

DEPARTMENT: POLLUTION CONTROL AGENCY

SF-00006-05 (4/86)

STATE OF MINNESOTA

DATE: May 16, 2014

Office Memorandum

TO: Silica Sand Rulemaking Advisory Panel

FROM: MPCA Silica Sand Air Rule Team

SUBJECT: Silica Sand Air Rule Concepts

The attached document provides the MPCA's initial DRAFT concept for a rule to control particulate emissions from silica sand mines and projects.

Based on research into applicable federal laws, regulations in other states, and your feedback, we have compiled this draft document. The goal of the document is to provide a broad overview of both how the rule is structured and the potential requirements it may contain. Stakeholders have previously told us that it is helpful to have an idea of what requirements the MPCA believes a rule should contain and how it will operate prior to having a detailed draft of rule language. Based on that prior feedback, we are providing this document.

The draft conceptual rule contains several sections. The first includes definitions, which will impact the applicability of the rule. Although definition and applicability are arguably among the most critical portions of the rule, very little specificity is provided in this section. This is because the three agencies are working together to try to construct definitions that, at minimum, share a common core. We will be providing you with additional proposals regarding definitions in the future.

The rule is proposed as a performance standard that sets forth stack limits that must be met or actions that must be taken. Performance standards are very common in air quality regulation, and MPCA rules (Chapter 7011) already contains performance standards for many types of industrial operations. The first section of the conceptual rule (after definitions) proposes monitoring of particulate emissions in one or more size fractions. The next section sets forth performance standards for ten different actions at existing facilities, while the following section sets forth performance standards for the same actions at new facilities. In general, we envision that the standards for existing facilities would include best management practices, while new facilities would be subject to more stringent requirements that may include specific emission limits. This difference in requirements for new or existing facilities is very common in performance standards. The rule also includes requirements for noise and for ceasing operations during times of high wind.

As noted previously, this document is intended to take a very broad look at potential regulations. It is very likely that not all these concepts or areas will end up in the final rule.

We will be giving a very brief overview of the conceptual rule today, and plan to do a detailed walk through at the June meeting. We look forward to discussing this draft concept with you and hearing your feedback.

2013 Ch. 114 Section 105

RULES; SILICA SAND.

(a) The commissioner of the Pollution Control Agency shall adopt rules pertaining to the control of particulate emissions from silica sand projects. The rulemaking is exempt from Minnesota Statutes, section 14.125.

(b) The commissioner of natural resources shall adopt rules pertaining to the reclamation of silica sand mines. The rulemaking is exempt from Minnesota Statutes, section 14.125.

(c) By January 1, 2014, the Department of Health shall adopt an air quality health-based value for silica sand.

(d) The Environmental Quality Board shall amend its rules for environmental review, adopted under Minnesota Statutes, chapter 116D, for silica sand mining and processing to take into account the increased activity in the state and concerns over the size of specific operations. The Environmental Quality Board shall consider whether the requirements of Minnesota Statutes, section 116C.991, should remain part of the environmental review requirements for silica sand and whether the requirements should be different for different geographic areas of the state. The rulemaking is exempt from Minnesota Statutes, section 14.125.

EFFECTIVE DATE. This section is effective the day following final enactment.

Future work

Applicability: All facilities or subset? Scope of process types, new / existing equipment

Emission Limits: Stringency? Size fraction? Averaging time? Informed by test results from existing facilities, possibly modeling

Monitoring: Ambient monitoring for PM-related pollutants, CE monitoring, VEs?

Reporting: Daily log of control equipment parameters, water application areas/rates, VE log

Performance Tests: Method 5? Method 201? NIOSH 7500?

Definitions: Legislature? NAICS 212322, SIC 1446

- A.) Definitions
- B.) Source-Oriented Monitoring
- C.) Standards of Performance for Existing Industrial Sand Facilities
- D.) Standards of Performance for New Industrial Sand Facilities
- E.) Noise
- F.) Cessation of Operations

A.) Definitions

Silica Sand Facility

New Silica Sand Facility

Existing Silica Sand Facility

B.) Source-Oriented Monitoring

Subparts XX of this section apply each Existing Industrial Sand Facility. Subparts YY of this section apply to each New Industrial Sand Facility.

Subpart 1 Particulate Matter

The owner or operator shall demonstrate compliance with the Particulate Matter ambient air standards at Minn. R. 7009.0020.

