



Managing Environmental Risk in Oil & Gas Transactions

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Executive Summary

- Types of Transactions and Nature of Environmental Liability
- Due Diligence Issues for Upstream Transactions
 - Role of Site Assessments
 - Evaluation of on-site contamination
- Types of Environmental Liabilities
 - Red Flags
 - Effects of Identified Releases
- Documentation Considerations
- Environmental Insurance

Environmental Liability Cannot be Overlooked in E&P Transactions

Executive Summary

- Emerging Issues of Environmental Risk
 - Air Emissions Compliance – Background
 - Nature and Types of Liability
 - Permitting Issues
 - Other Applicable Air Compliance Programs
 - Practical Operational Considerations and Unexpected Costs
- General Duty Clause and EPA Enforcement Techniques
- Due Diligence to Address Air Compliance
- Drafting Tips to Address Air Compliance
- Maintaining Compliance

Air Permitting Compliance Should be a Current Material Focus

Managing Environmental Risk in Oil and Gas

- Oil and Gas Transactions Can Take Several Forms
- Typical Oil and Gas Transactions
 - Property Acquisitions and Sales
 - Company Acquisitions
 - Asset Retirement Transactions

Different Transactions, Different Risks

Managing Environmental Risk in Oil and Gas

- Potential Liabilities Associated with Oil and Gas Producing Properties
 - Potential liabilities of an oil and gas **lessee**
 - Liability for pre-existing environmental conditions
 - Liabilities after transfer
 - Plugging and abandonment liabilities
 - Potential liabilities of a **mineral owner**
 - Potential liabilities of a **fee or surface owner**

Producing Properties Pose Risks to Several Types of Parties

Due Diligence Issues for Upstream Oil & Gas Properties

- Most O&G Upstream Operations Are Not Materially Impacted by CERCLA
- CERCLA's Hazardous Substance definition, however, is much broader than RCRA's hazardous waste exclusion
- Other Exemptions
- Releases Commonplace
- Many Aspects of Due Diligence Related to Property Ownership are Often Inapplicable
- Uniqueness of Oil and Gas Operations
 - Unique permitting issues
 - Different industry practices and standards
 - Number and distribution of assets
- Separation of Asset and Surface Estate Ownership

Assets in the Field May Fall Outside of CERCLA's Reach

Due Diligence Issues for Upstream Oil & Gas Properties

- Stock Acquisitions
 - When undertaking due diligence in the context of an acquisition, it is important to remember that acquisitions of businesses through direct stock purchases involve the purchase and sale of securities and are thus subject to the antifraud provisions of Section 10(b) of the 1934 Act and rule 10b-5. See *Gould v. Rufenacht*, 471 U.S. 701 (1985); *Landreth Timber Co. v. Landreth*, 471 U.S. 681 (1985). *Escott v. BarChris Constr. Corp.*, 283 F. Supp. 643 (S.D.N.Y. 1968)

Stock Sales May Involve Additional Risks

Environmental Due Diligence

- Overall Objectives
- Materiality
- Timing
- Sufficient Time to Conduct Title Review and Environmental Due Diligence

Due Diligence Involves Transaction Specific Planning

Role of Environmental Site Assessments in the Diligence Process

- Phase I Environmental Site Assessments ASTM E1527-05
- Objective — Meet “all appropriate inquiry” obligations to qualify for CERCLA protections
- Process — Identify potential liabilities (“RECs”), known or suspected releases of petroleum or hazardous substances
- Cost?
- Reliability?
- Is a Phase I necessary or helpful in a transaction involving a producing oil and gas property?
- How often are Phase I’s actually performed for producing properties?
- What are areas of concern?
 - Pipelines
 - Tanks and other production facilities
 - Drilling pits, sumps and cellars
 - Air emissions
- Will not address issues of air permitting and regulatory compliance

Phase I May Not be the Best Diligence Tool in Upstream Transactions

Role of Environmental Site Assessments in the Diligence Process

- Phase II Environmental Site Assessments ASTM E1903 - 97
- Objective — Meet “all appropriate inquiry” obligations to qualify for CERCLA protections
- Process —
- Is a Phase II necessary or helpful in a transaction involving a producing oil and gas property?
- How often are Phase II’s actually performed for producing properties?
- Cost?

Phase 2 Assessments May Have Selective Benefit

Environmental Impacts

- *De Minimis* Conditions & Materiality
 - An oil spill that may require substantial investigation and reporting at an industrial facility may be a *de minimis* or minor issue in the oilfield
 - Response costs may differ by an order of magnitude
 - Risk based clean-up standards may limit required response
- Applicable Remediation Standards May Differ from Typical Commercial/Industrial Response Action

Standard of Materiality May Differ in Upstream Deals

Typical Oilfield Contaminants

- Crude Oil
- Condensate
- Disposed wastewater
- Drilling Muds and Fluids
- Treatment Chemicals

Contaminants Are Generally Well-Defined

Potential Environmental Liabilities

- Traditional Upstream Environmental Liabilities
- Landowners' claims
- Regulatory Penalties
- Large-Scale Cleanup Costs
- Loss of Opportunity
- Loss of Permits or Inability to Obtain New Permits

