

Working Group Meeting

**Proposed Rule 1148.2
Drilling and Well Completion
Notification and Reporting**

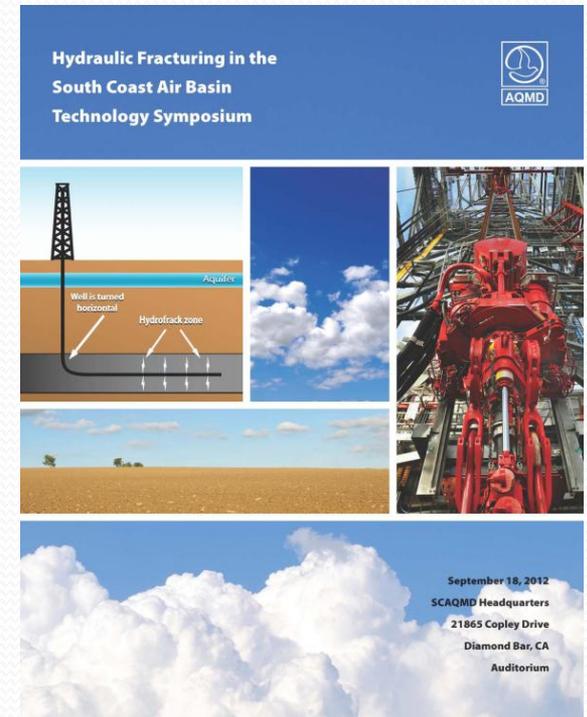
December 12, 2012

Background - AQMD Hydraulic Fracturing Symposium

On September 18, 2012, AQMD convened a technology symposium on the use of hydraulic fracturing discussing:

- How the process is used in the Basin
- Environmental impacts including air, water, and seismic impacts
- Regulatory activities at the federal and state levels
- Public concerns regarding lack of specific information and potential impacts

Participants included academic, governmental, industry, and environmental experts



Governing Board Direction to Staff

Board directed staff to initiate rule development to:

- Require reporting of chemicals used when hydraulic fracturing is conducted in the Basin
- Determine if existing AQMD regulations adequately cover oil and gas production activities if conducting hydraulic fracturing
- Report on the initiation and progress of rule development at Board's Stationary Source Committee within 120 days (on or before February 15, 2013)

BOARD MEETING DATE: October 5, 2012 AGENDA NO. 29

PROPOSAL: Report on "Hydraulic Fracturing in the South Coast Air Basin" Technology Symposium and Recommendations for Future Actions

SYNOPSIS: As part of the discussions on the potential impacts associated with the use of hydraulic fracturing in oil and gas production, a technology symposium was held on September 18, 2012. An overview of the use of hydraulic fracturing, potential environmental impacts, and current activities at the federal, state, and local levels were discussed. A roundtable discussion followed with representatives from the state legislature, environmental organizations, industry, and academia regarding the state of hydraulic fracturing and to solicit recommendations for future actions that the Board may consider. A summary of the symposium is provided in this report. In addition, staff is seeking the Board's direction to pursue additional actions to ensure that air emissions from oil and gas production are minimized.

COMMITTEE: No Committee Review

RECOMMENDED ACTIONS:

1. Receive and file this report.
2. Direct staff to initiate rule development and related items as provided in the staff recommendations.

Barry R. Wallerstein, D.Env.
Executive Officer

CSLRR

Background
As part of questions raised regarding the increased use of hydraulic fracturing in deep shale gas production, staff briefed the Board at its April 2012 Retreat on the use of hydraulic fracturing in deep shale gas located primarily in the Midwest and Northeastern states. A discussion on potential environmental impacts was discussed. Representatives

Rulemaking Approach

- **Step 1 – Notification and Reporting**

- Gather data on activities relating to hydraulic fracturing and similar well production stimulation techniques
- Identify Best Management Practices used to minimize air quality impacts from drilling and well completion and well stimulation activities

- **Step 2: Report to the Governing Board information collected in Step 1**

- Seek Board direction regarding how to proceed
- Board may direct staff to continue collecting data and/or develop new requirements to reduce emissions from oil and gas drilling and well completion activities

Pre-Production Processes

Site Preparation

- Site grading and excavation
- Mobilization of trucks, pumps, etc.
- Construction of drilling equipment



