

Air Quality Considerations for Drilling Operations

Clean Air Act Requirements

- State Implementation plans (§110)
 - Measures to prevent violations of air quality standards
- PSD program (§161)
 - Emission limitations and other such measures ...to prevent significant deterioration of air quality.
- Title V permit program (§504)
 - Permits authorizing operations at multiple temporary locations must ensure compliance with air quality standards and PSD increments

Criteria Pollutants

- Oxides of Nitrogen (NO_x)
 - Causes airway inflammation in healthy people and increased asthma symptoms
- Sulfur Dioxide (SO_2)
 - Causes bronchoconstriction and increased asthma symptoms
- Particulate Matter (PM, PM_{10} , $\text{PM}_{2.5}$)
 - Affects heart and lung function

Emissions of concern

| Pollutant | Thresholds (Tons per year) | Typical Drilling Operation (Potential emission TPY) |
|------------------|-------------------------------|--|
| NO _x | 40 | 174 |
| SO ₂ | 40 | 297 |
| PM ₁₀ | 15 | 9.4 |

Thresholds are emission levels found to be of concern for ambient air quality compliance (Adopted as minor source permit thresholds)

Thresholds do not account for multiple operations affecting the same area

Thresholds have not been updated to address

- short-term standards for NO_x or SO₂
- standard for PM_{2.5}

SIP requirements

- Must be able to prevent construction or modification if it will interfere with attainment or maintenance of an ambient air quality standard [40 CFR 51.160]
- Alaska implements this requirement for drilling operations through permits required by AS 46.14.130(c) (minor permits)

Ambient Air

- Ambient air means that portion of the atmosphere external to buildings to which the general public has access. [40 CFR 50.1(e)]
- EPA policy requires fence or other barrier to exclude the general public.
- Alaska policy has been that ambient air begins at pad or platform edge unless some other measures taken to exclude public.

SIP - Minor Permit

Portable Oil and Gas Operation

- Required for construction or relocation, unless already authorized in a Title V operating Permit [18 AAC 50.502(c)(2)]
- To obtain permit, must conduct ambient air quality analysis to show emissions do not violate air quality standards [18 AAC 50.540(c)]
- Can use general permit if location and operations qualify [18 AAC 50.502(d)]

Minor General Permit

- Air quality effects estimated for isolated drilling operation.
- Includes limitations to protect ambient air quality.
- Does not allow for co-located operations.
- Has not been updated to ensure compliance with $PM_{2.5}$ or short-term NO_x and SO_2 standards.

PSD Requirements

- Air pollution may not increase by more than a specified increment after the baseline date. [40 CFR 52.21(c)]
- Plan may exclude temporary increases in emissions that do not exceed 2 years (not renewable).
[40 CFR 51.166(f)]
 - ADEC policy has been to exclude increment analysis for any temporary emissions, without adopting specific plan revisions. [no explicit legal authority]
- All pollution consumes increment, but compliance is only checked when major permit is sought.

Title V requirements

- Must include all requirements applicable to emission units at the stationary source.
[40 CFR 71.2 – definition of applicable requirement]
- Can issue more than one Title V permit for each source [AS 46.14.190(b)]

Title V Options

- Treat temporary Oil and Gas operations as alternative operating scenarios in each major source permit [40 CFR 71.6(a)(9)]

OR

- Issue a Title V permit to the Oil and Gas operation allowing it to operate on any major stationary source subject to the conditions of the permit [AS 46.14.215 and CAA 504(e)]

Changing SIP Requirements

- Prior rules remain federally enforceable until change is approved by EPA [40 CFR 51.105]
- Must demonstrate that revised control strategy will ensure compliance with air quality standards. [40 CFR 51.112]
- Demonstration must be made using air quality models. [40 CFR 51.112]

Summary

- Individual drilling operations emit hundreds of tons of pollution that affect air quality
- Any solution must
 - Ensure compliance with air quality standards for any operational scenario
 - Meet Clean Air Act requirements
 - Be approved by the EPA as a SIP revision