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Rulemaking | Preliminary Analysis

North Dakota Administrative Code (NDAC) 33.1-15-07 & Adoption of 40 CFR 60 Subparts OOOO & OOOOa into NDAC 33.1-15-12

Disclaimer: This document is intended to provide information to interested parties. It is not intended as a complete regulatory review nor final agency action.

Current Action

The North Dakota Department of Environmental Quality (NDDEQ) is soliciting comments on the following:

How do recent EPA rulemakings in the oil and gas sector pertaining to 40 CFR 60, Subparts OOOO and OOOOa (Quad-O/Oa) impact NDDEQ's anticipated adoption of these rules (into North Dakota Administrative Code [NDAC] 33.1-15-12)?

Anticipating that the NDDEQ adopts Quad-O/Oa, should it:

1) amend NDAC 33.1-15-07-02.1 as requested in the Petition for Rulemaking[1],
2) amend NDAC 33.1-15-07-02.1 but with different language, or
3) not amend NDAC 33.1-15-07-02.1.

The NDDEQ is in the process of rulemaking to adopt Quad-O/Oa as mandated in House Bill 1024 (HB1024[2]) from the 66th Legislative Assembly, which would amend NDAC 33.1-15-12-02 to include 40 CFR 60, Subparts OOOO and OOOOa and adopt by reference. The Department is seeking input if it should also amend NDAC 33.1-15-07 – Control of Organic Compounds Emissions (Chapter 7) Section 2. Requirements for organic compounds gas disposal, Subsection 1 (NDAC 33.1-15-07-02.1.):

> *No person may cause or permit the emission of organic compounds gases and vapors, except from an emergency vapor blowdown system or emergency relief system, unless these gases and vapors are burned by flares, or an equally effective control device as approved by the department. Minor sources, as determined by the department and not subject to New Source Performance Standards (NSPS), may be granted exemptions to this subsection.*

The Department is also seeking comment on any other relevant questions or technical issues related to the adoption of Quad-O/Oa and changes to NDAC 33.1-15-07-02.1.

[1] See https://deq.nd.gov/AQ/Notices/RuleRevisions/Chapt7/2019.06.12FinalLettertoDEQ-BAR.pdf
[2] See https://www.legis.nd.gov/assembly/66-2019/bill-actions/ba1024.html

Background and History

NDAC 33.1-15-07

The Control of Organic Compounds (NDAC 33.1-15-07, i.e. Chapter 7) has been part of North Dakota's EPA-approved state implementation plan (SIP) since 1970. The requirement for organic compounds gas disposal has existed since 1972, when hydrocarbons were added as a National Ambient Air Quality Standard (NAAQS), which are to be protective of human health and the environment. Organic compounds include volatile organic compounds (VOCs) which are compounds that react with sunlight in the atmosphere to form ground-level ozone (O_3). In 1979, EPA removed hydrocarbons from the NAAQS and replaced it with ozone. The ozone NAQQS was revised in 1997 to an 8-hour standard of 80 parts per billion (ppb), and that standard was lowered in 2008 to 75 ppb and again in 2015 to 70 ppb (i.e. has become more stringent)[3]. EPA has also disused lowering the ozone standard further to 60 ppb, which could cause North Dakota to be classified as a "nonattainment" area (i.e., not in compliance with the NAAQS).

If any of the NAAQS are exceeded, North Dakota will be designated as being in "nonattainment" and federal highway funding may be withheld until North Dakota achieves "attainment" status (is back in compliance with the NAAQS). After an area is designated as nonattainment, the state has up to three years to produce a State Implementation Plan (SIP), which outlines the measures that will be taken to reduce emission levels and re-attain the standard. To achieve attainment, North Dakota may be required to adopt more stringent control requirements, conduct non-attainment new source review and implement strict permitting requirements into the SIP to re-obtain "attainment" status. If non-attainment occurs, this would result in rulemaking and more extensive permitting to address reductions in VOC and nitrogen oxides (NO_x) or other ozone (O_3) precursors to reduce ambient concentrations of ozone.