Fenceline
Upwind/downwind
1 in 6 / 1 in 3 / Daily
Midnight-to-midnight
FRM

Subpart 2 PM10

The owner or operator shall demonstrate compliance with the PM10 ambient air standards at Minn. R. 7009.0020 and 40 CFR pt. 50.

Fenceline
Upwind/downwind
1 in 6 / 1 in 3 / Semi-Continuous
Midnight-to-midnight
FRM / FEM

Subpart 3 PM2.5

The owner or operator shall demonstrate compliance with the PM2.5 ambient air standards at Minn. R. 7009.0020 and 40 CFR pt. 50.

Fenceline
Upwind/downwind
1 in 6 / 1 in 3 / Semi-Continuous
Midnight-to-midnight
FRM / FEM

Subpart 4 Silica

The owner or operator shall collect either PM10 or PM4 sized particles.

Fenceline
Upwind/downwind
1 in 6 / 1 in 3 / Daily
Midnight to Midnight
If PM10: FRM / FEM
If PM4: Operator propose method, Agency approval required
NIOSH 7500
If 95% UCL exceeds 3 ug/m³, then:

C.) Standards of Performance for Existing Industrial Sand Facilities

This section applies to each Existing Industrial Sand Facility. Compliance demonstrated within XXX days of the final rule.

Subpart 1	Blasting BMPS Wet down area prior to blast No blasting during XXX wind speed
Subpart 2	Mining / Drilling Downhole water injection BMPS
Subpart 3	Crushers Wet suppression Choke feed
Subpart 4	Conveyors Minimize distance between transfer points Use belt scraper Clean under conveyors
Subpart 5	Roads Wet suppression
Subpart 6	Storage Piles Wet suppression Fence / Wind breaks Periodic cleaning within XXX distance of pile Minimize drop height
Subpart 7	Dryers Enclosure w/ control device
Subpart 8	Screens Enclosure w/ control device
Subpart 9	Loading and Unloading Stone ladders Telescoping chutes Choke feed Wet suppression
Subpart 10	Transportation Cover trucks Wheel wash station Speed restriction Seal leaks in truck body

D.) Standards of Performance for New Industrial Sand Facilities

This section applies to each New Industrial Sand Facility. Compliance demonstrated within XXX days of startup.

- Subpart 1 Blasting
 - Wet down area prior to blast
 - Stemming Materials
 - No blasting during XXX wind speed

- Subpart 2 Mining / Drilling
 - If wet: Downhole water injection
 - If dry: use dust collection shroud and control device

- Subpart 3 Crushers
 - Enclosure w/ control device
 - <NSPS limit: 0.014 or 0.022 gr/dscf>
 - <additional stack limit based on results of universe of tested facilities>

- Subpart 4 Conveyors
 - Enclosure w/ control device
 - <NSPS limit: 0.014 or 0.022 gr/dscf>
 - <additional stack limit based on results of universe of tested facilities>

- Subpart 5 Roads
 - Mine haul roads: Wet suppression
 - Non-haul roads: pave, vacuum sweep

- Subpart 6 Storage Piles
 - Enclosure w/ control device

- Subpart 7 Dryers
 - Enclosure w/ control device
 - <NSPS limits: 0.025 – 0.040 gr/dscf>
 - <additional stack limit based on results of universe of tested facilities>

- Subpart 8 Screens
 - Enclosure w/ control device
 - <NSPS limits: 0.014 or 0.022 gr/dscf>
 - <additional stack limit based on results of universe of tested facilities>

- Subpart 9 Loading and Unloading
 - Enclosure w/ control device
 - <NSPS limits: 0.014 or 0.022 gr/dscf>
 - <additional stack limit based on results of universe of tested facilities>

- Subpart 10 Transportation
 - Cover trucks
 - Wheel wash station
 - Speed restriction
 - Seal leaks in truck body

E.) Noise

The owner or operator of a silica sand facility shall comply with the noise pollution control rules in chapter 7030. The owner or operator of a silica sand facility shall demonstrate compliance with the noise pollution control rules by conducting a test at every residence within XXX feet of the silica sand facility. The initial test shall occur prior to start-up of the facility. The next test shall occur within XXX days of startup of the facility. Recurring tests shall occur on a schedule prescribed by the Commissioner.

F.) Cessation of Operations

The owner or operator of a silica sand handling facility shall not conduct any silica handling operations that are not enclosed in a building when steady wind speeds exceed XX miles per hour as determined at the nearest official station of the United States Weather Bureau or by wind speed instruments on or adjacent to the site.

