

**Solvent Cleaning Operations  
Comment and Response Document**

**May 1, 2001**

**Bureau of Air Quality  
Department of Environmental Protection**

The Environmental Quality Board (Board) published notice of the public comment period and public hearings for the Solvent Cleaning Operations proposed rulemaking in the *Pennsylvania Bulletin* on August 28, 1999 (29 *Pa. B.* 4661). The Board held three public hearings on the proposal at the following Regional Offices of the Department of Environmental Protection:

September 28, 1999

DEP Southwest Regional Office  
400 Waterfront Drive  
Pittsburgh, PA

October 1, 1999

DEP Southeast Regional Office  
Suite 601 Lee Park  
555 North Lane  
Conshohocken, PA

October 5, 1999

DEP Southcentral Regional Office  
Susquehanna River Conference Room  
909 Elmerton Ave.  
Harrisburg, PA

The public comment period for the Solvent Cleaning Operations proposed rulemaking closed on October 27, 1999. Testimony received during the public hearings and written comments received during the public comment period are summarized in this comment and response document. The identity of each commentator is indicated by the assigned number(s) in parentheses after each comment.

This is a list of corporations, organizations and interested individuals from whom the Environmental Quality Board has received comments regarding the solvent cleaning proposed regulation.

<b>ID</b>	<b>Name/Address</b>	<b>Zip</b>	<b>Submitted 1 pg Summary</b>	<b>Provided Testimony</b>	<b>Req Final Rulemaking</b>
1	Ms. Sharon Roth PA Chamber of Business & Industry One Commerce Square 417 Walnut Street Harrisburg, PA	17101		T	
2	Mr. John P. O'Sullivan Lucent Technologies Environment, Health and Safety Dept. 2525 N. 12th Street Reading, PA	19612-3396		T	
3	Mr. Charles E. Fiore Compliance Services Manager ZEP Manufacturing Company 1310 Seaboard Industrial Blvd., N.W. P.O. Box 2015 Atlanta, GA	30301			
4	Mr. David C. Ruskey Mr. Phil Wegener Mr. Paul Sargent Intersil 125 Crestwood Rd. Mountaintop, PA	18707			
5	Mr. Francis P. Rudy Sr. Environmental Coordinator Specialty Gas Division Air Products and Chemicals, Inc. P.O. Box 351, R.R. 1 Tamaqua, PA	18252	S		
6	Mr. Richard Gudz CARDONE Industries, Inc. World Headquarters 5501 Whitaker Ave. Philadelphia, PA	19124-1799	S		

ID	Name/Address	Zip	Submitted 1 pg Summary	Provided Testimony	Req Final Rulemaking
7	Graphic Arts Association c/o Mr. William J. Cluck Saul, Ewing, Remick & Saul LLP Penn National Insurance Tower 2 N. 2nd Street, 7th Fl. Harrisburg, PA	17101			
8	Lucent Technologies, Inc. c/o Mr. John W. Carroll Pepper Hamilton 200 One Keystone Plaza N. Front & Market St. P.O. Box 1181 Harrisburg, PA	17108-1181	S		
9	Mr. James J. Masiak Vice President of Manufacturing Superior Tube Company 3900 Germantown Pike Collegeville, PA	19426-3112			
10	Steven G. Olson Director DOD Regional Environmental Coordination Region III - Regional Environmental Group Commander Navy Region - Mid Atlantic Navy Public Works Center (Code 910) 9472 Maryland Ave., Ste. 211 Norfolk, VA	23511-2797			
11	Mr. Anthony M. Skicki Manager - Environmental Affairs GPU Energy 2800 Pottsville Pike Reading, PA	19640			
12	Mr. David A. Wagner Sr. Environmental Manager Safety-Kleen 1140 Greenhill Rd. West Chester, PA	19380			
13	Ms. Wendy Cooper Environmental Engineer Allegro 3900 Welsh Rd. Willow Grove, PA	19090			