Traditional Environmental Risks Should Be
Identified and Defined

Looking for Red Flags

- Environmental Management Practices
 - Operator's environmental management, maintenance and housekeeping practices, relative to the industry standard?
 - Site reconnaissance
 - Correspondence, records, interviews with operational staff
 - Press searches, interviews
 - Spill reports and notifications
 - Management/review committee reports, memoranda, intracompany correspondence.
 - Litigation files, including administrative proceedings, consent orders and decrees, notice of citizens' suits
 - Consultants' reports and correspondence
 - Pollution control capital expenditure reports (including budgets, requests)
 - Financial estimates, reserves for environmental liabilities (including, but not limited to, financial assurance under RCRA for closure, post-closure, underground storage tanks)
 - Insurance policies, especially Environmental Impairment Liability ("EIL") and related analyses, memoranda

Due Diligence Remains Necessary to Evaluate Risk

Looking for Red Flags

- Environmental Expenditures
 - Financial assurances (surety and performance bonds, letters of credit, accounting reserves, *etc.*) provided or maintained with respect to any environmental obligations
- Insurance Matters
 - Currently existing and historical insurance coverage for environmental liabilities and contamination, including the per incident and aggregate limits of the policy as well as any relevant deductibles and exemptions
 - Claims made or paid by or to persons for environmental, health, or safety matters under any insurance policies

Insurance Coverage and Identification of Ongoing Expenditures Are Good Tools to Help Define Risk

Looking for Red Flags

- Regulatory Files
 - Notices of violation and Regulatory Orders
 - Land Use
- Land Use Entitlements
 - Conditional use permits and variances
 - Zoning
 - Noise Restrictions
 - Historic/Open Space Preservation
 - Required Approvals & Permits
- Litigation
 - High public profile, bad press

Public File Review Should Be a Component of Due Diligence

Looking for Red Flags

- Facility Location
 - Relations with landowners
 - Proximity to Residential Area/other Receptors
 - Proximity to Sensitive Locations
 - Water bodies, including seasonal water ponds
 - Sensitive habitat
 - Shallow Groundwater Used for Local Supply
 - Hydrogeologic data
 - Private and public waterwells to be considered

Location, Location, Location!

Waste Management

- RCRA hazardous waste exclusion has limits
- Whether any facilities are or have been registered under RCRA as generators, small quantity generators, and conditionally exempt small quantity generators
- Current and discontinued waste-handling operations and provide information regarding all waste (solid, liquid and gaseous) generated by or resulting from those current and discontinued operations
- Waste disposal sites or other locations where any wastes or other materials originating from the Company have been sent
- Presence, condition, handling and management of any asbestos-containing materials, polychlorinated biphenyls, and mercury

RCRA Liability Should Be a Component of Due Diligence

Discovery of a Release/Contamination

- What Happens When You Find Something?
- Consider Potential Risks and Responsibilities
 - Regulatory reporting
 - Response obligations
 - Contractual notice and obligations
 - Common law claim potential

Environmental Responsibility Can Arise in Various Contexts

Discovery of a Release

- Materiality
 - What is material to the client?
 - Dollar amounts
 - Need to be clear whether these are discrete or aggregate costs
 - Cost estimation
 - Remediation Costs
 - Removal Costs
 - Diminution in value of property
 - Cost Triggers

Precise Drafting Will Better Establish Contours of
Potential Liability

Discovery of a Release

- Reporting Obligations
 - Regulatory
 - Financial
 - Securities
 - Contractual

Reporting Obligations are Varied

Purchase and Sale Agreement

- Environmental Contingencies
 - Financing
 - Lender Environmental Contingencies
 - Material consents
 - Post-closing adjustments

Environmental Risk is at Issue Throughout a Transaction's Life

Purchase and Sale Agreement

- Environmental Representations and Warranties
 - Compliance
 - Disclosures
 - Pending and Threatened Litigation
 - Indemnities

Reps and Warranties Should Extend Beyond Clean-Up Responsibility

Purchase and Sale Agreement

- Indemnity Provisions
 - “Knock for Knock” Indemnity Provisions
 - Time
 - Fact/Deal Specific Issues

Indemnities Can Take Several Forms

Purchase and Sale Agreement

- Transfer of Environmental Permits
 - Permit Transfers
 - Typically specific time periods for transfer
 - “Assuming” an outdated permit carries risks
 - Review available applications to understand what was actually authorized
 - Post-closing responsibilities should be enunciated in the parties’ agreement

Contemplate the Need for Permit Transfers

Purchase and Sale Agreement

- Assignments and Other Conveyances
 - Buyers' and Sellers' Covenants
 - Assumption of Liabilities
 - Jointly Owned Properties
 - Buyers' and Sellers' Covenants
 - Negative Covenants
 - Covenants Running With the Land
 - Suspense Funds
 - Liability After Assignment

Asset/Deal Specific Provisions Will Require Negotiation

Post-Closing Audit

- If the Representations and Warranties Made by the Seller Survive the Closing
- This Gives the Acquiror a Potential Right to Sue for Breach of Contract if the Representations and Warranties Prove to be Less Than Expected

Survival and Duration are Often Heavily Negotiated and for Good Reason

Environmental Insurance

- Unusual in producing property transactions
- Environmental insurance, however, can be useful in the sale of a fee property where oil production operations have been or are being abandoned

Insurance Has Historically Not Played a Large Role in
Oil & Gas Transactions

Environmental Insurance

- Carriers Currently Issuing Policies
 - Chubb
 - XL Catlin
 - Beazley
 - Pioneer
 - Great American
 - Sirius
 - Ironshore
 - Zurich
 - Freberg
 - Allianz
 - Philadelphia
 - Allied World (AWAC)
 - Aspen