From 1972 SIP and NDAC:

> 7.200 REQUIREMENTS FOR ORGANIC COMPOUNDS GAS DISPOSAL
>
> 7.210 No person shall cause or permit the emission of organic compounds gases and vapors, except from a vapor blowdown system or emergency relief system, unless these gases and vapors are burned by smokeless flares, or an equally effective control device as approved by the Department.
>
> 7.220 Organic compounds gases and vapors which are generated as wastes as the result of oil exploration, development, production, refining, or processing operations and which contain hydrogen sulfide, shall be incinerated, flared or treated in an equally effective manner before being released to the ambient air. The emissions from all devices designed for incinerating, flaring or treating waste organic compounds gases and vapors shall result in compliance with the ambient air quality standards.

It should also be noted that organic compounds may also contain Hazardous Air Pollutants (HAPs). Therefore, the control of organic compounds may have a co-benefit by controlling air toxics.

[3] For more detailed information on the Ozone NAQQS see: https://www.epa.gov/ground-level-ozone-pollution, https://www.govinfo.gov/content/pkg/FR-2015-10-26/pdf/2015-26594.pdf, and https://www.epa.gov/sites/production/files/2016-02/documents/20151001ria.pdf

For the 2008 Ozone Infrastructure SIP (ISIP) and the 2015 ISIP, NDAC 33.1-15-07 has been a vital element when demonstrating that the State has the ability to regulate ozone precursors in order to maintain compliance with the ozone NAAQS.

HB 1024 and 40 CFR 60, Subparts OOOO and OOOOa (Quad-O/Oa)

The United States Environmental Protection Agency (EPA) first published 40 CFR 60, Subpart OOOO (Quad-O) in 2012[4]. On September 18, 2015, the EPA published 40 CFR 60, Subpart OOOOa (Quad-Oa). These two regulations have undergone several rulemaking actions by EPA and legal challenges.[5] In 2019, during the 66th Legislative Session, the NDDEQ was instructed to adopt and implement these two subparts, which would mean that NDDEQ would be the agency implementing these two regulations instead of EPA Region 8, who currently implements these regulations. If NDDEQ adopts Quad-O/Oa, EPA still retains oversight authority.

40 CFR 60, Subparts OOOO and OOOOa apply to VOC and methane emissions from the natural gas and oil wells, crude oil transport, and natural gas transmission sectors. These subparts focus on design requirements for gas collection to route to control devices and best practices for the control of emissions. It specifies a leak detection and repair (LDAR) program with requirements for an operating and maintenance (O&M) program and specifies recordkeeping, monitoring, and reporting requirements. Organic compound leaks that are discovered during the required LDAR checks (quarterly to semi-annually, depending on the source) are not considered violations under Quad-O/Oa, but rather initiates the requirement for timely repairs. If the discovered leaks are not addressed within a specified time period, an enforcement action may be warranted. The intent of an LDAR program is to codify O&M requirements and fix leaks at specified intervals (quarterly, semi-annually) rather than allow leaks (emissions) for possibly years.

Current EPA Quad-Oa Rulemaking

Currently, the EPA has proposed an amendment[6] to Quad-Oa that would remove the transmission and storage segments as an affected source category (e.g. natural gas compressor stations). This proposal would also remove the methane requirements for sources in the production and processing segments. An alternative proposal would rescind the methane requirements from all oil and natural gas sources without removing any sources from the source category.

NDAC 33.1-15-07-02.1 Petition

On June 12, 2019, Continental Resources (CLR) petitioned the NDDQ for rulemaking under NDCC 23-01-04.1(3) and NDCC 28-31-16[1]. This petition for rulemaking is targeted to NDAC 33.1-15-07-02.1.

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[4] See https://www.epa.gov/stationary-sources-air-pollution/crude-oil-and-natural-gas-production-transmission-and-distribution for more information about EPA's rulemaking on Quad-O.

[5] See https://www.epa.gov/controlling-air-pollution-oil-and-natural-gas-industry/new-source-performance-standards-and for more information about EPA's rulemaking on Quad-Oa.

