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EPA Reaches for the Air Emissions of Hydraulically Fractured Wells and Beyond

October 18, 2011

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As seen in the October issue of *The American Oil & Gas Reporter*.

To date, much of the regulatory focus for oil and gas activities – the subject of increased media attention because of the shale resources in Pennsylvania, West Virginia and Ohio – has been on water concerns. That focus has broadened significantly to include air issues.

In particular, the U.S. Environmental Protection Agency recently issued a proposed rule that would subject several parts of the oil and natural gas production, transmission and storage processes to air emission limitations. If you are engaged in any aspect of the oil and gas industry, you should take notice – EPA's proposal extends to sources of emissions not previously regulated, including fractured and refractured wells. Highlights of the proposal are touched on below. Further, note that the duty to comply with the new source performance standards stems from the date the proposal was published – August 23, 2011 – rather than the date EPA's final rule ultimately is published (likely in March 2012).

Proposed New Source Performance Standards

Under section 111 of the Clean Air Act (CAA), EPA must set performance standards for new, modified or reconstructed sources in categories of stationary sources that EPA has determined cause or contribute significantly to air pollution. EPA bases these new source performance standards – or "NSPS" – on the best system of emission reduction that has been demonstrated by the particular industry, and it may consider certain costs, energy requirements and other factors in setting the standards. Every eight years, EPA must review the NSPS and modify them, if appropriate. Sources of all sizes must comply.

For the oil and gas industry, EPA first set NSPS in 1985, but the standards only covered emissions from natural gas processing plants. EPA proposes to add requirements to several points along the journey from wellhead to citygate: well completions and recompletions; compressors; pneumatic controllers; and storage vessels.

"Well completion" means the process of preparing gas wells for production. By including well completions in its regulatory reach, EPA subjects hydraulically fractured (or "fracked") wells to volatile organic compound (VOC) limitations for the first time. Specifically, all newly fracked wells or existing wells that are refracked would, in most instances, need to be "green" completed – a process also known as "reduced emissions completion" – where the

flowback water, sand, hydrocarbon condensate and natural gas are separated to reduce the natural gas and VOC vented to the atmosphere, and the VOC condensate and salable natural gas are recovered. Pit-flaring would be required for gas not suitable for entering the gathering line as well as for exploratory or delineation wells. EPA would require owners or operators of wellhead-affected facilities to submit a 30-day advance notice of each well completion subject to the NSPS and seeks comment for whether an additional two-day notice is appropriate. EPA predicts that, annually, 20,000 well completions and workovers will be subject to these new requirements, and that, as a result of the controls, VOC emissions will be reduced by 95%, while 90% of salable natural gas will be recovered.

For centrifugal natural gas compressors, EPA proposes the use of dry seal systems. But because some operators use centrifugal compressors with wet seals, EPA seeks input on whether, as an alternative to dry seals, the use of wet seals combined with routing of emissions from the seal liquid through a closed vent system should be permitted. For reciprocating compressors, EPA proposes that the rod packing be changed for every 26,000 hours of operation.

Pneumatic controllers are used in the industry to regulate pressure, flow and temperature. For gas-driven pneumatic devices at gas processing plants, EPA generally proposes a zero emission limit for each such unit. Even replacements of such units would be subject to such requirements. For pneumatic controllers at other locations (such as compressor stations), EPA proposes a bleed limit of 6 standard cubic feet of gas per hour (scf/hr), which – according to EPA – reflects the emission level that is achievable when low bleed gas-driven controllers are used. For pneumatic controllers not installed at a natural gas processing plant, EPA requires a manufacturer's guarantee that the device is designed so that natural gas emissions are less than 6 scf/hr.

EPA proposes that emissions at storage tanks be controlled by installing vapor recovery units (VRUs) or by routing the emissions from the tanks to a flare control device. These controls would apply to tanks with a throughput of one barrel of condensate per day or 20 barrels of crude oil per day. EPA estimates that VOC emissions from storage vessels would be reduced by 95 percent through the VRU installations and routing.

With respect to the NSPS that already exist for natural gas processing plants, EPA proposes to tighten the requirements to reflect already-existing procedures and leak thresholds for controlling VOC equipment leaks at processing plants (at 40 CFR 60, subpart VVa). EPA also proposes to strengthen the SO2 control requirements – up to 99.9-percent control – for facilities with the highest sulfur feed rates and those with the highest hydrogen sulfide concentrations.