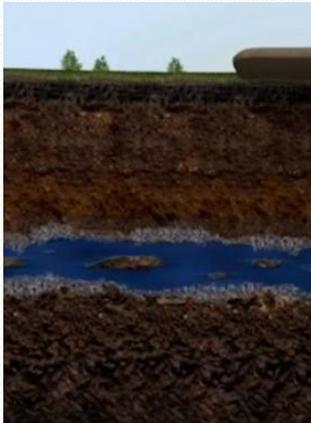
Drilling:

- Equipment used for mixing drilling mud, recirculating drilling mud, and powering drilling rig
- Mixing dry materials for drilling mud



Well Completion Activities

- Mixing cement
- Run and cement casing
- Mixing hydraulic fracturing fluid
- Equipment used to mix hydraulic fracturing fluid
- Equipment used to pump hydraulic fracturing fluid to and out of well
- Casing perforation
- Return of drilling mud to the surface prior to well completion



Potential Emission Sources from Site Preparation

Source	Pollutant(s)	Applicable Rule/Regulation
<ul style="list-style-type: none"> Exhaust emissions from off-road diesel equipment for site grading and excavation 	DPM and NOx	CARB Off-Road Regulation
<ul style="list-style-type: none"> Fugitive dust from site grading and excavation activities 	PM	Rule 401 – Visible Emissions Rule 403 – Fugitive Dust
<ul style="list-style-type: none"> Exhaust emissions from on-road delivery trucks and equipment 	DPM and NOx	CARB On-Road Regulation



Potential Emission Sources from Drilling Operations

Emission Source	Emissions	Applicable Rule/Regulation
Exhaust emissions from engines used to power the drilling rig and support activities	DPM and NOx	CARB Off-road regulations
Fugitive dust from mixing drilling mud	PM and Possibly toxics	No existing requirements
Hydrocarbons during handling and transport of drilling mud that returns to the surface	VOCs and Possibly toxics	No existing requirements



Potential Emission Sources from Well Completion and Well Stimulation

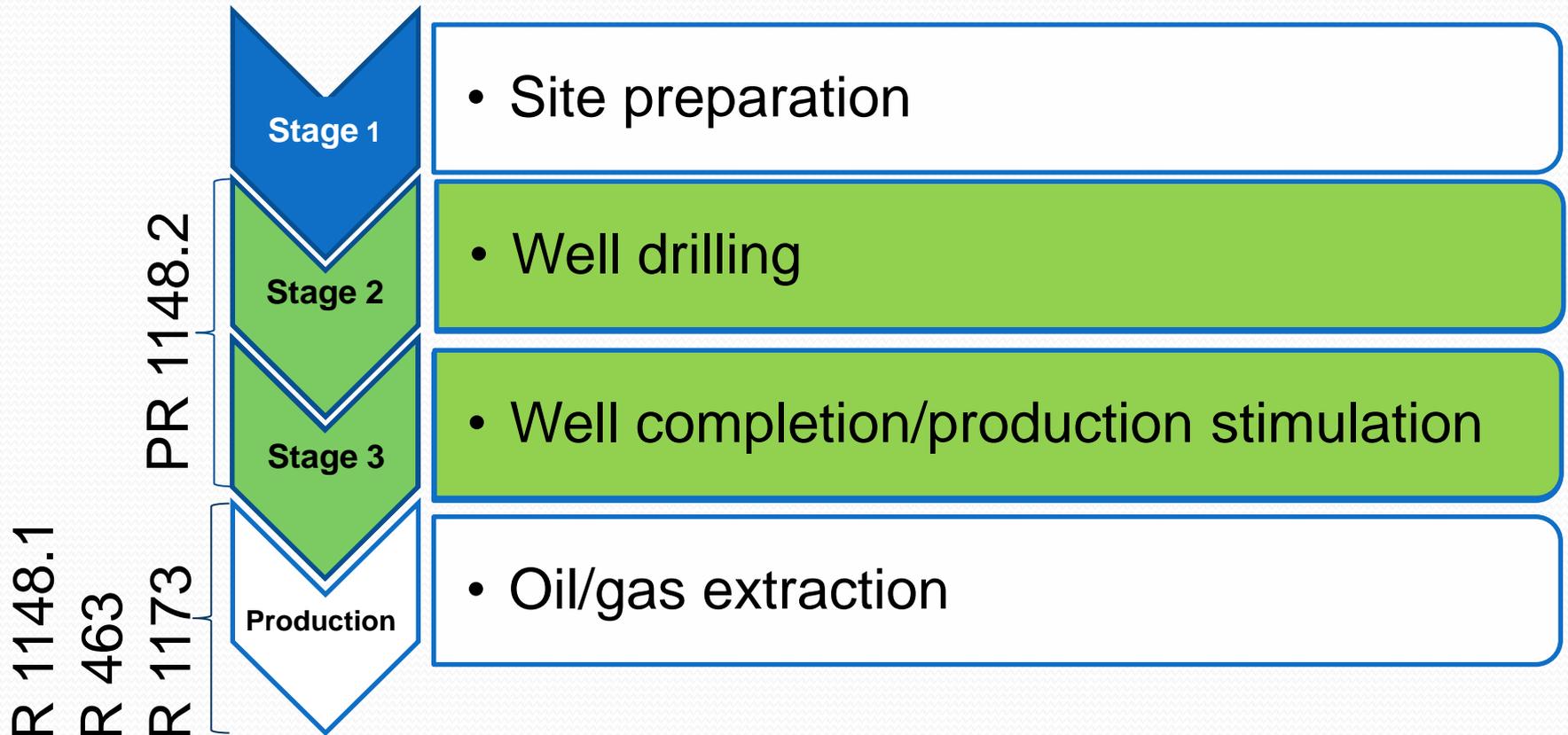
Source	Emissions	Rule
<ul style="list-style-type: none">Exhaust emissions from engines used to power cement trucks and power the completion rig and support activities such as equipment used to mix fracturing fluids and frac pumps	NOx Diesel PM	CARB Off-road Regulations
<ul style="list-style-type: none">Fugitive dust emissions from mixing hydraulic fracturing fluid	PM and possibly toxics	No existing requirements
<ul style="list-style-type: none">Hydrocarbons during handling and transport of flowback fluid that returns to the surface	VOCs and possibly toxics	No existing requirements
<ul style="list-style-type: none">Venting or flaring emissions during flowback period	VOCs and possibly Toxics	No existing requirements