A Reasonable Number of Underwriters are in Environmental Markets

Environmental Insurance

- Coverage
 - What types of coverage and policies are currently available?
 - Pollution Legal Liability (fixed site)
 - Contractor's Legal Liability
 - Lender PLL ("PLL") – Coverage limited to either outstanding balance of the loan or cost of clean-up
 - Cost Cap coverage no longer readily available
- Representation and Warranty Insurance Policies
 - Not currently being used to address environmental risks in any material way
 - Amount of diligence required undercuts potential availability and utility

Some Insurance Products May Have Applicability to Oil and Gas Deals

Environmental Insurance

- Current Terms of the Policies
 - 5 years readily available
 - 10 years is more difficult if asking for historical and new conditions
 - If historical conditions only and transactional, 10 years historical only

Duration is Relatively Short

Environmental Insurance

- Typical Coverage Limits
 - Depends on the risk.
 - Portfolio policies for multiple policies warrant higher limits, such as \$25 - \$50 million
 - Can be very lender-driven
 - \$25 million is a standard limit that should not require excess markets
 - CPL limits can typically be much lower if for an individual contractor, as much of the liability is pushed down to the subs
 - Project CPLs are tied to the value of the project
 - Lower policy term – lower limits can suffice
 - Smaller portfolio – also appropriate for lower limits
 - Typically, do not see limits lower than \$5 million.
 - Most standard carriers have a capacity of \$25 million

Limits Are Well-Defined

Environmental Insurance

- Current Cost Per Million Dollars of Coverage
 - Relatively cheap
 - Depends on risk class and policy type (CPL v. PLL; New and pre-existing conditions v. new only)
 - The minimum premiums are not necessarily tied to limits
 - At least \$7,500-\$10,000/year for PLL
- Coverage
 - Most policies are on a claims made mold
 - However, many carriers are differentiating themselves by offering occurrence mold
 - Oil & gas business is typically claims-made for any fixed site drilling production

Premiums Allow for Some Utility

Environmental Insurance

- Endorsements
 - Manuscript endorsements
 - Some carriers even offer manuscript policies
 - Limit the notice requirements and narrow to a specific individual.
 - Broad Named Insured and Automatic Additional Insured
 - Automatic Acquisition Endorsement that doesn't require underwriter approval to add
 - Provided that the acquired property fulfills a set of agreed upon requirements
 - Aggregate retention/deductible
 - Many manuscripted endorsements relate to contaminant-specific exclusions and work to carve back coverage and/or include re-opener coverage and ability to automatically add back coverage subject to satisfactory ESA
 - Manuscripting is a function of experience, time, and relationships

Manuscripting Policies and Endorsements Can Be the Key to an Effective Policy

Environmental Insurnace

- Disclosed Documents Schedule
 - Important that every policy include a disclosed documents schedule and a schedule of insured contracts
- Material Change in Use Endorsement
 - Important that the Material Change in Use endorsement includes a specified use that is as broad as possible
- Are there certain types of properties that carriers will not touch?
 - Redevelopment of contaminated sites, such as former dry cleaners or waste sites, typically get extremely limited coverage and require much more lead time and underwriting information
 - Most types of properties are insurable at the appropriate cost, although coverage will be adjusted accordingly

Key Points in the Negotiation Process

Environmental Insurance

- Information (other than Phase I's and Phase II's) that underwriters require
 - Review of any contracts (PSA, lease agreements, *etc.*)
 - Any additional sampling results that might be available in addition to Phase I & II (air quality reporting, additional water sampling, *etc.*)
 - Detailed development plans if a redevelopment project
 - Details on any potential redevelopment, property improvements/renovations that will be taking place
 - Both prior to and during the policy period
 - Waste Management Plan and Water Management Plan - any documentation evidencing good housekeeping that would reduce the likelihood of a claim

Underwriters Require a Reasonable Diligence Effort

Environmental Insurance

- How long does it take to place coverage?
 - Depends on coverage
 - PLL - 2 weeks, but can sometimes work with a shorter lead time if it is a straight-forward risk
 - Need to account for about 1 week or more for on-going negotiation with the underwriter, as the first quote often doesn't reflect their "best and final"
 - Broker needs to provide on-going guidance and will narrow to a few competitive markets
 - Underwriters also need time to request approval from the Home Office, which can take up to a week
 - A detailed manuscripted policy, however, can take months

Time to Secure a Policy Depends on Several Factors

Environmental Insurance

- Broker
 - Important to have a broker experienced in placing environmental insurance
 - Broker needs to effectively coordinate with client and counsel to secure an effective policy

Getting the Right Policy is a Team Effort

Emerging Issues of Environmental Risk in Oil & Gas Transactions

- Historically, risk profiling has focused on “the dirt”
- Clean-up liability, however, has become increasingly more susceptible to definition
- Risk mitigation mechanisms, like insurance, allow for clean-up risk to be better managed
- Technology and agency focus have brought new and different scrutiny to the oil patch
- Air regulation is the new frontier and the stakes are high

Air Compliance is a National Concern

Emerging Issues of Environmental Risk in Oil & Gas Transactions

- Summary of Emerging Risk – Air Emissions Compliance
 - Ongoing nationwide emphasis on air regulation
 - Industry is focus of EPA and state regulatory agencies
 - Regulatory focus
 - Air Permitting deficiencies
 - Emissions quantification and control
 - Leak detection and repair
 - Equipment programs
 - Pervasive state regulation
 - Often more strict than federal rules
 - Low thresholds for permitting and controls
 - Technology is “fueling enforcement”

