ETHANOL PERMITTING AND COMPLIANCE UPDATES

FEW BOOTH 222

GHG Emissions and PSD Permitting

Over the past several years, EPA has taken action on greenhouse gas (GHGs) emissions under the CAA. The result of these EPA actions is that certain Prevention of Significant Deterioration (PSD) permits and Title V permits issued on or after January 2, 2011, must address GHG emissions. As of July 1, 2011, existing and new facilities that emit at least 100,000 tpy carbon dioxide equivalent (CO_2e) are subject to Title V permitting requirements. Additionally, a new source emitting 100,000 tpy of CO_2e is major for PSD purposes. An existing source with GHG emissions greater than 100,000 tpy with a planned modification that results in generation of 75,000 tpy of CO_2e is now considered a major modification under PSD. A major modification is defined as "any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase of a regulated NSR pollutant; and a significant net emissions increase of that pollutant from the major stationary source." As such, any optimization project that will increase ethanol production by more than roughly 15 to 20 million gallons of annual production will most likely require a PSD permit under these regulations.

Up until recently, facilities only needed to consider combustion sources for GHG permitting purposes due to an EPA issued deferral for biogenic sources. However the biogenic deferral will end in July 2014. Also, in July 12, 2013, a D.C. Circuit Court ruling vacated the deferral but delayed issuance of a mandate which essentially means the vacatur is not in effect. This leaves much uncertainty with GHG emissions and permitting.

Biogenic CO_2 sources are those generated during the combustion or decomposition of biologically-based material. They include the CO_2 portion of landfill gas, digester gas, combustion of wood waste and other wood products, combustion and pass through in landfill gas flares, and landfill gas-fired engines. **CO_2 from fermentation during ethanol production or other industrial fermentation processes is considered a biogenic source of emissions.**

Once major sources become subject to PSD, these sources must, in order to obtain a PSD permit, meet the various PSD requirements. For example, they must complete a BACT Analysis, demonstrate compliance with air quality related values (NAAQS) and PSD increments, address impacts on special Class I areas (e.g., some national parks and wilderness areas), and assess impacts on soils, vegetation, and visibility. Conditions of these permits may also require on-site ambient air monitoring. PSD permits generally take longer to process. Contact RTP to discuss PSD permitting requirements and how they may be applicable to your facility's next project.

2014 Renewable Fuel Standard

The Renewable Fuel Standard (RFS) program was created under the Energy Policy Act of 2005, and established the first renewable fuel volume mandate in the United States. Under the RFS2 program, fuel producers and importers must blend renewable fuels into gasoline and diesel fuels at volumes that increase every year. The current proposed 2014 target is roughly 15.2 billion gallons of renewable ethanol (or equivalent) and 9.2% total fuel volume or 17 million gallons of cellulosic ethanol and 0.01% total fuel volume. The current statutory level set by Congress is 14.4 billion gallons of renewable ethanol, but the proposed level in 2013 was 16.55 billion gallons. However, that value has come under fire from various interest groups. Chris Grundler, who heads the EPA's Office of Transportation and Air Quality spoke at the National Ethanol Conference in Orlando, Florida, and said his team of about a dozen staffers received and were processing the 100,000 public comments on the proposed 2014 RFS, which for the first time called for a cut to the biofuels blending mandate. Grundler also stated that the EPA, in its RFS proposal, had to recognize that the blend wall does, in fact, exist in the current marketplace. It has long been suspected that the blend wall is a result of major oil companies' refusal to invest in E15 and E85 fueling infrastructure. EPA plans on finalizing the 2014 RFS standards later this month.

RTP Environmental Associates, Inc.