EPA proposes that the new and revised requirements apply during periods of startup, shutdown and malfunction (SSM). Recognizing, however, that even properly designed and maintained equipment can fail, EPA proposes to add an affirmative defense to civil penalties for exceedances of emission limits that are caused by malfunctions.

Sources subject to the NSPS will be required to certify their compliance annually (along with filing an annual report), and they must also comply with other notice (such as the 30-day notice for well completions mentioned above) and recordkeeping requirements (such as semiannual reports for processing plants). EPA expresses concern about the number of well completions expected each year – estimated at 20,000 – and how widely geographically dispersed they are. As such, EPA seeks comment on whether third-party service providers can verify sources' NSPS compliance, with the costs for those third-party verifiers to be borne by industry.

Importantly, unlike most other rules issued under the CAA, NSPS standards are triggered once proposed, meaning that the proposed standards would apply to affected facilities that commence construction, reconstruction or modification after August 23, 2011, the date the rule was published in the Federal Register. What this means is that once the final rule is published – likely March 2012 – all the notifications for wells on which construction commenced between August 23rd and that final rule publication date would become instantly due. (Note that "commence construction" may not mean breaking ground but could occur earlier in the planning process; consult your environmental counsel to determine just what events subject a well or other source to the NSPS.)

National Emissions Standards for Hazardous Air Pollutants

Under section 112 of the Clean Air Act, EPA sets air toxics standards for existing and new stationary sources. For major sources – those with the potential to emit 10 tons per year of a hazardous air pollutant (HAP), or those that potentially emit 25 tons per year of any combination of HAPs – these standards are based on "maximum achievable control technology" (MACT). Once set, EPA must review the MACT standards to determine if an impermissible degree of residual risk to health remains and, every eight years, conduct a technology review of the standards. EPA first set such standards for oil and gas in 1999 but has not conducted the required reviews until now.

The air toxics at issue in the oil and gas industry include benzene, toluene, ethylbenzene, xylene and n-hexane. EPA proposes to revise how a major source for such pollutants is defined. Previously, for sources upstream from a processing plant, emissions from dehydrators and storage vessels with the potential for flash emissions were added together to determine whether a source is major. But EPA now proposes to expand that to include emissions from all storage vessels – even those that contain produced water. This would have the effect of increasing the sources that qualify as "major" and thus are subject to the MACT rules.

For glycol dehydrators at oil and gas production facilities and natural gas transmission and storage sources, previously an operator could escape major-source HAP regulation by reducing the source's benzene emissions to less than one ton per year. Under EPA's proposal, reducing benzene emissions to avoid major-source regulation will no longer be an option. And for storage vessels, EPA previously only required controls for vessels with the potential for flash emissions. Now, as proposed, EPA would apply the requirements – mainly, use of closed vent systems – to all storage vessels, including those that store produced water (as well as crude oil and condensate). EPA also proposes to tighten its existing air toxics standard for equipment leaks for oil and gas production, by changing the leak definition for valves from 10,000 parts per million (ppm) to 500 ppm.

Unlike the NSPS, these MACT requirements do not all apply immediately. For small glycol dehydrators, storage vessels without the potential for flash emissions, and production field facilities that become newly subject to these MACT standards – i.e., those not considered "major" under the prior rules – the compliance deadline is three years after the final rule is published in the Federal Register (likely March 2012). Importantly, however, large dehydrators that previously escaped regulation by limiting benzene emissions to less than one ton per year would only have 90 days for compliance. EPA mentions no compliance date for equipment leak and certain SSM requirements; presumably those requirements apply once the final rule is published.

Stated Benefits of the Proposed Rule

EPA touts many benefits associated with its proposal, such as a 540,000 ton reduction in VOC emissions (contributors to smog) and 38,000 ton reduction in air toxics. EPA does not directly target methane emissions in its proposal, but it boasts of methane reductions of 3.4 million tons since the controls in place for VOCs and other emissions will reduce methane as well. (Agency-watchers suspect methane targets are just around the corner, once EPA studies the greenhouse gas emissions data it collects next year from the industry through its Subpart W reporting requirements.)

Perhaps the benefit EPA claims will result from the rule that industry will feel compelled to challenge the most is the savings EPA predicts industry will enjoy. Based on the salable gas and condensate to be recovered, EPA estimates that $30 million per year will be realized in savings, making the rule a net financial gain to industry.

What next?

EPA held public hearings on the proposal at the end of September 2011, and the agency will continue to receive written public comment through October 24, 2011.