Heightened Focus on Regulatory Applicability

Emerging Issues of Environmental Risk in Oil & Gas Transactions

- Due Diligence
- Much different than traditional focus on cleanup liability
 - Work is specialized and can be time consuming
 - Emphasis starts with:
 - Authorizations
 - Emissions calculations
 - Equipment lists
- Documentation
 - Standard language may not be protective
 - Concept of “environmental defect” does not address air compliance
 - Risk of broad assumption language
 - Specifically address compliance requirements
- Risk Mitigation Strategies
 - Focused diligence to quantify risk
 - Audit and disclosure programs
 - Agency relationships
- Establishing and Maintaining Compliance
 - Internal SOPs
 - Intra-company coordination
 - Necessary EHS staffing

Air Compliance Should Receive Heightened Attention in Transactions

Environmental Regulation of Upstream Oil & Gas Operations

- Significant Multi-faceted Corporate Risk
 - Permitting and Compliance
 - Equipment/tank emissions
 - Performance standards
 - Monitoring, leak detection
 - Inspection, reporting, recordkeeping
 - Costs of Compliance
 - Capital improvements
 - Tank repair and replacement
 - Potential fines and penalties
 - Potential injunction/shutdown of operations
 - Data accumulation
 - Integration of functions
 - Brand tarnishment
 - Administrative and Operational Burdens
 - Training
 - Establishment of new or additional SOPs
 - Facility specific substantive inspections, recordkeeping, and reporting

Compliance Costs Extend Beyond Permitting

Immediate Compliance Issues: Air Emissions Regulation

- Constantly Increasing Federal and State Focus
 - Major and minor source permitting: 1972, expanded in 1996
 - Performance standards for storage vessels: 1973, 1984
 - Regulation of certain compressors: 2011
 - Regulation of internal combustion engines: 2005, 2006
 - GHG reporting obligations: 2009
 - Reg. OOOO: Emissions standards and limitations for tanks/equipment in the oil & gas sector: 2012
 - Reg. OOOOa: Regulation of methane and additional equipment sources of VOCs in the oil & gas sector: 2016
- Failure to be permitted or meet regulatory obligations can carry significant *per diem* penalties/regulatory actions
 - Federal statutory maximums can range from up to \$97,229 per day
 - States penalties are usually much lower than federal limits, but states still have wide latitude to assess large penalties
 - Shutdown/injunction are typically available enforcement options

As Regulation of Air Emissions Increases, So Does the Potential for Penalties

Compliance Liability

- Nature of Compliance Liability
 - “Strict liability”
 - No finding of fault, intent, or negligence required
 - Potential civil and criminal liability
- Enforcement
 - Statutory enforcement authorization
 - Agency
 - Private citizens
 - Triggers for enforcement
 - Permitting or re-permitting an existing site
 - Inspections
 - Complaints
 - Accident/emissions event
 - Technological oversight
 - File review/data analytics
 - Means of enforcement
 - Orders
 - Agreed orders
 - Trend toward “state-wide” enforcement

Liability is Strict and Various Enforcement Mechanisms Exist

Examples of Enforcement

- Noble Energy – Exploration and Production Company
 - Unauthorized emissions identified by FLIR camera at one facility
 - Agency requires basin-wide approach in Colorado to address emissions
 - Fine: \$4.95 million
 - Capital costs: \$60 million
 - SEPs/mitigation projects: \$8.5 million
- American Electric Power
 - CAA violations
 - NSR permitting violations alleged by EPA
 - Fine: \$15 million
 - Projects: \$60 million

Compliance Costs Can Include Significant Capital Expenditures

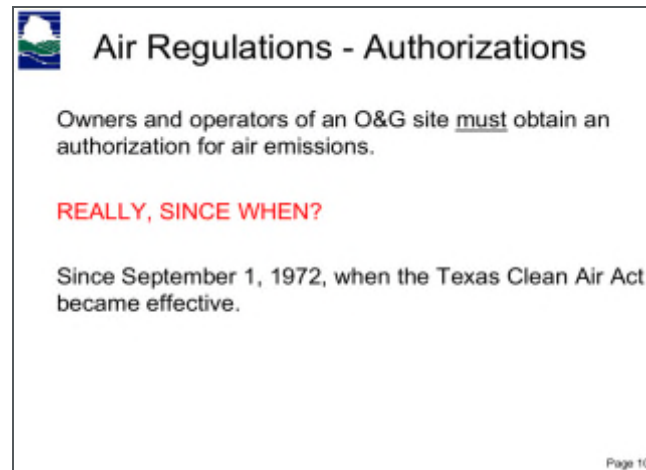
Application/Enforcement of Environmental Air Regulations in the E&P Industry

- Regulatory Overview
 - Clean Air Act
 - Major Source (Title V Operating Permit Requirements)
 - Minor Source
 - Permit by Rule/exemptions
 - New Source Performance Standards (“NSPS”)
 - Reg. OOOO
 - Reg. OOOOa
 - Other – Equipment Specific Programs
 - » Engines (Reg. JJJJ, Reg. ZZZZ)
 - » Compressors (Reg. OOOO and OOOOa)
 - » Others
 - New EPA/State Initiatives
 - Green completions
 - Site-wide emissions inventories
 - Aggregation methodology
 - EPA audit policy