Initial Review of AQMD Regulations

- Site preparation activities are generally covered under CARB regulations and Rules 401 and 403
- Some regulatory gaps during drilling and well completion activities
 - Fugitive dust emissions from mixing of drilling mud and hydraulic fracturing fluid
 - Emissions from drilling mud and hydraulic fracturing fluid (flowback fluid) as it returns to the surface
 - Venting and flaring during flowback period

PR 1148.2 Applicability



EPA Regulation – NSPS and NESHAP for Oil and Natural Gas Sector

- Applicability
 - Onshore gas well drilled principally for production of natural gas
 - Oil wells are not subject to this rule
- Requires use reduced emissions completions (RECs) or “green completions”
 - Reduce VOC emissions from well completions
 - Capture gas and liquid hydrocarbons in flowback during well completion
- Notification and reporting requirements for well completions
 - Notification 2 days prior to well completion activities
 - Annual well completion report summarizing completion activities

Baldwin Hills Community Standards District

- The Community Standards District (CSD) established permanent development standards, operating requirements, and procedures for the LA County portion of the PXP Inglewood Oil Field
- CSD includes 36 “Oil Field Development Standards” including:
 - Air quality and public health
 - Fire protection and emergency response
 - Safety and risk of upset
 - Geotechnical
 - Noise attenuation

PXP Settlement Agreement

- On October 2012, a Hydraulic Fracturing Study for the PXP Inglewood Oil Field was released as one of the 15 addition terms of the settlement agreement
- Study included an air quality analysis consisting of a review of regulations applicable to the Inglewood site
 - Methane emissions from hydraulic fracturing flowback water reduced by storage in vapor-controlled tanks
 - Ongoing HC and H₂S monitoring as required by CSD
- Air quality analysis in PXP study did not address
 - Fugitive emissions during mixing of drilling mud and flowback
 - Emissions from drilling mud and flowback that comes to surface

Other State Regulations for Chemical Reporting

- The following states have adopted regulations for reporting chemicals used during hydraulic fracturing
 - Arkansas, Colorado, Louisiana, Mississippi, Montana, New York, North Dakota, Oklahoma, Pennsylvania, Texas
- General reporting requirements
 - Report chemicals used during hydraulic fracturing
 - Posting chemicals on fracfocus.org may be used to demonstrate compliance
 - Report when the hydraulic fracturing occurs
- Proprietary chemicals and trade secret exemptions allowed unless:
 - Challenged by landowner or adjacent landowner whose property the relevant wellhead is located
 - Health professional or emergency responder who needs the information for diagnostic, treatment, or other emergency response

