



**Reasonably Available Control Technology (RACT)  
State Implementation Plan for the 2015 Ozone  
National Ambient Air Quality Standards**

**Prepared by:  
The Ohio Environmental Protection Agency  
Division of Air Pollution Control**

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## I. Summary

The Ohio Environmental Protection Agency (Ohio EPA) has prepared this revision to the Ohio State Implementation Plan (SIP) to address Reasonably Available Control Technology (RACT) requirements for the 2015 8-hour ozone National Ambient Air Quality Standards (NAAQS). For certain source categories, Ohio EPA is submitting regulations that establish new or more stringent RACT controls. For other source categories, Ohio EPA is certifying that previously adopted RACT regulations and controls represent RACT for implementing the 2015 ozone NAAQS.

Table 1 shows source categories for which Ohio EPA has adopted new or more stringent RACT regulations in Ohio Administrative Code (OAC) Chapter 3745-21 for volatile organic compounds (VOC) and in OAC Chapter 3745-110 for nitrogen oxides (NOx). Ohio EPA is submitting these regulations to the U.S. Environmental Protection Agency (U.S. EPA) for approval into the Ohio SIP (see Appendices A and B). As described in more detail in the cover letter, Ohio EPA is requesting approval of revisions to OAC Chapter 3745-21 for both the Cleveland OH and the Ohio portion of the Cincinnati OH-KY 2015 ozone nonattainment areas and is requesting approval of OAC Chapter 3745-110 into Ohio's SIP only for the Cleveland OH 2015 ozone nonattainment area<sup>1</sup>.

Appendix C lists U.S. EPA CTGs, Ohio EPA VOC RACT regulations that were adopted to meet the presumptive level of RACT established in the CTGs, non-CTG categories for which regulations were developed, negative declarations for CTG categories for which Ohio does not have any sources, and the date U.S. EPA approved the RACT submittal into the Ohio SIP.

Section IV.B.1 below and Appendix I describe Ohio EPA's NOx RACT analysis and amendments to the regulations based on this review, along with Ohio EPA's rationale for concluding that the emissions standards as amended constitute RACT for the 2015 Ozone NAAQS.

Several major sources of VOC and NOx emissions have previously approved source-specific RACT controls in OAC Chapters 3745-21 and 3745-110. Ohio EPA has adopted requirements in OAC rule 3745-21-11 and OAC rule 3745-110-04 for facilities in the nonattainment areas that have existing source-specific RACT to submit an updated RACT study within one year of the effective date of the rule. Upon review of the RACT studies, Ohio EPA will determine if the existing RACT continues to be appropriate or if it is necessary to establish updated RACT for the source.

Table 1. Source Categories with New or More Stringent RACT Regulations

<b>RACT SOURCE CATEGORY</b>	<b>POLLUTANT</b>
Boilers, Stationary Combustion Turbines, and Stationary Internal Combustion Engines, Reheat Furnaces	NOx
Ship Building and Ship Repair	VOC
Aerospace Manufacturing	VOC

<sup>1</sup> Cuyahoga, Geauga, Lake, Lorain, Medina, Portage and Summit counties. Although OAC Chapter 3745-110 includes Ashtabula county, we are not requesting requirements for Ashtabula county be included in the SIP as it is not included in the 2015 ozone nonattainment area.

<b>RACT SOURCE CATEGORY</b>	<b>POLLUTANT</b>
Boat Manufacturing	VOC
Flat Wood Paneling Surface Coating	VOC
Flexographic, Packaging Rotogravure and Publication Rotogravure Printing Lines	VOC
Industrial Cleaning Solvents	VOC
Large Appliance Surface Coating	VOC
Metal Furniture Surface Coating	VOC
Offset Lithographic Printing and Letterpress Printing	VOC
Paper, Film, and Foil Surface Coating	VOC
Surface Coating of Miscellaneous Metal Parts and Plastic Products	VOC
Industrial Adhesives and Sealants	VOC
Automobile and Light-duty Truck Assembly Coating Operations, Heavier Vehicle Assembly Coating Operations and Cleaning Operations Associated with These Coating Operations	VOC
Oil & Gas	VOC

## **II. Background**

U.S. EPA defines RACT as the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.<sup>2</sup> Sections 172(c)(1) and 182(b)(2) of the Clean Air Act (CAA) (42 U.S.C. § 7502(c)(1) and § 7511a(b)(2)) require states to implement RACT for certain sources of VOC and NOx located in areas classified as moderate (and higher) nonattainment for ozone.