<b>ID</b>	<b>Name/Address</b>	<b>Zip</b>	<b>Submitted 1 pg Summary</b>	<b>Provided Testimony</b>	<b>Req Final Rulemaking</b>
14	Mr. Sean McGowan Chairman, SSIPA Environmental Committee Carpenter Technology Corp. P.O. Box 14662 Reading, PA	19612-4662			
15	Mr. Peter A. Scaccia Director, Environment, Health & Safety Armstrong World Industries, Inc. P.O. Box 3209 Lancaster, PA	17604-3209	S		
16	Mr. Fred A. Sembach Vice President, Government Affairs Pennsylvania Chamber of Business and Industry 417 Walnut St. Harrisburg, PA	17101-1902	S		
17	Mr. Wayne A. Belko Chairman, PEA Environmental Committee Pennsylvania Electric Assn. 800 N. 3rd St., Ste. 301 Harrisburg, PA	17102	S		
18	Mr. Douglas L. Biden Secretary - Treasurer Electric Power Generation Assn. 301 APC Bldg. 800 N. 3rd St. Harrisburg, PA	17102	S		
19	Mr. David Patti President Pennsylvania Chemical Industry Council 25 N Front St., Ste. 100 Harrisburg, PA	17101			
20	The Honorable Mary Jo White Senate of Pennsylvania Room 168, Main Capitol Bldg. Harrisburg, PA	17120			
21	Independent Regulatory Review Commission 14 <sup>th</sup> Floor, Harristown #2 333 Market Street Harrisburg, PA	17120			

- 1. Comment:** The proposed definitions of “cold cleaning machine” and “vapor cleaning machine” are not consistent with the federal definitions. The definition of "cold cleaning machine" should be revised to encompass all non-boiling VOC solvent cleaners. This would make the definition consistent with the EPA definition and definitions in other states. (1,2,6,9,14,16,21)

**Response:** The Department agrees. The definition of "cold cleaning machine" has been revised in the final rulemaking to include all non-boiling VOC solvent cleaners. Solvent cleaning machines that use heated, but non-boiling solvents, are not considered vapor cleaning machines. These changes make the Pennsylvania definitions consistent with EPA.

- 2. Comment:** It may be difficult for operators to find suitable, low volatility, replacement solvents and if they are available, they may be costly and result in production inefficiencies and quality problems. (1,15,16)

**Response:** The final rulemaking provides operators a choice of compliance options for cold cleaners. Operators of affected cold cleaners can either implement a program using low volatility solvents or they can assure that the affected unit meets specific hardware requirements. For most, if not all applications, however, low volatility solvents and aqueous cleaning systems can provide acceptable cleaning at an acceptable or reasonable cost, which will alleviate cost, production and quality problems. In addition, the final rulemaking exempts machines that are subject to the federal maximum achievable control technology (MACT).

- 3. Comment:** The proposed regulation extends the provisions of the federal MACT standards to all solvent cleaning operations, including those using non-HAP solvents and non-VOC solvents. The Environmental Quality Board (EQB) has not demonstrated that these provisions, that are more restrictive than the federal requirements, are necessary to attain the NAAQS. This is contrary to Executive Order 1996-1 and Section 4.2 of the Pennsylvania Air Pollution Control Act (APCA). (1,2,8,13,14,16,19,21)

**Response:** The Department, in part, agrees. The final regulation applies only to those solvent cleaning machines using volatile organic compounds (VOC) in the cleaning solvent. The final requirements do not apply to aqueous cleaning systems or to other cleaning systems using compounds listed by EPA as exempt by the Administrator of EPA. However, the Board believes that it is necessary to have essentially the same level of control requirements for vapor cleaning machines using non-HAP VOC solvents as for HAP VOC solvents. Lower levels of control requirements for non-HAP VOC machines could result in switching from non-VOC HAP solvents to non-HAP VOCs with the resulting potential for increased ozone formation. While the final rulemaking is, in part, more stringent than federal requirements, the emission reductions that will result from this rulemaking are a significant part of the Commonwealth’s efforts to continue toward attainment and maintenance of the

health-based NAAQS for ozone throughout Pennsylvania. As a result, this regulation is not contrary to either Executive Order 1996-1 or Section 4.2 of the APCA.