[6] https://www.epa.gov/sites/production/files/2019-08/documents/frn_oil_and_gas_review_2060-at90_nprm_20190828revised_d.pdf

NDAC 33.1-15-07-02.1 Petition

The proposed amendment to NDAC 33.1-15-07-02.1, as petitioned, reads:
[Note: light text is petitioner added, crossed out texted is petitioner removed, *italic text* is original rule text.]

> *No person shall cause or permit the emission of organic compounds gases and vapors, except from a vapor blowdown system or emergency relief system, unless these gases and vapors are* "fugitive emissions" as defined in section 1(14)[7], and emissions control equipment ~~*burned by flares, or an equally effective control device as*~~ *approved by the department* is installed and operated in accordance with sections [the Department's implementing regulations for Quad O and Quad Oa][8]. Provided the requirements of these sections are met, then fugitive emissions from such equipment shall be exclusively regulated under section 17 ("Restriction of Fugitive Emissions")[9]. *Minor sources, as determined by the department and not subject to New Source Performance Standards (NSPS), may be granted exemptions to this subsection.*

NDAC 33.1-15-01-04.14 defines:

> *"Fugitive emissions" means solid airborne particulate matter, fumes, gases, mist, smoke, odorous matter, vapors, or any combination thereof generated incidental to an operation process procedure or emitted from any source other than through a well-defined stack or chimney.*

NDAC 33.1-15-17-04. Restriction of fugitive gaseous emissions.

> *No person shall emit or cause to be emitted into the ambient air from any source of fugitive emissions as specified in section 33.1-15-17-01 any gases which:*
>
> 1. *Exceed the ambient air quality standards of chapter 33.1-15-02 at or beyond the property line of the source.*
> 2. *Exceed the prevention of significant deterioration of air quality increments of chapter 33.1-15-15 at or beyond the property line of the source for sources subject to chapter 33.1-15-15.*
> 3. *Exceed the emission restrictions for odorous substances of chapter 33.1-15-16 at or beyond the property line of the source.*
> 4. *Exceed the restrictions on the emission of visible air contaminants of chapter 33.1-15-03 at or beyond the property line of the source.*

Preliminary Department Analysis of Effects of Petitioner's Proposed Language

The petitioners proposed language would remove the language that requires organic gases and vapors to be controlled by flares or an equally effective control device, unless that control device is required under 40 CFR 60,

[7] The Petitioner language incorrectly references NDAC 33.1-15-01-04.14 which is a subsection.
[8] The Department assumes this to reference NDAC 33.1-15-12-01 Subpart OOOO and Subpart OOOOa as they would be cited after rulemaking to adopt these two subparts.
[9] Petitioner language incorrectly references NDAC 33.1-15-17 as "section 17 ('Restriction of Fugitive Emissions')" when it is Chapter 17.

Subpart OOOO or OOOOa. This change would limit and prevent the Department from being able to control organic compounds from sources other than those in the oil and natural gas industrial sectors covered by Quad-O/Oa, which would likely result in higher emissions of organic compounds from other industrial and agricultural sources throughout the state. The language as proposed by the petitioner could also threaten the Department's approved 2015 Ozone ISIP. Section 110(l) of the Federal Clean Air Act (CAA) states that the EPA may not approve a SIP revision if it would interfere with any applicable requirement concerning attainment and reasonable further progress. Additionally, EPA cannot approve a SIP in one state that contributes to the nonattainment of another state. The demonstration that the changes to Chapter 7 do not interfere with attainment of the ozone NAAQS in North Dakota or in other states could be very difficult and time-consuming.

If EPA's proposed Quad-Oa rulemaking becomes final and removes the transmission and storage segments, then the petitioner's language would affect the use of NDAC 33.1-15-07-02.1 to control VOCs from compressor stations and crude oil storage facilities in addition to the petitioner's language change effect on all non-oil and gas industries.

The midstream oil and natural gas industry sector (i.e., compressor stations, crude oil storage tanks, etc.) has used the NDAC 33.1-15-07-02.1 *flare or equally effective control device* requirement in NDAC 33.1-15-07-02.1[10] to determine Quad-O/Oa applicably after the Chapter 7 required controls and therefore not be an affected source under Quad-O/Oa, i.e. not subject to Quad-O/Oa and the requirements therein. Through NDDEQ policy[11], the Department has set the same level of control as Quad-O/Oa, six tons per year per tank VOC emissions, without the recordkeeping and reporting requirements of Quad-O/Oa.