	A	B	C	D	E	F	G	H	I
1	DRAFT		DRAFT			DRAFT			DRAFT
2									
3			Federal (USEPA)			Minnesota			Wisconsin
4		Perf. Std.	Permit Req.		Perf. Std.	Permit Req.		Perf. Std.	Permit Req.
5	Blasting	-	-, (1), (5)		(2)	20% opacity (Minn. R. 7011.0110)		(3), NR 415.075	Use of Stemming Materials 20% opacity
6	Mining	-	-, (1), (5)		(2)			(3), NR 415.075	Downhole water injection 20% opacity
7	Crushing	NSPS OOO	(1), (5) if no stack exists then 7-15% opacity, if stack exists then 0.014-.022 gr/dscf		(2)	NSPS OOO		(3), NR 415.076	NSPS OOO
8	Conveying	NSPS OOO	(1), (5) if no stack exists then 7-15% opacity, if stack exists then 0.014-.022 gr/dscf		(2)	NSPS OOO		(3), NR 415.075, NR 415.076	Enclosures, 20% opacity, NSPS OOO
9	Roads	-	-, (1), (5)		(2)	Pave Roads, Moisture Content of 1.5 - 2% (Minn. R. 7007.0800), No Visible Emissions (Minn. R. 7007.0800)		(3), NR 415.075	Pave roads, Limit Speed to 10 MPH, Apply Water
10	Storage Piles	-	-, (1), (5)		(2)	Moisture Content of 1.5 - 2% (Minn. R. 7007.0800), No Visible Emissions (Minn. R. 7007.0800)		(3), NR 415.075	20% opacity, apply water
11	Drying	NSPS UUU	(1), (5) 10% opacity, 0.025-.040 gr/dscf		(2)	NSPS UUU		(2)	NSPS UUU
12	Screening	NSPS OOO	(1), (5) if no stack exists then 7-15% opacity, if stack exists then 0.014-.022 gr/dscf		(2)	NSPS OOO		(3)	Enclosures, 20% opacity, NSPS OOO
13	Loading	NSPS OOO	(1), (5) if no stack exists then 7-15% opacity, if stack exists then 0.014-.022 gr/dscf		(2)	NSPS OOO		(3)	Enclosures, 20% opacity, NSPS OOO
14	Transportation	-	-, (1), (5)		(2)	Cover Truck Load			-
15	Fenceline Monitor	-	-, (1), (5)		(6)	Upwind / Downwind: TSP, PM10, PM2.5, PM4-silica		(3), NR 415.075	'particulate matter' interpreted as PM10
16									
17			(1) In general, air permits are issued at the state level. However, USEPA issues air permits in certain instances (e.g. tribal lands). These permits are called Part 71 permits, and Region V has published a list of these permits here: http://yosemite.epa.gov/r5/r5ard.nsf/Tribal%20PermitsIOpenView&Start=1						
18			(2) This state enforces federal performance standards for nonmetallic mining and mineral drying, but has not written state-specific rules for this nonmetallic mineral process ('nonmetallic mineral' is inclusive of silica sand). In the absence of a performance standard, permit staff are left to craft facility-specific requirements						
19			(3) This state enforces federal performance standards for nonmetallic mining and mineral drying and has written state-specific rules for this nonmetallic mineral process, but has not written performance standards that are specifically tailored to silica sand. In the absence of a performance standard, permit staff are left to craft facility-specific requirements						
20			(4) This state enforces federal performance standards for nonmetallic mining and mineral drying and has written state-specific performance standards that are specifically tailored to silica sand.						
21			(5) No known air permits issued to a silica sand facility by this governmental entity						
22			(6) National Ambient Air Standards apply, but this governmental entity does not have a performance standard that requires a fenceline monitor for compliance demonstration						