Ohio has two nonattainment areas that are anticipated to be bumped-up to moderate nonattainment under the 2015 ozone standard: the Cleveland OH (Cuyahoga, Geauga, Lake, Lorain, Medina, Portage and Summit counties) and the Cincinnati OH-KY<sup>3</sup>, (Butler, Clermont, Hamilton and Warren counties) nonattainment areas. The Cincinnati OH-KY area recently attained the 2015 ozone standard based on the 2019-2021 design value, and Ohio EPA submitted a redesignation request and maintenance plan for the Ohio portion of the area on December 21, 2021. Therefore, the Cleveland OH area will be required to implement RACT for major sources of VOC and NOx and source categories of VOC for which Control Technique Guidelines (CTGs) have been issued by EPA. Both areas have previously been subject to moderate area planning requirements for prior ozone standards; however, the Cleveland area has more recently been subject and therefore, has more recent RACT requirements in place. In Ohio, the major source applicability thresholds are potential emissions of 100 tons per year for both VOC and NOx.

To assist states with implementing RACT, U.S. EPA issued CTGs for various source categories

<sup>2</sup> 44 FR 53762, September 17, 1979

<sup>3</sup> Ohio and Kentucky share this nonattainment area. Kentucky's RACT analysis and submittal will be separate from Ohio's

of VOC emissions.<sup>4</sup> CTGs establish a “presumptive norm” for RACT for the VOC source categories addressed. Some CTGs cover only major sources of VOC emissions while others apply at thresholds below the major source level. U.S. EPA developed its first CTGs in the 1970s, and subsequently issued new CTGs and updates for certain source categories.<sup>5</sup> Ohio’s nonattainment areas subject to RACT are required to adopt RACT for all sources covered by CTGs issued by U.S. EPA and all other major non-CTG stationary sources.

Ohio EPA adopted regulations at Ohio Administrative Code (OAC) 3745-21 Carbon Monoxide, Photochemically Reactive Material, Hydrocarbons, and Related Material Standards, which established emission controls on VOC sources consistent with U.S. EPA’s CTGs. U.S. EPA approved these regulations as meeting RACT and incorporated them into the Ohio SIP.<sup>6</sup> If there were no facilities within a CTG source category in an applicable nonattainment area, Ohio EPA submitted a “negative declaration” to U.S. EPA.

For major sources not in a CTG category, Ohio EPA determined RACT on a facility-by-facility basis except for five categories which Ohio EPA developed specific non-CTG categorical RACT requirements. Facility-by-facility basis RACT determinations are included in OAC 3745-21-09 (FF) to (BBB). The five categories for which a non-CTG RACT was specifically developed are included in OAC 3745-21-12 Control of Volatile Organic Compound Emissions from Commercial Bakery Oven Facilities; OAC 3745-21-14 Control of Volatile Organic Compound Emissions from Process Vents in Batch Operations; OAC 3745-21-16 Control of Volatile Organic Compound Emissions from Industrial Wastewater; OAC 3745-21-21 Storage of Volatile Organic Liquids in Fixed Roof Tanks and External Floating Roof Tanks; and OAC 3745-21-25 Control of Volatile Organic Compound Emissions from Reinforced Plastic Composites Production Operations. U.S. EPA approved these source-specific and categorical non-CTG RACT determinations as part of the Ohio SIP.