40 CFR 60, Subpart OOOO states:

§60.5365 Am I subject to this subpart?

You are subject to the applicable provisions of this subpart if you are the owner or operator of one or more of the onshore affected facilities listed in paragraphs (a) through (g) of this section for which you commence construction, modification or reconstruction after August 23, 2011, and on or before September 18, 2015.

(e) Each storage vessel affected facility, which is a single storage vessel located in the oil and natural gas production segment, natural gas processing segment or natural gas transmission and storage segment, and has the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section by October 15, 2013 for Group 1 storage vessels and by April 15, 2014, or 30 days after startup (whichever is later) for Group 2 storage vessels, except as provided in paragraphs (e)(1) through (4) of this section. The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline specified in this section. ***The determination may take into account requirements under a legally and***

[10] See https://www.regulations.gov/document?D=EPA-HQ-OAR-2017-0483-0041

[11] See https://deq.nd.gov/AQ/oilgas/VOC.aspx for VOC related NDDEQ policies.

> ***practically enforceable limit in an operating permit or other requirement established under a Federal, State, local or tribal authority***. [Emphasis Added]

40 CFR 60, Subpart OOOOa states:

> §60.5365a Am I subject to this subpart?
>
> *You are subject to the applicable provisions of this subpart if you are the owner or operator of one or more of the onshore affected facilities listed in paragraphs (a) through (j) of this section for which you commence construction, modification, or reconstruction after September 18, 2015.*
>
> *(e) Each storage vessel affected facility, which is a single storage vessel with the potential for VOC emissions equal to or greater than 6 tpy as determined according to this section. The potential for VOC emissions must be calculated using a generally accepted model or calculation methodology, based on the maximum average daily throughput determined for a 30-day period of production prior to the applicable emission determination deadline specified in this subsection.* ***The determination may take into account requirements under a legally and practically enforceable limit in an operating permit or other requirement established under a federal, state, local or tribal authority.*** *[Emphasis Added]*

If the petitioner's language remains as proposed it would remove the federally enforceable tank limits and make every previous tank restricted under Chapter 7 now subject to Quad-O/Oa. This would have the effect of increasing the permitting and recordkeeping burden on industry and the Department without any appreciable environmental benefit.

All minor sources would need to be re-evaluated and re-permitted for VOC controls and air toxics.

NDAC 33.1-15-01-04.12 defines:

> *"Federally enforceable" means all limitations and conditions which are enforceable by the administrator of the United States environmental protection agency, including those requirements developed pursuant to title 40 Code of Federal Regulations parts 60 and 61,* ***requirements within any applicable state implementation plan*** [Emphasis Added]*, any permit requirements established pursuant to title 40 Code of Federal Regulations 52.21 or under regulations approved pursuant to title 40 Code of Federal Regulations part 51, subpart I, including operating permits issued under a United States environmental protection agency-approved program that is incorporated into the state implementation plan and expressly requires adherence to any permit issued under such program.*

Overview of Chapter 7 and 40 CFR 60, Subparts OOOO and OOOOa

NDAC 33.1-15-07 is not limited to a specific industry; it applies to all sources of organic compounds and limits the emissions of organic compounds gases and vapors as well as hydrogen sulfide (H_2S). Chapter 7 does not specify recordkeeping, reporting, or monitoring requirements or a leak detection and repair (LDAR) program. Under Chapter 7, fugitive emissions resulting from sources other than emergency vapor blowdown systems or emergency relief system (i.e. pressure relief valves [PRVs] operating to release pressure as a safety mechanism, excluding PRVs open or leaking due to poor maintenance) may be considered a violation.

Additionally, the control requirements under Chapter 7 reduce the emissions of hazardous air pollutants (HAPs) and methane, which can decrease the permitting and compliance burden on industry for Air Toxics and air dispersion modeling requirements for several facility types, while ensuring VOC and HAP emissions are controlled.