As with most regulatory proposals, EPA's proposal raises many issues. To list just a few:

- Has EPA correctly assessed, for NSPS purposes, the best systems of emissions reduction (as required by CAA 111) and, for MACT purposes, the reductions achieved by the best-performing sources?
- Has EPA correctly estimated the emissions reductions and cost impacts (or claimed savings) associated with the proposal?
- Can EPA appropriately consider well recompletions to be "modifications" subject to NSPS? Weren't the emissions associated with the full production of the well anticipated at the time of the original completion, such that a recompletion is not a new emissions event?
- Can EPA permissibly delegate its enforcement authority to third-parties for purposes of verifying compliance?
- Can EPA realistically impose a zero emission limit for pneumatic devices at all gas processing plants, when some plants might not have access to electric service?
- Should mere replacement of an existing pneumatic device be subject to NSPS requirements, even if that replacement does not increase emissions?
- For air toxics purposes, should EPA have considered the one ton/year benzene exemption to be an emission standard?
- Did EPA correctly determine that a substantial number of small businesses would not be significantly impacted by the proposals? (In other words, will small producers be run out of

business by the burdens imposed on them – e.g., green completions and advance notifications of each well completion?)

- Does equipment exist to carry out the requirements? For example, EPA estimates that 20,000 wells, annually, would be subject to the NSPS. And the new NSPS requirements are applicable to new sources as of August 23, 2011. Is there enough green completion equipment, today, in the marketplace to accommodate the expected number of well completions? Are there enough vapor recovery units for the storage vessels affected?

- Does the proposal square with the Obama Administration's stated goal of encouraging domestic energy production?

If any of these questions or others ring true to your circumstances, then consider submitting comments to EPA on or before October 24, 2011. Consult your legal counsel, trade associations and technical consultants for the best means of communicating your issues. (If you need additional information regarding EPA's proposal or analyses, such as EPA's Regulatory Impact Analysis, visit www.regulations.gov and plug in EPA-HQ-OAR-2010-0505 as the docket number.)

EPA is slated to review the comments it receives and sign the final rule no later than February 28, 2012, per court order. However, given the complexity of the issues involved and the tight time-frame for EPA to assess public comments, it would not come as a surprise if EPA were to seek the court's blessing to move that deadline back. Whenever the final rule is signed, expect the rule to be challenged on reconsideration and on judicial review.

What else?

EPA's oil and gas NSPS and MACT proposal is in addition to other recent air rules directed at toxic air emissions from existing stationary reciprocating internal combustion engines (RICE); many such engines are used in natural gas transmission, gathering, underground storage tanks and processing plants. Even engines at smaller sources are now subject to certain maintenance practices. Don't forget too that the oil and gas sector must report their 2011 greenhouse gas emissions to EPA by the end of September 2012. Further, greenhouse gas emissions from larger sources are now being regulated, complicating the permitting process for such sources. Plus EPA continues to make changes to the national air quality standard for fine particulate matter and is scheduled to reconsider the ozone standard again in 2013 (EPA on September 2nd announced it was withdrawing a draft ozone standard that had been under development).And the very question of what is considered part of a source – and thus what might vault a facility into the "major source" category – continues to face uncertainty, with EPA's announcement in September 2009 that it would analyze source aggregation issues on a case-by-case basis. (Note that for purposes of air toxics rules, the CAA specifically precludes the aggregation of oil and gas wells or pipeline facilities.)

Add to this EPA's announced "New Enforcement Initiative" for energy extraction for 2011-2013, under which EPA will dedicate a team of national sector experts to enforcement efforts for the oil and gas sector. Industry participants should anticipate and prepare for CAA 114 information requests, inspections and more scrutiny generally.

Finally, the federal actions mentioned in this article are just that – federal. Stay tuned for how states implement the requirements, and whether they and local governments impose additional restrictions or attempt to sharpen their own

enforcement tools. As just one example of recent state activity directed at oil and gas operations, the Ohio Environmental Protection Agency has now developed a draft model general permit to apply to air emissions from production operations (although the drilling and completion phases, because they are temporary, are expected to be exempt from the permit requirement, and other sources of de minimis emissions too would be exempt). Similar actions directed at air emissions can be expected in the near term from other state agencies, especially in the states experiencing the most significant increases in production operations.

Watch Closely, Participate If You Can

Considering all the movement afoot to regulate air emissions in the oil and gas sector, anyone potentially affected should keep a watchful eye on the regulators and legislators. Better yet, actively participate as the rules are developed and push for common sense, risk-based approaches based on industry realities. You still have time to influence EPA's current NSPS and MACT proposal; comment on the proposal no later than October 24th so that the resulting final rule is a better regulatory tool for all.

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