Category: 31 – Beyond Set I and II CTG

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

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SUBJECT: Review of Illinois Group II VOC Rules

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The final rules, adopted by the Illinois Pollution Control Board, to control VOC emissions from the Group II CTG sources have been reviewed. Illinois' rules apply Statewide. The State certified they have no manufacturers of flatwood paneling and stated that gasoline tank trucks are covered under existing rules. Our comments are as follows:

1. Rule 205(1)(4) Refinery Leaks - The test method and procedures are not included in the regulation. Section 205(1)(6)(A)(I) states that testing for leaks must be by methods approved by the Agency. These methods should be reviewed by EPA before this rule is given final approval.

2. Rule 205(n)(4) Internal Offsets - The equations listed under (4), internal offsets appear erroneous in that (Bi), the volume of each coating in liters per day (gallons per day), excluding water, delivered to the coating applicator is the same for Eall and Eact.

The volume of coatings will be different since the coatings can only be compared on the basis of solids applied to the part being coated (see attached example VOC equivalency calculation).

3. Rule 205(s) Graphic Arts - This rule exempts sources with emissions less than 1000 T/yr. The CTG recommended a 100 T/yr exemption. The State should submit a list of sources with emission data to document their claim that 95 percent of emissions will be covered. No test methods were listed for this category.

4. Rule 205(o)(3)©) Floating Roof Tanks - Tanks storing crude oil are exempted. Crude oils can vary widely in vapor pressure. The State should document the need for this exemption or limit the exemption to waxy heavy pour crudes as recommended in the CTG.

5. Gasoline Tank Trucks - The summary by the Illinois Pollution Control Board stated that certification of gasoline tank trucks is covered by existing

rules. Rule 205(p)(5) requires that all trucks equipped for vapor recovery shall be designed and maintained to be vapor tight at all times. This rule does not define vapor tight and is not equivalent to an annual certification program. The State must develop a tank truck certification program and should follow the testing recommendations in the gasoline tank truck CTG.

Attachment

Allowable Emissions for One of Several
Coating Lines in a Bubble Calculation

Given:

Existing coating - 5.5 lbs VOC/gal coating
Existing coating solvent density = 7.36 lbs/gal
Existing coating usage = 10 gals/hr

Complying coating = 3.0 lbs VOC/gal coating
Complying coating solvent density = 7.36

Assumption – transfer efficiency and film thickness stays constant

Existing coating:

$$\frac{5.5\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.75\,\text{volume \% solvent}$$

$$1.00 - 0.75\,\text{volume \% solvent} = 0.25\,\text{volume \% solids}$$

$$10\left(\frac{\text{gal}}{\text{hr}}\,\text{coating used}\right) \times 0.25\,\text{volume \% solids} = 2.5\,\text{gal solids applied}$$

Complying coating:

$$\frac{3.0\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.41\,\text{volume \% solvent}$$

$$1.00 - 0.41\,\text{volume \% solvent} = 0.59\,\text{volume \% solids}$$

application rate – 2.5 gals solids/hr (see above)

$$\left(\begin{matrix}\text{gallons coating}\\ \text{required}\end{matrix}\right) = \frac{2.5\,\text{gals solids applied}}{0.59\,\text{volume \% solids}} = 4.24\,\frac{\text{gals coating required}}{\text{hr}}$$

Allowable emissions:

$$\text{Allowable emissions} = 3.0\,\frac{\text{lbs VOC}}{\text{gal}} \times 4.24\,\frac{\text{gals coating}}{\text{hr}} = 12.72\,\frac{\text{lbs VOC}}{\text{hr}}$$

EXAMPLE

VOC EQUIVALENCY CALCULATIONS

Assume:

A. Coating being used = 5.5 lbs VOC/gal coating (minus water)
B. 10 gals/day coating currently being used
C. Complying coating = 3.0 lbs VOC/gal coating (minus water)
D. Density of solvent = 7.36 lbs/gal

1. VOC emissions with actual coating usage =

5.5 lbs VOC/gal coating x 10 gallons/day = 55 lbs VOC/day

2. The State of Illinois calculations (in calculating allowable emissions) utilizes the complying coating emission rate for each coating in Kg/1 (lb/gal) for each coating applied (say 3 lbs VOC/gal) = and the actual coating usage.

3.0 lbs VOC/gal coating x 10 gallons/day = 30 lbs VOC/day

3. The correct allowable VOC emissions and coating usage with the complying coating would be:

3.0 lbs VOC/gal coating x 4.24 gals coating/day = 12.72 lbs VOC/day

The calculations for determining the 4.24 gals of coating in Item 3 are as follows:

$$\frac{5.5\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.75\,\text{volume \% solvent}$$

$$1.00 - 0.75\,\text{volume \% solvent} = 0.25\,\text{volume \% solids}$$

$$10\left(\frac{\text{gal}}{\text{hr}}\,\text{coating used}\right) \times 0.25\,\text{volume \% solids} = 2.5\,\text{gal solids applied}$$

Complying Coating:

$$\frac{3.0\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.41\,\text{volume \% solvent}$$

$$1.00 - 0.41\,\text{volume \% solvent} = 0.59\,\text{volume \% solids}$$

Application rate of solids = 2.5 gals/day (see above)

$$\begin{pmatrix}\text{gallons coating}\\ \text{required for}\\ \text{complying coating}\end{pmatrix} = \frac{2.5\,\text{gals solids applied}}{0.59\,\text{volume\% solids}}$$

$$= 4.24\,\frac{\text{gals coating required}}{\text{hr}}$$

GROUP II VOC REGULATIONS

State of Illinois

CTG Category	RACT Limits	Compliance Dates	Test Methods	Exemptions
Tank Trucks	---	---	---	—
Refinery Leaks 205(1)(4)	yes	7/1/83	no	
Floating Roof Tanks 205(o)(3)©)	yes	12/31/83	no	tanks storing storing crude oil
Miscellaneous Metals 205(n)(1)(J) & (K)	no low solvent	12/31/83 12/31/86	yes	< 25 T/yr
Paneling (no source certification)				
Pharmaceutical	---	---	---	—
Rubber Tires (205(t)	yes	12/31/83	no	
Dry Cleaning 205(u)	yes	12/31/83	no	< 306 gal/yr
Graphic Arts 205(s)	yes low solvent	12/31/83	no	< 1000 T/yr