Air Compliance Involves Virtually Every Operating Site

Environmental Regulation of the Upstream Industry

- Necessity of Permitting
 - 2011 TCEQ presentation made this point to industry:



- Rule of thumb: All E&P facilities must either have a permit or evidence it is not required
 - New equipment is heavily regulated
 - EPA's focus is now shifting to existing in service equipment

The Upstream Industry is Heavily Regulated and Permits are Required

Environmental Regulation of the Upstream Industry

- Sources of Air Emissions
 - Storage tanks
 - Loading/offloading equipment
 - Oil tanks
 - Water tanks
 - Heater/treater units
 - Knockouts/separators
 - Engines and compressors
 - Pneumatic controllers
 - Pit flares/other control devices
 - Other

Most Equipment at E&P Sites is an Emissions Source of VOCs

Immediate Compliance Issues: Air Emissions Regulation

- Nature of Air Permit Affects Compliance Obligations and Risk Profile
 - Air permits are needed to (i) construct and (ii) operate
 - Most states distinguish facilities based on TPY of potential emissions and the nature of the pollutant
 - Major source
 - Minor source
 - Permit by Rule/exempt
 - Major source status carries the most significant compliance costs, including significant potential penalties, recordkeeping, reporting, and potential federal oversight
 - Controls to limit emissions to minor source levels also can be used to satisfy other compliance obligations
 - VOCs and H₂S are often pollutants at issue where permitting E&P facilities

Minor Source Status Mitigates Compliance Risks and is Ultimately Cost Effective

Maintaining Compliance

- Compliance with Permit Obligations
 - Permits are based on applications that are the Company's representation of its operations
 - Deviation from the "representation" = violation
 - New equipment or process changes need to be permitted in advance – breach of the representation
- Permits Must be Obtained in Advance of Bringing a Facility On-Line/Making Changes to a Facility
 - Integration of the various corporate functions with the environmental function is essential
 - The operations and financial functions need to consider timing and cost of environmental requirements in the planning process

Facility Modifications and New Facilities Need to be Permitted in Advance

Application/Enforcement of Environmental Air Regulations in the E&P Industry

- Title V Operating Permits
 - Federal program, typically state implemented
 - Major Source Operating Permits
 - Required if facility has PTE of greater than:
 - 100 tons per year (“TPY”) of any regulated pollutant (criteria and non-criteria) – VOCs are the primary issue for oil and gas facilities
 - 10 TPY of any hazardous air pollutant, or
 - 25 TPY of any combination of hazardous air pollutants
 - Key issues
 - Covers all emissions sources at the site
 - Significant monitoring, recordkeeping and reporting requirements
 - Public participation
 - Renewed every 5 years
 - Federal enforceability and oversight
 - Self-reporting and compliance certification
 - Potential for significant fines and penalties for non-compliance

Major Sources, Major Obligations, Major Fines

Application/Enforcement of Environmental Air Regulations in the E&P Industry

- Minor Source Operating Permits
 - Can be either true minor or a “synthetic” minor permit
 - “Synthetic” minor permit = controls installed at facility to bring PTE levels of pollutant below major threshold and agree to enforceable limits on pollution
 - Significant reduction in monitoring, recordkeeping, and reporting requirements
 - Significant reduction in potential for fines and penalties
- Source Aggregation
 - Federal: Sites under common ownership or control within .25 miles and have integrated operations or equipment will be aggregated
 - State: Can be more strict
 - Result: More diligence, more permitting

Cost of Controls Often Outweighed by Benefits of Minor Source Permitting

Maintaining Compliance

- Regulatory Compliance
 - Securing permits is only one component of compliance
 - Permits put facilities in the Agency's database-triggering obligations and potential inspections
 - Each permit/PBR will contain additional reporting, recordkeeping, inspection, and monitoring requirements
 - Each permit will have renewal deadlines that must be satisfied
- Rules Also Contain Independent Requirements Affecting Equipment and Operations with Disparate Time Tables for Compliance

Extensive Requirements are Contained in Permits and in Separate Rules

Application/Enforcement of Environmental Air Regulations in the E&P Industry

- Typical Equipment Programs Applicable to E&P Operations
- NSPS OOOO (“Quad O”)
 - The Clean Air Act requires the EPA to adopt technology-based new source performance standards (“NSPS”) limiting emissions from new or modified facilities in certain industries
 - Prior to 2012, NSPS set by the EPA for the oil and gas industry generally covered natural gas processing plants
 - On August 23, 2011, the EPA proposed new NSPS OOOO covering storage vessels
 - NSPS OOOO established the following items for storage vessels
 - Emission limits and operating standards
 - Control requirements
 - Monitoring and testing
 - Recordkeeping, reporting and notification
 - On August 16, 2012, the EPA published the final NSPS OOOO, with an Effective Date of October 15, 2012, but application of new rules tied back to the proposal date of August 23, 2011

Reg. OOOO Governs New tanks and Other Equipment

Application/Enforcement of Environmental Air Regulations in the E&P Industry

- NSPS OOOO (cont'd)
 - NSPS OOOO applies to all storage vessels constructed, reconstructed or modified after August 23, 2011 with VOC emissions ≥ 6 TPY
 - NSPS OOOO – Modification and Reconstruction
 - Any “modification” to or “reconstruction” of an existing storage vessel will cause NSPS OOOO to apply to that storage vessel
 - “Modification” defined as “any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollution ... emitted into the atmosphere by that facility or which results in the emission of any air pollutant ... into the atmosphere not previously emitted”
 - Any “reconstruction” of a storage vessel will cause NSPS OOOO to apply to that storage vessel irrespective of any change in emission rate by that storage vessel
 - “Reconstruction” is defined to mean any replacement of components of an existing facility such that the fixed capital cost of new components exceeds 50% of the fixed capital cost required to construct a comparable new facility

