EPA's Degreasing NESHAPs

On December 2, 1994, the U.S. Environmental Protection Agency (EPA) issued final national emission standards for hazardous air pollutants (NESHAPs) for new and existing halogenated solvent cleaning operations . . .

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The new NESHAPs cover both vapor degreasing and immersion (cold) cleaning using trichloroethylene, perchloroethylene, and methylene chloride.[1] They were developed under the requirements of Title III (Hazardous Air Pollutants) of the federal Clean Air Act, as amended. Under the new standards, companies operating existing equipment have until December 1997 (36 months) to comply with the requirements.

In developing the standards, EPA focused on equipment and work practice requirements achieving a level of control between 50 and 70 pct. The standards give solvent cleaning sources operating batch or in-line degreasers three options for compliance:

- Installing one of several combinations of emission-control equipment and implementing automated parts handling and specified work practices;
- Meeting an idling mode emission limit, in conjunction with parts handling and work practice requirements; or
- Meeting a limit on total emissions.

The multiple compliance options in the NESHAPs recognize the vast number of industries and operating schedules associated with the use of halogenated solvent cleaners. EPA's standards allow companies considerable flexibility in complying with the control requirements. The alternative idling and total emissions limits allow the use of new and innovative technologies that can achieve a level of control equivalent to available equipment combinations.

Significant Changes from the November 1993 Proposal. EPA made several changes to the degreasing standards since they were proposed n November 1993. Most of the changes were made to clarify the require-

TABLE I--Control Equipment Combinations And Idling Limits

	Control Equipment Combination Options[1,2]	Alternative Idling Limit[2,3] (lb/sq ft/hr)
Batch Vapor[4] (≤13 sq ft)	1: FBR = 1.0, FRD 2: FRD, RRD 3: FRD, DWL 4: FRD, WMC 5: FRD, SHV 6: FRD, CA 7: FBR = 1.0, RRD, DWL 8: FBR = 1.0, RRD, SHV 9: FBR = 1.0, WMC, SHV 10: FRD = 1.0, SHV, CA	0.045
Batch Vapor[4] (>13 sq ft)	1: FBR = 1.0, FRD, RRD 2: FBR = 1.0, FRD, SHV 3: FBR = 1.0, RRD, SHV 4: FRD, DWL, RRD 5: FRD, RRD, SHV 6: FRD, WMC, SHV 7: FRD, SHV, CA	0.045
In-Line[5] (Existing)	1: FBR = 1.0, FRD 2: FBR = 1.0, SHV 3: FRD, DWL 4: DWL, CA	0.021
In-Line[5] (New)	1: FRD, SHV 2: FRD, CA 3: SHV, CA	0.021
Batch Cold Cleaning	1: CVR, Water Layer 2: FBR = 0.75, CVR[6]	n/a

[1] FBR - freeboard ratio, FRD - freeboard refigeration device, RRD - reduced room draft, WMC - working-mode cover, DWL - dwell, SHV - superheated vapor, CA - carbon adsorption, CVR - manual cover.

[2] Compliance with the proposed equipment or idling emission standard also requires automated parts handling and work practices.

[3] 0.045 lb/sq ft = 0.22 kg/sq meter; 0.021 lb/sq ft = 0.10 kg/sq meter.

[4] New and existing equipment; 13 sq ft = 1.21 sq meter.

[5] Vapor and cold cleaning.

[6] Compliance also requires work practices.

ments of the standards. Other significant changes include the following:

• Addition of a table and equation for calculating emission rates and compliance for new cleaning machine designs that do not have a solvent/air interface;

• Modification of the allowable equipment combinations to add carbon adsorbers and to eliminate redundant or overlapping controls;

• Inclusion of additional equipment options for batch cold cleaning equipment.

• Revision of monitoring requirements for hoist speed and reduced room draft; and

• Extension of several compliance and reporting deadlines.

Companies operating halogenated solvent cleaning equipment have 36 months to comply with the new standards, instead of the 24 months originally contained in the November 1993 proposal. In addition, the deadline for submitting an initial notification report was extended to 270 days (August 29, 1995) from the 90 originally proposed.

Compliance Requirements. Under the new standards companies are required to submit an initial notification report for each solvent cleaning machine by August 29, 1995. This report should include the name of the company, the location of the machine, a description of the machine (type, solvent/air interface area, existing controls), the installation date, the company's anticipated compliance approach and an estimate of annual solvent consumption.

Companies operating existing equipment are then required to implement a compliance approach before December 1997, and to submit an initial report of compliance by March 1998. Cleaning machines that began operations after November 29, 1993, (the date of proposal) are required to comply with the standards immediately upon startup. An initial compliance notification for these new machines is required within 150 days of startup or by May 1, 1995, whichever is later.