To aid in meeting the 2008 ozone standard in the Cleveland nonattainment area, Ohio EPA adopted NO<sub>x</sub> RACT requirements under OAC 3745-110 Nitrogen Oxides – Reasonably Available Control Technology, which established RACT for very large, large, mid-size, and small boilers; stationary combustion turbines; stationary internal combustion engines; and reheat furnaces. It included provisions for source-specific NO<sub>x</sub> RACT determinations for “other” major NO<sub>x</sub> sources with a potential to emit 100 tons or more per year of NO<sub>x</sub>. Ohio EPA has not submitted these regulations to U.S. EPA for inclusion into the Ohio SIP prior to this action.

Ohio EPA’s previous adoption of RACT regulations for VOC and NO<sub>x</sub> and issuance of source-specific RACT determinations met its RACT obligations under the 1979 1-hour ozone standard, the 1997 8-hour ozone standard, and the 2008 8-hour ozone standard.

### **III. RACT Requirements Under 2015 Ozone NAAQS**

Under CAA section 109(d), U.S. EPA is required to periodically review and promulgate, as necessary, revisions to the NAAQS to continue to protect human health and the environment.

On October 1, 2015, U.S. EPA lowered the 8-hour ozone standard to 0.070 ppm, effective

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<sup>4</sup> The CAA does not require NO<sub>x</sub> CTGs

<sup>5</sup> U.S. EPA also issued several VOC Alternative Control Technologies (ACTs) in the 1980s and 1990s

<sup>6</sup> See 40 CFR 52.1870 for a complete list of U.S. EPA-approved Ohio SIP revisions, including those related to RACT regulations and determinations

December 28, 2015.<sup>7</sup> Effective August 3, 2018, U.S. EPA designated the following areas and counties as marginal nonattainment<sup>8</sup>:

- Cleveland OH: Cuyahoga, Geauga, Lake, Lorain, Medina, Portage and Summit counties
- Cincinnati OH-KY: Butler, Clermont, Hamilton and Warren counties. The Cincinnati area recently attained the 2015 ozone standard based on the 2019-2021 design value, and Ohio EPA submitted a redesignation request and maintenance plan for the Ohio portion of the area on December 21, 2021.
- Columbus OH: Delaware, Fairfield, Franklin and Licking counties. This area was subsequently redesignated to attainment/unclassifiable effective August 21, 2019<sup>9</sup>.

The Cleveland OH and Cincinnati OH-KY nonattainment areas did not attain the 2015 ozone standard by the attainment date and are expected to be bumped-up by U.S. EPA to moderate nonattainment. Because of the bump-up to moderate nonattainment, Ohio will be required to comply with RACT requirements under the 2015 ozone NAAQS in the Cleveland OH 2015 nonattainment area.

#### **IV. RACT Evaluation**

Ohio EPA must meet RACT requirements by either adopting new or more stringent regulations or controls that represent RACT control levels or by certifying that previously adopted RACT controls in its SIP approved by U.S. EPA continue to represent RACT. If no applicable sources for a RACT category exist in Ohio's nonattainment areas, Ohio EPA must make a negative declaration.

Ohio EPA evaluated its RACT regulations and for certain source categories adopted new or more stringent RACT controls effective on March 25, 2022 for NO<sub>x</sub> RACT (OAC Chapter 3745-110) and March 27, 2022 for VOC RACT (OAC Chapter 3745-21), as listed in Table 1 above. For VOC, the more stringent controls were based on new or updated CTGs published by U.S. EPA that Ohio EPA had not yet adopted. For NO<sub>x</sub>, the more stringent controls were based on Ohio EPA review of other state RACT requirements. These more stringent VOC and NO<sub>x</sub> controls are described below, and Appendices A and B contain the amended regulations (redline/strikeout), background documents and Response to Comments (where applicable) for the regulatory amendments, which provide further analysis and explanation. For other source categories Ohio EPA determined its existing regulations continue to represent RACT.

Appendix C lists U.S. EPA CTGs, Ohio EPA VOC RACT regulations that were adopted to meet the presumptive level of RACT established in the CTGs, non-CTG categories for which regulations were developed, negative declarations for CTG categories for which Ohio does not have any sources, and the date U.S. EPA approved the RACT submittal into the Ohio SIP.

