10/20/1983 VOC381020831

Category: 38 – Dilution Solvents

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

October 20, 1983

MEMORANDUM

SUBJECT: Addition of Dilution to Solvents to Printing Inks

FROM: James C. Berry, Chief
Chemical Applications Section, CPB (MD-13)
G.T. Helms, Chief
Control Programs Operations Branch, CPDD (MD-15)

TO: Doug Cook
Air Programs Branch, Region IV

This will confirm the guidance Dennis Crumpler gave to you by phone on October 13, 1983, regarding the addition of dilution solvents to printing inks. It is our position that all nonexempt solvents added to printing inks must be included in VOC reduction requirement calculations. Included are solvents added to the ink prior to its being pumped to the ink fountain and those added at the press to compensate for evaporative losses during the printing operation.

If you have additional questions please let me know. My telephone number is FTS 629-5605

cc: Jack Farmer, ESED/OD
Brock Nicholson, CPDD
Susan Wyatt, ESED

XX.9130 Provisions for Specific Processes

(a) No owner or operator of a facility engaged in the surface coating of miscellaneous metal parts and products may operate a coating application system subject to this regulation that emits VOC in excess of:

(1) 0.52 kg/1 (4.3 lb/gal) of coating, excluding water, delivered to a coating applicator that applies clear coatings;

(2) 0.42 kg/l (3.5 lb/gal) of coating, excluding water, delivered to a coating applicator in a coating application system that is air dried or forced warm air dried at temperatures up to 90 Degrees C (194 Degrees F);

(3) 0.42 kg/l (3.5 lb/gal) of coating, excluding water, delivered to a coating applicator that applies extreme performance coatings; and,

(4) 0.30 kg/l (3.0 lb/gal) of coating, excluding water, delivered to a coating applicator for all other coatings and coating application systems.

(b) If more than one emission limitation in paragraph (a) applies to a specific coating, then the least stringent emission limitation shall be applied.

©) All VOC emissions from solvent washings shall be considered in the emission limitations in paragraph (a), unless the solvent is directed into containers that prevent evaporation into the atmosphere.

(d) The emission limits set forth in paragraph (a) shall be achieved by:

(1) the application of low solvent coating technology;

(2) an incineration system which oxidizes at least 90.0 percent of the nonmethane volatile organic compounds (VOC measured as total combustible carbon) to carbon dioxide and water; or,

(3) an equivalent means of VOC removal. The equivalent means must be certified by the owner or operator and approved by the Director.

(e) A capture system must be used in conjunction with the emission control systems in part (d)(2). The design and operation of a capture system must be consistent with good engineering practice, and shall be required to provide for an overall VOC emission reduction efficiency sufficient to meet the requirements of paragraph (a). The required VOC emission reduction shall be calculated on a unit volume of uncured solids basis.

DISCUSSION

The emission limitations in this section of the regulation are based on the information given in Chapter 4 of the "Surface Coating of Miscellaneous Metal Parts and Products," EPA-450/1-78-015. The CTG document gave two additional categories, which are:

1. Frequent color change and/or large number of colors applied, or first coat on untreated ferrous substrate - 0.36 kg/l emission limit; and,

2. Powder Coatings - 0.05 kg/l emission limit.

The "frequent color change...." category has been included with part (a)(4), because it has the same emission limitation. The powder coatings category was also included in the "all other coatings" part (a)(4) as an incentive to use powder coatings. A facility which converts a coating line to powder coatings may use the difference between the actual emissions from the powder coatings and the emission limitation as an internal offset.

In paragraph (d) the stipulation is made that, if an incinerator is used, 90 percent of the VOC entering the device must be oxidized to H2O and CO2. This requirement assures that the incinerator is not simply oxidizing large molecular weight organic compounds to smaller molecular weight organics which would still participate in oxidant formation. The equivalent means of VOC removal may be an alternative control device, such as an adsorber or condenser. However, a combination of lower solvent usage and a lower efficiency control device is also acceptable, for other than incineration.

Emissions from purging of spray guns were not considered when developing the emission limitations in this section. However, since they are controllable, they should be included in a determination of compliance. Their inclusion in a compliance determination raises three issues, however: (1) what method can be used to factor these emissions into a compliance determination; (2) are these emissions of a quantity large enough to require a separate emission limitation; (3) are these emissions of a quantity small enough to be of no concern? EPA recommends that these be ignored if solvent washings and purging of spray guns are directed into essentially closed containers. If the emissions are uncontrolled, they should be attributed to the coating.

Operating schedules for printing machines vary considerably, making usual potential emissions calculations difficult. Calculations based on actual consumption of solvent and ink should include both the solvent used for dilution of ink and for equipment cleanup.

In some cases waste solvent and dirty cleaning solvent will be collected and disposed of in a manner which prevents its evaporation to the atmosphere. Unless specifically documented, it should be assumed that all other solvent used evaporates into the atmosphere.