	A	J	K	L	M	N	O	P	Q	R	S	T
1	DRAFT		DRAFT			DRAFT			DRAFT			DRAFT
2												
3			Iowa			Illinois			Michigan			South Dakota
4		Perf. Std.	Permit Req.		Perf. Std.	Permit Req.		Perf. Std.	Permit Req.		Perf. Std.	Permit Req.
5	Blasting	(2)	-		(2)	-		(2)	-		(3), BACM	(5), No blasting during 'high wind dust alert'
6	Mining	(2)	-		(2)	-		(2)	-			(5) Enclosure and Control Device (wet suppression, baghouse, wet scrubber), 20% Opacity, NSPS OOO
7	Crushing	(2)	-		(3), Pt. 212	Spray with water or surfactant, Utilize choke-feed or equivalent method, NSPS OOO		(2)	NSPS OOO		(3), BACM	(5), Cover conveying system or use wet suppression system, 20% Opacity, NSPS OOO
8	Conveying	(2)	NSPS OOO		(3), Pt. 212	Spray with water or surfactant, Utilize choke-feed or equivalent method, NSPS OOO		(3), Rule 372	Pneumatic Conveying, Enclose conveyor belts and exhaust to baghouse, Enclose transfer points and exhaust to baghouse, Use belt wipers, Equip conveyor belt with > 210 degree enclosure, Restrict belt speed, Minimize distance between transfer points, Periodically clean area under conveyors, NSPS OOO		(3), BACM	(5), If unpaved: Apply chemical stabilizer, apply water, or pave surface; If paved: Water flush, vacuum sweep; Track out: pave 100 foot by 20 foot area at intersection of public road and facility entrance All of above surfaces: 20% opacity
9	Roads	(2)	-		(3), Pt. 212	Pave or treat with water or chemical suppressant, Clean all paved areas		(2)	Pave roads; Vacuum sweep, wet sweep, or flush; Use dust suppressant; Use gravel in off-road areas		(3), BACM	(5), Apply chemical stabilizer, apply water, or install two-sided enclosure, 20% Opacity
10	Storage Piles	(2)	-		(3), Pt. 212	Moisture Content 1.5%		(3), Rule 372	Enclosure and Control Device, Wet Suppression, Minimize drop height, Periodic cleaning of area within 100 meters of pile		(3), BACM	(5), NSPS UUU
11	Drying	(2)	NSPS UUU			NSPS UUU		(2)	NSPS UUU		(2)	(5), Enclosure and Control Device (wet suppression, baghouse, wet scrubber), 20% Opacity, NSPS OOO
12	Screening	(2)	NSPS OOO		(3), Pt. 212	Spray with water or surfactant, Utilize choke-feed or equivalent method, NSPS OOO		(2)	NSPS OOO		(3), BACM	(5), Enclosure and Control Device (wet suppression, baghouse, wet scrubber), 20% Opacity, NSPS OOO
13	Loading	(2)	NSPS OOO		(3), Pt. 212	Use telescoping chutes, stone ladders, or equivalent; Spray with water or surfactant; Utilize choke-feed or equivalent method; NSPS OOO		(3), Rule 372	Telescopic Chute, NSPS OOO		(3), BACM	(5), Enclosure and Control Device (wet suppression, baghouse, wet scrubber), 20% Opacity, NSPS OOO
14	Transportation		-		(3), Pt. 212	Cover Truck Load		(3), Rule 372	Cover trucks when transporting material, Wash wheels and truck body, Tarp empty trucks, Clean empty trucks, Maintain 6 inches of freeboard, Seal leaks in truck body, Spray material with dust suppressant, Speed restriction		(3), BACM	(5), Install wash station
15	Fenceline Monitor	(6)	-		(6)	-		(6)	-		(6)	(5)
16												
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	A	U	V	W	X	Y	Z	AA	AB
1	DRAFT		DRAFT			DRAFT			DRAFT
2									
3			North Dakota			Ohio			Indiana
4		Perf. Std.	Permit Req. / Rule		Perf. Std.	Permit Req.		Perf. Std.	Permit Req.
5	Blasting	(3) 33-15-17-03	(5), Sequential Blasting		(2)	-		(2)	-
6	Mining	(3) 33-15-17-03	(5), Prevent particulate matter from becoming airborne		(2)	-		(2)	-
7	Crushing	(3) 33-15-17-03	(5), Prevent particulate matter from becoming airborne, NSPS OOO		(3) OAC 3745-17-08	Enclosure w/ control emitting less than 0.030 gr/dscf and no VEs, NSPS OOO		(3) 326 IAC 6-5-4	wet suppression, enclosure and exhaust to fabric filter, NSPS OOO
8	Conveying	(3) 33-15-17-03	(5), Prevent particulate matter from becoming airborne, NSPS OOO		(3) OAC 3745-17-08	Enclosure w/ control emitting less than 0.030 gr/dscf and no VEs, NSPS OOO		(3) 326 IAC 6-5-4	Enclose top/sides and exhaust to control device, apply water, NSPS OOO