Section IV.B.1 below and Appendix I describe Ohio EPA's NO<sub>x</sub> RACT analysis and amendments to the regulations based on this review, along with Ohio EPA's rationale for concluding that the emissions standards as amended constitute RACT for the 2015 Ozone NAAQS.

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<sup>7</sup> Federal Register Vol. 80, No. 206, Monday October 26, 2015

<sup>8</sup> Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, EPA, Final rule. 83 FR 25776 June 4, 2018

<sup>9</sup> Federal Register Vol. 84, No. 128, Wednesday, July 3, 2019

Several major sources of VOC and NO<sub>x</sub> emissions have previously approved source-specific RACT controls in OAC Chapters 3745-21 and 3745-110. Ohio EPA has adopted requirements in OAC rule 3745-21-11 and OAC rule 3745-110-04 for facilities in the nonattainment areas that have existing source-specific RACT to submit an updated RACT study within one year of the effective date of the rule. Upon review of the RACT studies, Ohio EPA will determine if the existing RACT continues to be appropriate or if it is necessary to establish updated RACT for the source.

## **A. VOC**

### **1. CTGs**

From 1996 through 2016, U.S. EPA issued new or revised CTGs for the following categories:

- Shipbuilding and Ship Repair Operations (Surface Coating) (1996)
- Aerospace (1997)
- Flat Wood Paneling Coatings (2006)
- Industrial Cleaning Solvents (2006)
- Lithographic Printing Materials and Letterpress Printing Materials (2006)
- Flexible Package Printing Materials (2006)
- Paper, Film, and Foil Coatings (2007)
- Large Appliance Coatings (2007)
- Metal Furniture Coatings (2007)
- Miscellaneous Metal and Plastic Parts Coatings (2008)
- Fiberglass Boat Manufacturing Materials (2008)
- Miscellaneous Industrial Adhesives (2008)
- Auto and Light-Duty Truck Assembly Coatings (2008)
- Oil and Natural Gas Industry (2016)

Ohio EPA has adopted all the above CTGs in the Cleveland area to address previous ozone standard planning requirements except the Oil & Natural Gas Industry (2016) CTG.

The following regulations were amended to include applicability to the Cincinnati area effective March 27, 2022 to address the 2015 ozone standard planning requirements:

- OAC 3745-21-20, Control of Volatile Organic Emissions from Shipbuilding and Ship Repair Operations (Marine Coatings)
- OAC 3745-21-19, Control of Volatile Organic Compound Emissions from Aerospace Manufacturing and Rework Facilities
- OAC 3745-21-24, Flat Wood Paneling Coatings
- OAC 3745-21-23, Control of Volatile Organic Compound Emissions from Industrial Solvent Cleaning Operations
- OAC 3745-21-22, Control of Volatile Organic Compound Emissions from Offset Lithographic Printing and Letterpress Printing Facilities
- OAC 3745-21-09(Y)(4), Flexographic, Packaging Rotogravure and Publication Rotogravure Printing Lines
- OAC 3745-21-09(F)(2), Paper, Film and Foil Coatings
- OAC 3745-21-09(K)(6), Surface Coating of Large Appliances
- OAC 3745-21-09(I)(4), Surface Coating of Metal Furniture

- OAC 3745-21-26, Surface Coating of Miscellaneous Metal and Plastic Parts
- OAC 3745-21-27, Boat Manufacturing
- OAC 3745-21-28, Miscellaneous Industrial Adhesives and Sealants
- OAC 3745-21-29, Control of Volatile Organic Compound Emissions from Automobile and Light-duty Truck Assembly Coating Operations, Heavier Vehicle Assembly Coating Operations and Cleaning Operations Associated with These Coating Operations

