needed to be performed.