400 Post Avenue • Westbury • NY • 11590 • Phone: (516) 333-4526 • Fax: (516) 333-4571 • Email: bailey@rtpenv.com • www.rtpenv.com

RFS2 Alternative Pathway Analysis to RINs

FEW BOOTH 222

A RIN is a unique 38-character number that is issued (in accordance with EPA guidelines) by the biofuel producer or importer at the point of biofuel production or the port of importation. RINs are a mechanism for insuring that the prescribed levels of biofuels in motor fuel are reached. Each gallon of ethanol produced has a RIN. The RINs can be traded among refiners once they've blended ethanol with petroleum or they can keep them to submit to the government. RINs from advanced biofuel plants, such as plants using sorghum (milo) as feedstock or cellulosic production facilities, are more valuable than RINs from conventional (corn-based) plants. The renewable fuel program includes a grandfathering clause that allows a biofuel plant that operated (or was in the process of being built) before December 19, 2007, to continue to produce biofuel up to its baseline volume (and generate RINs) even if the biofuel greenhouse gas (GHG) reduction versus petroleum fuel is less than the required 20%. Ethanol plants that use natural gas or biodiesel for process heat, which commenced construction on or before December 31, 2009 are also exempt. Many facilities have expanded the original facility design and are finding that obtaining RINs for the additional, "non-grandfathered" volumes of production to meet the requirements under the Federal Rule (40 CFR 80.1426, Tables 1 & 2) to be difficult without significant capital improvements. However, facilities have begun petitioning the EPA to further examine processes regarding fuel production at the facility to demonstrate that the facility meets the 20% reduction without further addition of technologies listed under the Federal Rule. Many petitions are based simply on natural gas and electricity energy savings compared to the EPA's calculated usage in the "typical" older ethanol production facility. Producers with grandfathered baselines have demonstrated that ethanol produced at their facility actually meets the 20% GHG reduction, and therefore, RIN generation should not be limited by their baseline. EPA has agreed with these demonstrations and has approved RIN generation above the baseline.

Alternative Feed Stocks

With rising prices and the volatility of the corn crop, facilities continue to explore alternative feed stocks as options. Grain Sorghum or Milo is a very hardy grain crop and is gaining popularity as an alternative feed stock because of its draught tolerance as compared to corn or soybeans. It is well-suited to various types of ethanol production, including cellulosic. The EPA announced it had approved grain sorghum as an eligible feedstock under the Renewable Fuels Standard (RFS), not just as conventional ethanol, but as advanced biofuel. EPA's analysis showed making ethanol with grain sorghum has a GHG reduction of roughly 32%, qualifying plants as producing "advanced biofuels". Various other alternative feed stocks gaining momentum recently include off-spec sugar or molasses, corn kernel fiber, and broken rice. However, not all States are keen on alternative feed stocks and many are requiring major air permit amendments for its use. There is also a concern that this feedstock will result in increases to volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions. It is important to note that some state requirements may be specific to corn-based ethanol. As such, it is prudent to check with the agency before switching feed stocks to avoid compliance violations.

Alternative Products

In a response to some of the criticisms associated with ethanol as a fuel additive, many industry stakeholders are seeking to convert processes to produce butanol instead. Butanol, with two additional carbons, is more similar to gasoline than it is to ethanol and has about 30% higher energy content than ethanol. Additionally, butanol doesn't separate from gasoline in the presence of water and can be blended right at the refinery. Several recent scientific advancements show a real possibility for many current ethanol facilities.

Cellulosic Ethanol

Cellulose is the fiber contained in leaves, stems, and stalks of plants and trees, the most abundant organic compound on earth. Cellulosic ethanol is ethanol produced by converting sugars in cellulose into alcohol for fuel. Advanced ethanol, by comparison, is typically sourced from non-cellulosic feedstocks including sugars and milo (see above). Switchgrass and other perennial grasses, in particular, are considered to be promising sources of cellulosic ethanol. Existing ethanol facilities may be able to take advantage of technology improvements that will allow for the production of ethanol from an expansive range of feedstocks. These "bolt-on" technologies may allow producers to increase production capabilities by using both grain starch and cellulosic material at the same facility since the ethanol molecule is identical, regardless of the feedstock. Facilities may even be able to utilize existing piping, storage, and loading infrastructure at current facilities, which may off-set costs. There are also various tax incentives for the production of cellulosic ethanol over the production of conventional ethanol.

Don't forget to ask us about:
- Hazardous Waste Generation
- RMP Exposures
- EPA Enforcement & Compliance Priorities
- NRDC Challenge to the 250 Rule (Indiana)
- Rules Specific to your State