Appendix D contains an updated 5% RACT equivalency analysis for expansion of OAC rule 3745-21-26 into the Cincinnati area. In 2008, U.S. EPA revised the previously adopted Control Technique Guideline (CTG) for Miscellaneous Metal and Plastic Coating Operations. For the existing CTG that Ohio adopted as RACT for the Cincinnati and Cleveland-Akron-Lorain ozone nonattainment area in OAC 3745-21-09(U), Ohio performed an equivalency analysis to incorporate an option that would exempt metal coating lines in these two areas from the VOC content limitations, provided the lines each use less than 3 gallons/day. In order to adopt this option in our rules we had to prove that the increase in emissions from this option would be no more than 5% compared to adopting the CTG exactly as U.S. EPA had issued it. Ohio EPA submitted this equivalency analysis for the Cleveland area on November 18, 2015, and U.S. EPA approved it into the SIP on September 8, 2017 (82 FR 42452). Because Ohio EPA is required to adopt the newer 2008 CTG in the Cincinnati nonattainment area as a part of the bump-up to moderate nonattainment for the 2015 ozone standard, we are submitting an updated 5% RACT equivalency analysis to incorporate the 3 gallons/day exemption in our revised RACT rule (OAC rule 3745-21-26) for Cincinnati.

Appendix E contains a 110(l) demonstration for pleasure craft coatings component of OAC rule 3745-21-26, "Surface Coating of Miscellaneous Metal and Plastic Parts" which is based on USEPA's 2008 revised Control Technique Guidelines (CTG). Ohio EPA had previously submitted a 110(l) when this rule was adopted for the Cleveland area. Ohio EPA is now submitting a 110(l) for the expansion of these provisions into the Cincinnati area, where we identified no subject sources.

Ohio EPA identified only two sources subject to the CTG for the Oil and Natural Gas Industry in the Cleveland nonattainment area and none in the Cincinnati nonattainment area. Therefore, Ohio EPA established the relevant requirements in source-specific federally enforceable, permanent permits to install and operate (PTIOs) for the following two sources in Cleveland:

- OWS Acq Co - A624 Wylie Compressor (Facility ID 0679015035): Permit No. P0129069, effective November 10, 2021.
  - Specific terms related to the Oil and Gas CTG include C.1.b)(1)e., C.1.b)(2)a., C.1.c)(2), C.1.d)(2) and C.1.e)(4).
- OWS Acq Co - K492 Smallwood (Facility ID 0679015020): Permit No. P0130909, effective November 10, 2021.
  - Specific terms related to the Oil and Gas CTG include C.1.b)(1)e., C.1.b)(2)b., C.1.c)(3), C.1.d)(7) and C.1.e)(5).

Ohio EPA conducted a public comment period on the draft PTIO for Wylie Compressor from September 30, 2021 to October 30, 2021, and for Smallwood from October 7, 2021 to November 6, 2021. No comments were received. Appendix F contains the final PTIOs, draft PTIOs with public notice, and response to comments. Ohio EPA is requesting that the specific



terms<sup>10</sup> related to the Oil and Gas CTG identified above in the final PTIOs be approved into Ohio's SIP.

Ohio is making a negative declaration for the Oil and Gas CTG for the Cincinnati area (Appendix G).

Ohio EPA previously submitted a Negative Declaration for the following CTGs for both the Cincinnati and Cleveland areas:

- Factory Surface Coating of Flat Wood Paneling (1978) CTG
- For High-Density Polyethylene or Polypropylene sources covered under the Manufacture of High-Density Polyethylene, Polypropylene, and Polystyrene Resins (1983). OAC 3745-21-09(CC) regulates Polystyrene Resin Manufacturing only for sources in both the Cincinnati and Cleveland areas.
- Equipment Leaks from Natural Gas/Gasoline Processing Plants (1983)

Appendix G contains updated Negative Declarations for High-Density Polyethylene or Polypropylene sources and Equipment Leaks from Natural Gas/Gasoline Processing Plants. Ohio EPA has determined, in consultation with U.S. EPA R5, that an updated Negative Declaration for the 1978 Flat Wood Paneling CTG is not necessary. U.S. EPA's newer 2006 CTG document "Control Techniques Guidelines for Flatwood Paneling Coatings" contains more stringent requirements for the three categories covered by the 1978 CTG. Ohio EPA incorporated the provisions for the 2006 CTG into Ohio Administrative Code (OAC) rule 3745-21-24 on April 2, 2009 and submitted the rule for inclusion to the SIP (Originally approved 74 FR 37171, eff. 8/27/09).