Other State Requirements

- Arkansas Oil and Gas Commission* **AND** New York Department of Energy Conservation**
 - Requirements for hydraulic fracturing fluid flowback handling, transport, storage, and disposal
- Michigan Department of Natural Resources and Environment (Surface Casing Rules)
 - Water quality sampling and chemical analysis of produced water to be reported within 60 days of well completion
- Oklahoma***
 - Requires **at least 24 hours notice prior** to starting hydraulic fracturing operations

* Proposed Rule B-19 Requirements for Well Completion Utilizing Fracture Stimulation

** Well Permit Issuance for Horizontal Drilling and High-Volume Hydraulic Fracturing

*** Administrative Code Title 165 Chapter 10- Oil and Gas Conservation

Other States' Requirements

- Louisiana Office of Conservation*
 - Limits use of exploration and production waste in hydraulic fracturing operations conducted on the Haynesville Shale formation
- Montana Board of Oil and Gas Conservation**
 - Requires written description of well stimulation activities (fracturing, acidizing, or other chemical treatment) **48 hours prior to commencement**
- Ohio***
 - Requires well completion record within 30 days of well completion

* Pit Closure Techniques and Onsite Disposal of Exploration and Production Rule

** Title 36, Chapter 22 - Administrative Rules of Montana

*** Administrative Code Chapter 1509 Division of Mineral Resources Management - Oil and Gas

Frac Focus Website

- Voluntary national hydraulic fracturing chemical registry
- Managed by the:
 - Ground Water Protection Council
 - Board consists of various State environmental agency representatives
 - Committees comprised of public agency, industry, and environmental representatives
 - Interstate Oil and Gas Compact Commission
 - Multi-state government agency comprised of the Governors of oil-producing states and appointed representatives

Frac Focus Website

- Public can search for information on wells by geographic location, by operator, or well name/ID
- Participating operators provide PDF lists of fracking chemicals for select well sites
- Industry “trade secret” information remains protected

PR 1148.2 Objectives

- Collect data and information on emission sources related to:
 - Drilling
 - Well Completion and well stimulation activities
- Notify the AQMD prior to:
 - Well drilling and completion activities or well stimulation activities
 - Identify if residential and sensitive receptors are within 1,500 feet from drilling site
- Implementation Mechanism
 - AQMD will develop web-based survey or other tool to simplify reporting and sharing of data

Proposed Notification Requirements

- Notification to AQMD prior to the start of oil or gas drilling
- Drilling operator information
- Anticipated start date of drilling, well workover, and well completion activities
- Additional Notification prior to actual well completion activities
- Activities to be conducted (drilling, well completion, well workover)
- Type of well completion activity
- Identification of sensitive receptors within 1,500 feet of drill site

Proposed Reporting for Drilling, Well Completion and Well Workovers

- Reporting requirements after pre-production activities are completed
- Provide overall description of activity including preparation of materials and techniques used to control potential emissions
- Equipment used during drilling and well completion activities
- Duration of each activity

Proposed Chemical Reporting Requirements

- Require reporting of all chemicals used in drilling, well completion, and well workover activities
- Goals for reporting
 - Report volumes, mass or concentration of chemicals
 - Identification of chemical CAS Number
 - Identification if chemical is a Hazardous Air Pollutant or a Toxic Air Contaminant
 - Use of an electronic reporting tool
 - Information available to the public in user friendly format
 - Searchable information
 - Address trade secret issues

Reporting Drilling Mud and Flowback

- Amount of drilling mud and flowback recovered prior to well production
- Description of the handling, transport, and storage method of the drilling mud, hydraulic fracturing fluid, and flowback
- Considering
 - Sample analysis of the drilling mud and flowback
 - True vapor pressure and HAPs analysis

Proposed Rulemaking Schedule

- January 2013
 - Public Workshop
- February 2013
 - Report rulemaking status to the Stationary Source Committee
 - Set Hearing for Proposed Rule 1148.2
- March 2013
 - Governing Board Hearing for Proposed Rule 1148.2