To illustrate that NDAC 33.1-15-07 was and has applied to other non-oil and gas facilities from the 4/26/1988 Revisions Summary:

> *Language has been added to allow the Department to exempt some minor sources from requirements that would mandate all emissions, regardless of quantities to be flare or controlled equally effective. An example of minor sources may include spray paint booths or coating operations.*
>
> *Language is being deleted in 33-15-07-02 regarding oil exploration, development and production because this is now covered in Chapter 20.*

NDAC 33.1-15-20-04.1.

> *The emissions from all treaters, separators, engines, incinerators, flares, tanks, and other onsite equipment must comply with the requirements of subsection 5.*

NDAC 33.1-15-20-04.3.

> *Any volatile organic compound gas or vapor may be subject to controls as specified in chapter 33.1-15-07.*

NDAC 33.1-15-20-04.4.

> *Routine inspections and maintenance of tanks, hatches, compressors, vent lines, pressure relief valves, packing elements, and couplings must be conducted to minimize emissions from equipment used for gas containing hydrogen sulfide (H_2S). Tank hatches must hold a positive working pressure or must be repaired or replaced.*

NDAC 33.1-15-20-04.5.

> *The owner or operator of any oil or gas well production facility shall install equipment necessary to ensure that emissions comply with the ambient air quality standards of chapter 33.1-15-02, including hydrogen sulfide and sulfur dioxide; the class I and class II increments for sulfur dioxide, nitrogen dioxide, and particulate matter of chapter 33.1-15-15, if applicable; the odor concentration limits of chapter 33.1-15-16; and any other applicable chapter of this article. For the purpose of this chapter, compliance must be determined outside the surface boundary of the production facility.*

Unlike Quad-O/Oa, Chapter 7 considers the facility's **overall** emissions rather than emissions from individual equipment, e.g. a storage tank. Under Quad-O/Oa, a facility made up of 10 tanks with a VOC emission rate of four tons per year per tank (totaling 40 tons VOC per year) would not be required to install controls. However, under Chapter 7, because the facility's emissions are greater than 20 tons per year[12], the facility would be required to control the VOC emissions.

40 CFR 60, Subparts OOOO and OOOOa apply to SO_2, VOC, and methane emissions from the natural gas and oil wells, crude oil transport, and natural gas transmission sectors. These subparts focus on design requirements for gas collection to route to control devices and best practices for the control of fugitive emissions. It specifies LDAR requirements as an operating and maintenance (O&M) program and specifies recordkeeping, monitoring, and reporting requirements. Gas leaks that are discovered during the required LDAR checks may not be considered violations, but rather initiates the requirement for repairs. If the discovered leaks are not addressed within a specified time period, an enforcement may be warranted.

Neither NDAC 33.1-15-07 nor NDAC 33.1-15-17 have requirements for LDAR programs for monitoring gaseous fugitive emissions.

Currently, on an oil well site (upstream), organic vapors and gases are required to be routed to and combusted by a flare with a minimum of 90% destruction and removal efficiency[13]. NDAC 33.1-15-07 requires that wellhead emissions need to be combusted. The only other requirement for the combustion of wellhead gas would be under NDAC 33.1-15-07-02.2 which requires gas that contains hydrogen sulfide (H2S) be combusted. Since Bakken is a sweet crude with very low amounts of H2S, NDAC 33.1-15-07.02.2 would not apply to Bakken wells. If the petitioned language is accepted as written, the requirement that organic vapors and gases be controlled via combustion would be removed for any well or source not subject to 40 CFR 60, Subpart OOOOa (pre-2015 oil wells).

Public Input

The Department is seeking input from all industrial sectors, interested parties, and the public about proposed changes to NDAC 33.1-15-07, the adoption of 40 CFR 60, Subparts OOOO and OOOOa and comments on any other relevant questions or technical issues related to the adoption of Quad-O/Oa and changes to NDAC 33.1-15-07.

[12] See: https://deq.nd.gov/publications/AQ/policy/PC/Storage_Vessels_at_Oil&Gas_Non-Production_Facilities.pdf
[13] See: https://deq.nd.gov/publications/AQ/policy/PC/Memo_OG_Operators_Clarification_Responsibilities.pdf