4. **Comment:** There is no supporting information to justify extending the requirements of the revised solvent cleaning limits beyond areas designated as moderate or severe ozone nonattainment with the 1-hour National Ambient Air Quality Standard (NAAQS). (1,19)

**Response:** With over 71,000 solvent cleaning machines throughout the Commonwealth, the Board has determined that to limit this regulation to the Southeastern and Southwestern regions only would be inequitable since it would leave businesses in those regions at a competitive disadvantage. In addition, this regulation has been designed not only to achieve the ozone standard, but to maintain it as well.

5. **Comment:** The broad definition of "solvent" includes non-VOC compounds that are exempted under EPA's definition of VOC. Since this proposed rulemaking is to address ozone air quality issues, it does not seem reasonable to impose additional control requirements on materials that do not contribute to the ozone problem. Non-VOC cleaners should be exempt from the requirements. (1,8,14,16)

**Response:** The Department agrees. The final rulemaking has been revised to apply only to solvent cleaning machines using VOC as the cleaning solvent. As a result, the definition does not include non-VOC compounds.

6. **Comment:** The requirements of the provisions for cold cleaners should be limited to machines used for the removal of grease or contaminants and should not extend to the removal of coatings and materials such as photoresist used in the electronics industry. (1,6,8,16)

**Response:** The Department agrees. The definition of solvent cleaning machine has been revised in the final rulemaking by removing the reference to removal of coatings. Removal of coatings such as photoresist is not considered solvent cleaning for purposes of this rulemaking.

7. **Comment:** There is no de minimis threshold for solvent cleaning machines in the proposed regulation. (1,2,8,14,15,16)

**Response:** In the final rulemaking the Department has established a de minimis threshold for cold cleaning operations. The final rulemaking applies to cold cleaning machines that contain 2 gallons or more of VOC.

- 8. Comment:** The 10 square foot de minimis applicability criteria in the existing regulation should be retained because these machines do not generate significant emissions. (1,8,11,12,13,16)

**Response:** The sheer number of small cold cleaning solvent units and the aggregate mass of emissions from these machines, based on emission factor estimates, indicates a need for measures to reduce emissions from smaller sources. In addition, the emission reductions techniques for cold cleaners, in many cases, have been implemented. The operators of small vapor cleaning machines may implement one of several compliance options or they may demonstrate that emissions meet an alternative emission limit as set forth in the regulation.

- 9. Comment:** The proposed rule is more stringent than the MACT for cold cleaners in that it disallows the use of the six halogenated solvents covered by the MACT because their vapor pressure exceeds the levels specified in the proposed regulation. (1,2,6,16)

**Response:** The final rulemaking allows the use of solvents that exceed the 1.0 mm Hg volatility limit if the cold cleaning machine has a freeboard ratio of 0.75 or greater. As a result, use of these six solvents is allowed.

- 10. Comment:** The final rulemaking should exempt cold cleaning machines that are covered by the MACT. However, these MACT requirements should not be mandated for machines using non-HAP solvents. (1,2,16)

**Response:** Cold cleaning machines that use non-VOC solvents are not covered by the final rulemaking. Machines using HAP solvents that are also VOC's are subject to the final rule. However, the final rulemaking has been revised to specify that cold cleaning machines subject to the MACT are exempt from the provisions of Section 129.63.

The Department believes that it is necessary to have essentially the same level of control requirements for vapor cleaning machines using non-HAP VOC solvents as for HAP solvents. Lower levels of control requirements for non-HAP machines could result in switching from non-VOC HAP solvents to VOCs, with the resulting potential for increased ozone formation. This should not be misconstrued as the Department is encouraging the continued use of HAP solvents, but only as a measure to minimize VOC emissions to the extent practical.