New, Modified, or Reconstructed Tanks ≥ 6 TPY VOC Must be Controlled

Application/Enforcement of Environmental Air Regulations in the E&P Industry

- NSPS OOOO
 - Storage vessel requirements
 - VOC PTE \geq 6 tpy must be controlled 95% or greater within 60 days of startup
 - VOC PTE $<$ 6 tpy must either have enforceable limits (i.e., permit) or documentation to demonstrate PTE is $<$ 6 TPY
 - Tanks subject to control can remove control if annual PTE drops below 4 tpy
 - All subject tanks have notification and annual reporting requirements
 - EPA has a certification program for control devices (combustor/flare)
 - If EPA certified combustor/flare not used – additional/expensive testing needed
 - Only a limited number of combustors are certified – supply may not always meet demand
 - NSPS OOOO is independent of permitting requirements

Controls Required on Many Tanks

Application/Enforcement of Environmental Air Regulations in the E&P Industry

- NSPS Reg. 0000a (“Quad Oa”)
 - EPA regulates methane directly for the first time
 - Expands Subpart 0000 emission rule for VOCs to cover methane and additional facilities
 - Requires
 - Monitoring and repair (“LDAR”) of methane leaks from certain equipment
 - Capture of methane gas during the well completion process for hydraulically fractured wells
 - Reduction in emissions from covered sources by 95%
 - Applies to both upstream and midstream operations
 - Timing
 - Final rule published in May 2016
 - Rule applies to sources built or modified after September 18, 2015

Reg. 0000a Goes Beyond Reg. 0000

Practical Impacts of Quad O/Quad Oa – Control Requirements

- Control of Tank Emissions
 - Trigger – Tank VOC emissions ≥ 6 TPY
 - Measured in first 30 days of production
 - This is where throughput will likely be highest and emissions will be most high
 - Control Availability of Certified Combustors may be an issue
 - Combustor Installation Costs – typically \$25k - \$40k/site
 - Installation can trigger other unforeseen much higher costs
 - Potential Unforeseen Consequences
 - Tank repair/replacement
 - Corrosion/holes – gives rise to venting
 - Old bolted tanks – may not hold pressure
 - Fiberglass tanks – may not withstand back pressure
 - New piping; site configuration
 - Business disruption

Budgeting Must Contemplate Costs Beyond Controls

Practical Impacts of Quad O/Quad Oa – Control Requirements

- Control of Tank Emissions
 - Limiting Costs
 - Structure tankage to manage flashing
 - Installation/modification may require series, not parallel
 - Addressing back pressure issue
 - Vapor Tower
 - VRU
 - Sampling Methodology
 - Site specific sampling may be required
 - State default values will be very conservative
 - Contemplate Potential Increases in Production and New Equipment
 - Can affect selection of tank composition
 - Can affect site layout and design

Some CapEx Can be Contemplated

Practical Impacts of Quad O/Quad Oa – LDAR

- Reg. OOOOa LDAR Requirements
 - Trigger – new well or when a well is fracked or refracked
 - Fracking – definition is very broad-based on flowback to the surface
 - New well sites and fracked/refracked wells – triggers LDAR at tank batteries servicing the wells at issue
 - Leak detection – determined by FLIR/PID
 - Repair and subsequent inspection must occur within 30 days
 - Result
 - Potential material costs associated with repair/replacement of tanks
 - Potential business disruption

LDAR Can Trigger CapEx

Application/Enforcement of Environmental Air Regulations in the E&P Industry

| Requirement | NSPS 0000 | NSPS 0000a |
|--|-------------------|-------------------|
| Regulates VOCs | Yes | Yes |
| Regulates Methane | No | Yes |
| Hydraulically fractured oil well completions | No | Yes |
| Fugitive emissions at well sites and compressor stations | No | Yes |
| Equipment leaks at natural gas plants | Yes | Yes |
| Pneumatic Pumps | No | Yes |
| Control requirements | BSER ¹ | BSER ¹ |

1. "Best system for emissions reduction" – EPA standard

Quad O and Quad Oa Heavily Regulate the Industry

Application/Enforcement of Environmental Air Regulations in the E&P Industry

- Focus of EPA and State Regulatory Agencies
 - After Reg. OOOO/OOOOa, states have ramped up regulation
 - Wyoming – 2016
 - Heightened site-wide regulation
 - 6 TPY site-wide (flash) emissions require controls
 - “Statewide” approach to enforcement
 - California – 2017
 - Heightened oil and gas methane regulation
 - Flash testing to determine annual methane emissions
 - 10 TPY site-wide vapor collection requirements
 - July 2017 – Vapor collection systems on separators and tank systems
 - January 2018 – LDAR program began
 - Controls on various equipment including compressors
 - Utah – 2018
 - New PBR for E&P sites
 - Control requirement – 4 TPY site-wide VOC emissions
 - Compliance certification
 - Colorado – 2018
 - Tightened – Reg. 7 in November 2017
 - All wells inspected
 - Expanded LDAR
 - Other states have followed suit