9	Roads	(3) 33-15-17-03	(5), Wetting down, paving (temporary or permanent), treating, detouring, speed restriction, prevent deposition on improved streets		(3) OAC 3745-17-08	Pave roadways, Remove deposited material, Apply water, Apply chemical dust suppressant		(3) 326 IAC 6-5-4	Paved Roads: Vacuum Sweep, Flush; Unpaved Roads: Pave w/ asphalt or concrete, treat w/ chemical dust suppressant, water spray, double chip and seal road surface
10	Storage Piles	(3) 33-15-17-03	(5), Silos or other suitable enclosures		(3) OAC 3745-17-08	Apply water, Install silos, bins, or other enclosed structures		(3) 326 IAC 6-5-4	Clean area around perimeter of pile, apply dust suppressant
11	Drying	(2)	(5), NSPS UUU		(2)	NSPS UUU		(2)	NSPS UUU
12	Screening	(3) 33-15-17-03	(5), Prevent particulate matter from becoming airborne, NSPS OOO		(3) OAC 3745-17-08	Enclosure w/ control emitting less than 0.030 gr/dscf and no VEs, NSPS OOO		(3) 326 IAC 6-5-4	wet suppression, enclosure and exhaust to fabric filter, NSPS OOO
13	Loading	(3) 33-15-17-03	(5), Haulage equipment be washed or wetted down, treated, or covered when necessary; NSPS OOO		(3) OAC 3745-17-08	Enclosure w/ control emitting less than 0.030 gr/dscf and no VEs, NSPS OOO		(3) 326 IAC 6-5-4	enclose area and exhaust to control device, total or partial enclosure of facility (w/ board approval) and exhaust to control device water spray, chemical dust suppressant, reduce free fall distance, NSPS OOO
14	Transportation	(3) 33-15-17-03	(5), Haulage equipment be washed or wetted down, treated, or covered when necessary		(3) OAC 3745-17-08	Cover open bodied vehicles		(3) 326 IAC 6-5-4	use completely enclosed vehicles, tarp vehicle, maintain vehicle body to prevent leaks, spray material in vehicle w/ dust suppressant
15	Fenceline Monitor	(6)	(5)		(6)	-		(6)	-
16									
17			(1) In general, air permits are issued at the state level. However, USEPA issues air permits in certain instances (e.g. tribal lands). These permits are called Part 71 permits, and Region V has published a list of these permits here: http://yosemite.epa.gov/r5/r5ard.nsf/Tribal%20Permits!OpenView&Start=1						
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Category	Rule	Description
Ambient Air	40 CFR pt. 50	National Ambient Air Quality Standards
Ambient Air	Minn. R. ch. 7009	Minnesota Ambient Air Quality Standards
Permit Program	40 CFR 52.21	Federal New Source Review Program
Permit Program	40 CFR pt. 70	Federal "Title V / Part 70" Stationary Source Permit Program
Permit Program	Minn. R. ch. 7007	Minnesota Air Permit Program
Performance Standard	40 CFR pt. 60	Federal Standards of Performance for New Stationary Sources
Performance Standard	40 CFR pt. 60, subp. 000	Standards of Performance for Nonmetallic Mineral Processing Plants
Performance Standard	40 CFR pt. 60, subp. UUU	Standards of Performance for Calciners and Dryers in Mineral Industries
Performance Standard	Minn. R. ch. 7011	Standards for Stationary Sources
Performance Standard	Minn. R. 7011.3350	Adopts and incorporates by reference 40 CFR pt. 60, subp. 000
Performance Standard	Minn. R. 7011.0150	Fugitive Emissions
Performance Standard	Minn. R. 7011.0700-0735	Industrial Process Equipment Rule
Performance Standard	Minn. R. 7011.0600-0620	Direct Heating Fossil-Fuel-Burning Equipment Rule
Performance Standard	Minn. R. 7011.0500-0550	Indirect Heating Fossil-Fuel-Burning Equipment Rule
Performance Standard	Minn. R. 7011.0100-0120	Emission Standards for Visible Air Contaminants
Other	Minn. R. ch. 7017	Performance Testing
Other	40 CFR pt. 64	Compliance Assurance Monitoring
Other	40 CFR pt. 52, subp. Y	State Implementation Plan for Minnesota
Other	Minn. R. ch. 7019	Emission Inventory
Definitions	Minn. R. ch. 7005	Definitions and Abbreviations
Definitions	*	Additional Definitions found within each program and/or rule