

Case-by-Case VOC RACT

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Why is VOC RACT Required?

- Federal EPA set new national ozone standard with June 15, 2004 effective date
- State EPA has monitored NE Ohio, as being in “moderate” (level 2 of 5) non-attainment
- State EPA must:
 - Develop Emission Reduction Plan (i.e., SIP) for Federal EPA approval, which will
 - Require reductions in ozone causing chemicals (i.e., VOCs) in 3 years from many types of sources, including factories

Who is Impacted?

- Based on July 21, 2006 draft, the rule impacts facilities if:
 - They are located in the following 8 NE Ohio counties:

Ashtabula, Cuyahoga, Geauga, Lake, Lorain, Medina, Portage, & Summit
 - They emit, or have the potential to emit (PTE), VOC emissions of 100 TPY or more in any year after 2001 before add-on controls
 - Note that it is likely you are covered if you are a Title V facility for VOCs with the following exclusion ...
 - The draft VOC RACT rule does not apply to:
 - Any existing RACT sources listed in 3745-21-09
 - Any sources covered by Control Technical Guidelines listed in 3745-21-12 thru 16 and 3745-21-18 thru 23 (new)

What is Required?

- Facilities impacted must conduct an engineering study to determine:
 - First the technical feasibility, and
 - Then the economic feasibilityof reducing VOC emissions
- This study is usually referred to as a RACT Study
 - (which stands for Reasonably Available Control Technology Study)
- Study to be done by engineering consulting firm, or person experienced in air pollution control

What Information must be Provided?

- Generic facility data
- Contact and responsible persons
- Generic source data, including EPA and company ID, date installed, production operating schedule, rates, controls, etc.
- Facility plot plan
- VOC emissions at:
 - Daily average & maximum production rates (in lbs per day), and
 - Annual emissions (in tons per year)

What Information must be Provided? (contd.)

- Detailed discussion of technical feasibility of employing the following types of add-on control equipment:
 - Carbon Absorber
 - Concentrator
 - Condenser
 - Flare
 - Thermal & Catalytic Incinerator
 - Scrubber

What must be Provided for any Control Options Judged Technical Feasible?

- An estimate of capture and control efficiency
- Quantification of annual VOC reductions
- Advantages & disadvantages of each option
- An annualized cost-effectiveness estimate is to be determined, including:
 - Capital & operating costs of each control system
 - Direct & indirect economic impact upon the facility - (confidential ?)
- The cost-effectiveness estimate is given in dollar per ton of VOC reduced
 - This has historically been around \$5,000 / ton of VOC reduced

And ... There is More?

- Must discuss technical feasibility of minimizing or eliminating VOC emissions by:
 - Modifying or replacing the source;
 - Implementing work practices; and
 - Implementing pollution prevention measures
- If coatings materials are used, must discuss technical feasibility of converting to waterborne, high-solids or powder coatings to minimize or eliminate VOC emissions
 - Need statements documenting this from suppliers

What is the Basis of the Emission Estimates for RACT Study?

- Basis is the calendar year from 2002 thru 2005 w/ the greatest potential to emit (PTE) over 100 TPY
 - PTE based on maximum production rate at 8,760 hours
- Do not need to estimate PTE for any year where adequate records do not exist
- Where PTE is less than 100 TPY for years 2002 thru 2005, then use the first calendar year after 2005 that has PTE over 100 TPY

Is There any Guidance to be Followed for Developing the RACT Study?

- All VOC estimates and assumptions must be documented
- Costs estimates are to be calculated in accordance with Ohio EPA document: "Guidance for Estimating Capital and Annual Costs of Air Pollution Control Systems (March, 1983)"
 - It gives an example of the cost-effectiveness estimate as well as various scale up factors that can be used in absence of actual cost data
 - There is also an example on comparing the incremental cost-effectiveness of alternative control systems with differing costs and levels of VOC reductions

Projected State VOC RACT Rule Timetables

- If RACT Rule is proposed by the June 15, 2007 SIP submittal date:
 - It would be effective - August 19, 2007 (w/o legal appeal)
 - Then the RACT Engineering Study would be due - February 19, 2008 (Can ask Director for added time)
 - Agency review & approval will take some time – (assuming 3 to 6 months) – May to August 19, 2008
 - Then have 18 months to achieve and demonstrate compliance – November 2009 to February 2010

Comments on Emissions

- The RACT analysis will include all process stack emission points and possibly fugitives emissions
- How confident are you with your emission estimates:
 - Are they based on a mass balance across the whole process, or
 - AP-42 emission factor, or
 - Limited and/or dated stack testing
- You may want to consider having some stack testing done
 - The more accurate your emission data the better the study's conclusions
- And do not forget any VOC collection and control system must meet NFPA and state building codes that base design air flow at 25% LEL

Comments on Collection & Controls

- Any existing permitted recovery and / or control systems will be part of the emission baseline from which to get reductions
- In collecting vents look to even out high VOC / LEL surges; possibly combining vents to do so
- Keep separate vents with low concentrations or infrequent venting periods
- Enhance any existing in-process recovery in-place of expensive add-on treatment

Comments on Pollution Prevention

- Any costs and emission reductions from Pollution Prevention (PP) efforts are not part of RACT Study cost-effectiveness
- If feasible, PP emission reductions may:
 - Get the facility below the RACT Study cut-off
 - If PP can not get facility below cut-off then:
 - It still should lower the baseline for projecting emission reductions to be achieved by add-on control system, and
 - Reduce the size, costs & analysis of control options

Review OEPA RACT Rules

- Review 3745-21-09 to get an idea of past case-by-case RACT control language applied to the listed facilities
- For sources similar to your operations check OEPA Title V Permit tracker by listed company facility to read the terms & conditions in that permit
- Next, review 3745-21-10 for the compliance monitoring and testing methods for your possible control option:
 - Keep in mind that compliance testing **EPA method 25** measures total non-methane organic compounds (NMOC) and is reported “as carbon;” and it is used for VOC concentrations > 50 ppm
 - **Method 25A** measures total hydrocarbons (THC) and is reported either “as propane” or “as carbon” and is used for lower VOC concentrations
 - There can be dramatic differences by chemical reported for VOC concentration

And still more Comments

- Consider initiating discussions with both your local Fire Department and company insurer
- Consider hiring:
 - Consulting design engineer with experience in design of air pollution control systems, including NFPA, etc.
 - Environmental consultant who has experience in similar engineering studies (i.e., BAT, BACT, etc.) done for air permits, etc.
- If you have not done so, alert your management that significant dollars may be required in the near future for:
 - Some stack testing,
 - RACT Study, and then possibly
 - Future VOC collection and control system

Final Comments

- Monitor the OEPA web site awaiting for the proposed Case-by-Case RACT rule
- That web address is:
 - <http://www.epa.state.oh.us/dapc/page/whatsnew.html>.