States are Enacting Stringent VOC Regulations

H₂S/Sour Gas Compliance

- Extends beyond OSHA
- Typically regulated at the state level, but many state rules contain common elements
- H₂S/Sour Gas singled out for regulation
 - Common threshold for regulation = 100 ppm
 - >500 ppm can kill within minutes
 - Colorless, very corrosive
- Potential Liability Considerations
 - Regulatory fines and penalties
 - Injunctive relief – shut down of operations
 - Civil liability
 - Criminal liability

H₂S Risks Extend Beyond OSHA and Beyond Fines and Penalties

H₂S/Sour Gas Compliance

- Typical Facility Requirements Include:
 - Determination of area/radii of exposure
 - Controlled by flaring/VRU/H₂S stripping
 - Line marking
 - Contingency plans
 - Warning signs, fencing, wind indicators
 - H₂S detection and alarm requirements
 - Ambient air concentration limits
 - Employee training
 - Accident reporting
 - Certification of compliance

H₂S Requirements are Broad

Clean Air Act General Duty Clause

- General Duty Clause – Additional Basis for Air Enforcement
 - Section 112(r)(1) of the Clean Air Act is known as its “General Duty Clause”
 - Requires owners/operators of stationary sources storing/processing certain substances to:
 - Identify hazards that could result from releases
 - Design and maintain a safe facility
 - Take steps to prevent releases and minimize consequences

General Duty Clause Contains Broad Undefined Obligations

Clean Air Act General Duty Clause

“The owners and operators of stationary sources producing, processing, handling or storing such substances [i.e., *a chemical in 40 CFR part 68 or any other extremely hazardous substance*] have a general duty [*in the same manner and to the same extent as the general duty clause in the OSH Act*] to identify hazards which may result from such releases using appropriate hazard assessments techniques, to design and maintain a safe facility taking such steps as are necessary to prevent releases, and to minimize the consequences of accidental releases which do occur.”

CAA Language is Akin to OSHA General Duty Clause

General Duty Clause Compliance

- There are no regulations implementing the General Duty Clause
- Violation of a specific regulation is not a prerequisite
- Release events or explosions are often triggering events
- No threshold or RQ associated with a release is required
- Stationary source \neq permitted source
- There are no clear guide posts to determine when a General Duty Clause violation occurs

Broad Enforcement Activity Because No Regulations On Point

Common Violations of General Duty Clause

- EPA identifies common failures that give rise to General Duty Clause violations
- Failure to identify hazards:
 - Failure to identify hazards that may result in accidental release/explosion
 - Failure to adequately consider safety considerations given the facility's location (e.g., close proximity to a residential area, sensitive ecosystem, or industrial area with industries using hazardous substances)
- Failure to design and maintain a safe facility/taking such steps as are necessary to prevent releases:
 - Failure to design and maintain a safe facility
 - Failure to provide for sufficient layers of protection
 - Failure to update design codes
 - Failure to implement a quality control program to ensure that components/materials meet design specs
 - Failure of operators/employees to follow operating instructions
- Failure to minimize consequences of accidental releases:
 - Failure to develop adequate emergency plan or follow such plan
 - Failure to mitigate consequences of a release or explosion
 - Failure to train employees as to hazards which they may encounter

Alleged Violations Show Patterns of Enforcement

Enforcement in Oil and Gas Industry via General Duty Clause

- EPA is breathing new life into the general duty clause with active enforcement – currently, penalties have been small
- Pryme Energy E&P Site (\$30k penalty)
 - Fire sparked at tank with natural gas, condensate, and produced water deemed extremely hazardous substances by EPA
 - Caused by static electricity igniting flammable vapors from tank
 - EPA alleged failure to design/maintain safe facility, minimize consequences of accidental release by using accepted practices (failed to ground valve on tank) (EPA referred to API standard in the CAFO)
- Wagner Oil E&P Site (\$30k penalty)
 - Release of vapor, crude oil, lube oil, and produced water from production facility tank; fire
 - Caused by lightning striking the tank
 - EPA alleged failure to design/maintain safe facility, minimize consequences of accidental release by using accepted practices (need either protection against lightning or steel tank instead of fiberglass tank) (cited NFPA, API standards and EPA alert)

E&P Industry has Been a Target

Enforcement in Oil and Gas Industry via General Duty Clause

- Western Refining Southwest Refinery (\$187k)
 - Release of potassium hydroxide during cleaning, caused by hose detaching
 - Benzene stripper overflows onto concrete pad and ground
 - High levels of liquids in knockout drums lead to liquids at flare tip and fire
 - Naphthalene release where seal blew out; fire
 - EPA cited no standard; alleged failure to design/maintain safe facility, and minimize consequences of accidental releases by using accepted practices

Downstream Facilities also Cited for Violations

Appropriate Due Diligence to Address Air Emissions Compliance

- Appropriate Expertise Necessary
 - Not the typical Phase I consultant
 - Air regulatory expertise is a must
 - Industry expertise will be an asset
- Documentation to Review
 - Permits and permit applications
 - Emissions calculations
 - Emissions inventories
 - Equipment count by site
 - Facility list and installed controls
 - Tank Inventory (oil and water)
 - Throughput
 - Installed in series or parallel
 - Composition (metal/bolted/fiberglass)
 - Age/installation date
 - Repair/reconstruction and dates
 - SPCC plans
 - Dates of Well Fracking/Refracking
 - Copy of LDAR plans
 - Copy of Quad O/Oa Inspections and Annual Reporting
 - Date of facility acquisition/transfer
 - Other