## 2. Non-CTG Categorical RACT Determinations

Ohio EPA has five regulations that were adopted as non-CTG categorical regulations:

- OAC 3745-21-12, Control of Volatile Organic Compound Emissions from Commercial Bakery Oven Facilities
- 3745-21-14, Control of Volatile Organic Compound Emissions from Process Vents in Batch Operations
- OAC 3745-21-16, Control of Volatile Organic Compound Emissions from Industrial Wastewater
- OAC 3745-21-21, Storage of Volatile Organic Liquids in Fixed Roof Tanks and External Floating Roof Tanks
- OAC 3745-21-25, Control of Volatile Organic Compound Emissions from Reinforced Plastic Composites Production Operations

OAC 3745-21-21 is being expanded to the Cincinnati area and OAC 3745-21-25 already applies statewide. The remaining rules above apply to both the Cleveland and Cincinnati areas. Ohio EPA has reviewed these requirements and is re-affirming they continue to be appropriate as VOC RACT for these non-CTG categories (Appendix H).

## 3. Non-CTG Source-Specific RACT Determinations

For major VOC-emitting facilities outside the CTG categories, Ohio EPA previously approved

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<sup>10</sup> The entire PTIOs in Appendix F are not being requested as elements of Ohio's SIP. Only those specific terms related to the Oil and Gas CTG as identified above are considered SIP required.

RACT source-specific regulations that were subsequently approved by U.S. EPA as “single-source” SIP revisions. Ohio EPA has adopted a requirement in OAC rule 3745-21-11 for facilities in the nonattainment areas that have existing source-specific RACT to submit an updated RACT study within one year of the effective date of the rule. Upon review of the RACT studies, Ohio EPA will determine if the existing RACT continues to be appropriate or if it is necessary to establish updated RACT for the facility.

## **B. NOx**

### **1. Boilers, Stationary Combustion Turbines, Stationary Internal Combustion Engines, and Reheat Furnaces**

On December 11, 2007, Ohio EPA promulgated NOx RACT emission standards for various sizes of boilers, stationary combustion turbines, and stationary internal combustion engines (OAC 3745-110). NOx RACT emission standards for reheat furnaces were later promulgated on July 18, 2013. Ohio EPA evaluated other states’ recent RACT regulations and analyzed emissions and operational profiles of combustion units at major source facilities in Ohio to determine RACT requirements for these categories.

Appendix I describes the amendments to RACT made based on this review, and Ohio EPA’s rationale for concluding that the amended emissions standards constitute RACT for the 2015 Ozone NAAQS.

### **2. Source-Specific NOx RACT SIP Provisions**

For major NOx-emitting facilities, Ohio EPA previously approved source-specific RACT requirements. Ohio EPA has not submitted these regulations to U.S. EPA for inclusion into the Ohio SIP prior to this action.

Ohio EPA has adopted a requirement in OAC rule 3745-110-04(A)(3) for facilities in the nonattainment areas that have existing source-specific RACT to submit an updated RACT study within one year of the effective date of the rule. Upon review of the RACT studies, Ohio EPA will determine if the existing RACT continues to be appropriate or if it is necessary to establish updated RACT for the facility.

## **V. Public Participation**

Ohio published notification for the public comment period and public hearing concerning the draft RACT SIP and revisions to OAC Chapters 3745-21 and 3745-110 on Ohio EPA’s website on November 29, 2021. The comment period and public hearing was also noticed in Ohio’s Weekly Review and interested parties were notified via electronic mailing lists.

The public comment hearing was held and the public comment period closed on January 3, 2021. Appendices A and B include documentation regarding the public participation process for OAC Chapters 3745-21 and 3745-110, respectively, including the public notices, the transcripts from the public hearings, and response to comments document (where applicable). The draft RACT SIP underwent comment as part of this process (see public notices in Appendices A and B). No comments were received on OAC Chapter 3745-110 or the RACT SIP. One question was received during the public hearing for OAC Chapter 3745-21 which is addressed in the response to comments for that rulemaking in Appendix A.