After submitting an initial notification of compliance, companies (except those operating only batch cold cleaning machines) are required to submit an annual compliance report. If the equipment has violated its compliance requirements, however, an exceedance report must be submitted quarterly. Operators of batch vapor and in-line machines are required to obtain an operating permit from the state or EPA.

Compliance with one of the control combination options (see Table I) for batch or in-line vapor equipment is demonstrated by periodic monitoring of each of the control systems chosen. Measurement of hoist speed is required monthly for the first year and annually thereafter, provided the part movement has not exceeded 11 fpm. Monthly visual inspection of covers (e.g., working-mode) and enclosures is required to ensure their integrity.[2] Monthly measurement of dwell time is required, if

dwell is part of the machine's compliance approach.[3] If freeboard refrigeration devices and superheated vapor systems are used, weekly monitoring of air blanket temperature (with a thermometer or thermocouple) is required to ensure proper operation. For carbon adsorption systems, companies must measure the exhaust concentration weekly to ensure that is below 100 ppm. Compliance with the reduced room draft provision requires quarterly monitoring of the wind speed at the top of the freeboard area to ensure that it does not exceed 15.2 meters. Weekly monitoring of the room parameters used to achieve the reduced room draft also is required.

Work practice standards also have been set to reduce emissions associated with operating solvent cleaners. Rather than require direct monitoring of work practice compliance, however, EPA has developed a qualification test included as an appendix to the standard. The test is to be completed by the operator during inspection, if requested.

Companies choosing to comply with the alternative idling emission standard (see Table I) are required to demonstrate initial compliance by using EPA's idling reference test method 307. Data from the equipment manufacturer may be used, provided the unit tested is the same as the one for which the report will be submitted. Companies choosing to comply with the idling emissions limit also are required to install an automated parts handling system and to comply with the work-practice requirements. They also must show that the frequency and parameters monitored on the solvent cleaning machine are sufficient to demonstrate continued compliance with the idling standard.

Companies wishing to comply with the total emissions limit are required to maintain monthly records of solvent addition removal. Using mass-balance calculations, they must then show that the total emissions from the cleaning machine, based on a three-month rolling average, are equal to or less than the established limit for the cleaner (see Table II). For new machine designs without a solvent/air interface, EPA has established a compliance formula, based on cleaning capacity.[4]

Companies meeting the alternative total emission limit requirements are not required to conduct monitoring of equipment parameters, but must maintain records of their solvent usage and removal of solvent as waste. According to EPA, this compliance option provides an incentive for innovative emissions control strategies to limit solvent use. For some cleaning machines, EPA calculates that the alternative total emission limit could be more stringent than the equipment specifications. In particular, EPA expects that this alternative standard will be more difficult to meet for larger machines, for machines operating for more than one shift, and for machines cleaning parts

TABLE II--Total Emissions Limits For Cleaning Machines With A Solvent/Air Interface

	Average Emission[1,2] (lb/sq ft-month)
Batch Vapor (existing and new)	30.7
In-Line (existing)	31.4
In-Line (new)	20.3
Batch Cold Cleaning	n/a

[1] Three-month rolling average.

[2] 30.7 lb/sq ft = 150 kg/sq meter; 31.4 lb/sq ft = 153 kg/sq meter; 20.2 lb/sq ft = 99 kg sq meter.

with difficult configurations.

Next Steps. The standards for halogenated solvent cleaners were published in the Federal Register on December 2, 1994. They are available for computer downloading from EPA's Technology Transfer Network by calling 919-541-5742. (The file is listed under the Clean Air Act Amendments, or AC, bulletin board under Recently Signed Rules.) Copies of the standards also are available from the Center for Emissions Control by calling 1-800-835-5520.

EPA has developed a brochure and guidance document explaining the new standards. These documents will be available from EPA in early 1995. **PF**

[1]The standards also apply to 1,1,1-trichloroethane, carbon tetrachloride and chloroform. Production of 1,1,1 and carbon tetrachloride will be prohibited after December 31, 1994, under requirements of the stratospheric ozone protection privations (Title VI) of the Clean Air Act.

[2]Working mode cover means any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings from outside air disturbances while parts are cleaned in the machine.

[3]Proper dwell time for parts to remain in the freeboard are above the vapor zone is defined by EPA as no less than 35 pct of the time required for the parts at room temperature to cease dripping once placed in the vapor zone.

[4]EL=330 x (vol) 0.6 Where: EL= the three-month rolling average emission limit in kg per month; Vol = the cleaning capacity of the machine in cubic meters. (One cu meter = 35.289 cu ft)

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