Diligence for Air Compliance is Targeted

Transactional Considerations – Air Compliance

- Standard “Market” Provisions
 - Environmental Defect Concept
 - Typically focuses on “dirty dirt”
 - Typically not address permitting or regulatory compliance
 - Typically not address capital improvements required for regulatory compliance
 - Not address H₂S compliance
 - Not address “general duty” compliance
 - Conclusion: Little utility for industry’s most pressing environmental issue
 - Waiver of Undiscovered Matters
 - Site specific issues reveal how limiting these provisions are on buyers
 - Based on cost consideration, site audits of a few selected facilities can really only provide a general understanding of compliance
 - Drafting should focus on the overall issue, not site specific issues
 - Similar classes of deficiencies should be grouped for deductible purposes

Market Provisions Do Not Reflect Market Risk

Transactional Considerations – Air Compliance

- Standard “Market” Provisions
 - Representation and Warranties
 - Typically very limited
 - Typically not focused on compliance
 - Broad assumption of liability/limited indemnity
 - Will impute all post-closing regulatory compliance obligations on Buyer
 - “As-Is” structure no longer consistent with regulatory environment
 - Consider specific indemnities for known compliance issues
 - Ultimately deal structure will move to a more traditional commercial/industrial PSA format

Recognize there may well be Significant Environmental Liability that is Assumed

Transactional Considerations – Air Compliance

- Standard “Market” Provisions
 - Special Considerations for SWD Well Acquisitions
 - Understand the liability that will be assumed
 - Permitting regime – typically less stringent than other disposal facilities
 - Diligence should include comprehensive review of available records and site operations
 - Aquifer condition typically uncertain as is profile of injected waste
 - Risks include an entire “Table of Liability”
 - Cleanup
 - Common law
 - BI/PD
 - Little risk mitigation available

SWD Wells Present Significant Uncertainty and Risk

Risk Mitigation Strategies

- State audit, disclosure and immunity programs
 - Implemented in various states
 - Texas
 - Oklahoma
 - Wyoming
 - Utah
 - Other
 - Common Elements
 - Defined audit period
 - Mandatory voluntary disclosure
 - Agency notice
 - Corrective action within finite time period
 - EPA 2018 “New Audit Owner Clean Air Act Audit Program”
 - Proposed May 2018
 - Industry Specific Audit and Immunity Program
 - 60-day compliance period
 - Allows for enforcement of violations that “could have been discovered and were not”
 - Allows for penalties for violations not timely corrected
 - Significant stand-alone industry approach

State Audit Programs Offer Benefits

Risk Mitigation Strategies

- State audit, disclosure and immunity programs
 - Liability Protections
 - Verify availability by state and follow rules precisely
 - Sometimes fully discretionary
 - Typically, no immunity for criminal matters of if violation was intentional, reckless or resulted in significant economic benefit
 - Practical Considerations
 - Audit and analysis of significant number of facilities
 - Collection of Necessary Sampling Data
 - Development of Equipment Inventory
 - Logistics

State Audit Programs Provide Good Benefit but be Mindful of Practical Considerations

Maintaining Compliance

- Importance of a Comprehensive EHS Program
 - Establishes touchstones for compliance under each of the major environmental programs
 - Air
 - Stormwater/wastewater
 - Pit closures
 - Cleanup liability
 - Ecological resources, *e.g.*, migratory birds
 - Employee protection
 - Establishes an organized framework to track compliance across a state or the country
 - Can be a consideration in penalty assessment, and by the DOJ in its sentencing guidelines

An EHS Compliance Program is an Important Compliance Tool

Maintaining Compliance

- Importance of a Comprehensive EHS Program
 - Documents the company's commitment, policies, and procedures
 - Key elements of a successful EHS Program:
 - Recognized C-level commitment
 - Written policies and procedures
 - Training, training, training
 - Maintenance of facility "logs" detailing:
 - Commencement of construction and operation
 - Equipment
 - Dates of installation, repair, replacement, and operational change
 - Compliance dates and deadlines
 - By date
 - By state

EHS Programs Should Have Certain Critical Elements

Maintaining Compliance

- Importance of a Comprehensive EHS Program
 - Maintenance of all required records in an organized manner
 - Integration of the operations function and field level supervisors with the environmental function
 - Procedures that account for facility modifications
 - Procedures that allow time for a new facility to come on-line in compliance with rules
 - Procedures that provide for an audit function, corrective measures, and accountability

EHS Program Should Integrate Corporate Functions

Beginning the Process

- Initiate the Training Process
 - Begin dialogue with corporate and field level personnel
 - Identify the general requirements of major regulatory programs
 - Describe how these programs affect “doing business”
 - Discuss how systems can be set up so that the process is not overly burdensome
 - Explain the implications of non-compliance
 - Conduct meetings with a plain English, common sense business approach

Both Content and Tone are Important for Buy-In

Beginning the Process

- Beyond Training: Procedures and Policy Establishment
 - Involvement of Corporate Personnel
 - Corporate function needs to have sufficient depth not only to maintain appropriate records, but also deal with issues in the field as questions arise
 - Address compliance on an ongoing basis
 - Implement new programs as they arise
 - Field level personnel must also bear responsibility for ongoing facility compliance, inspecting, reporting and addressing potential issues as they arise
 - Integration of corporate and field-level personnel will help create a “knowledge base” to better maintain compliance

Compliance function will benefit from overall integration