- 11. Comment:** The requirement to dispose of hand-wipe cleaning rags into closed containers will prohibit air drying of rags and increase disposal costs, particularly for small businesses. (1,2,16)

**Response:** The Department agrees. However, the Board is concerned that the practice of "air drying" of solvent cleaning rags can result in the emissions of HAPs and VOCs that are



cost effective to control. However, at this time, the Board does not believe that imposing regulatory requirements to prohibit this practice is the best approach to the issue, and has deleted the requirement from the final rulemaking, except for aerospace operations. Hand-wipe cleaning rags in aerospace operations have been subject to requirements to store solvent-laden rags in closed containers under existing requirements, and these will be retained. For other hand-wipe activities the Department encourages, but will not require, operators to implement pollution prevention programs, including use of non-VOC and non-HAP solvents for hand-wipe cleaning.

- 12. Comment:** The provisions of the regulation are internally inconsistent in that Section 129.63(f) states that “as an alternative to complying with subsections (a) through (d), the operator of a solvent cleaning machine may demonstrate compliance with paragraph (1)”, an exemption based on emission limits. The proposed regulation does not provide such exemption levels for cold cleaning machines. (1,6,16)

**Response:** The Department agrees. This was an error in the proposed rulemaking. The alternative compliance provisions in the proposed Section 129.63(f), new subsection (e), do not apply to cold cleaning machines. Operators of cold cleaning machines containing VOCs may either use a solvent that meets the volatility limit or may use a machine with a freeboard ratio of 0.75 or greater.

- 13. Comment:** The Department’s calculation of the VOC reductions and the costs for the program implementation are flawed. The majority of the VOC losses from cold cleaners are from drag-out and not from standing losses. Reducing the volatility of the solvent will not significantly reduce the drag-out of solvents on parts. It will only increase the parts drying time and may reduce production efficiency. (1,6,16)

**Response:** Based on information developed by Maryland and incorporated into a state implementation plan (SIP) revision approved by EPA, the Department believes that the emission reductions predicted are accurate and applicable to Pennsylvania. Costs of compliance for cold cleaning machines may, in fact, be over-stated. Suppliers of solvents and machines have indicated that a significant segment of the industry has already changed solvent blends and that much of the solvent in use meets the 1 mm Hg volatility limit. These changes were made to facilitate compliance with other requirements, including those related to hazardous material transport. Therefore, the costs that were predicted for changing to low volatility solvents have in many cases already been imposed and would continue regardless of the 1 mm Hg volatility limit.

For production shops, the final regulation provides the operator the alternative compliance option of using a cleaning machine freeboard of 0.75 or greater and continuing the use of the current solvent. If increased freeboard is necessary, the costs should be nominal.

**14. Comment:** Exemptions should be provided for those who use non-VOC or low volatility solvents. (1,16)

**Response:** The Department agrees. The final rulemaking exempts solvent cleaning machines that use non-VOC solvents. The operating requirements applicable to those using low volatility requirements are necessary to assure that machines are operated with good operating practices. The record keeping requirements related to solvent purchases are necessary to assure that operators are being provided with solvents at the compliance levels.

**15. Comment:** Low volatility and non-VOC products are unavailable for the semiconductor and microelectronics industry that meet the stringent cleaning and production requirements of the industry. The provisions should be limited to pertain only to the removal of contaminants from metal parts or should carve out an exemption for certain electronics manufacturing operations. (2,8)

**Response:** The Department agrees. The final rulemaking applies only to the cleaning of contaminants from metal parts. Therefore, removal of contaminants during the production of silicon wafers is not subject to these final regulations.

**16. Comment:** The requirement for a freeboard ratio of 0.75 or greater for immersion cold cleaners will result in the scrapping of a large number of serviceable cold cleaning machines and the resulting high cost for replacement. The regulation should adopt a size limitation for the applicability of the 0.75 freeboard ratio. Alternatively, the regulation should specify a freeboard ratio of 0.50 for all immersion cold cleaning machines. (3)

**Response:** The final rulemaking allows operators of cold cleaning machines the option of using low volatility (1 mm Hg) solvents in a machine with a freeboard ratio of 0.5 or greater. A freeboard ratio of 0.75 or greater is required if the solvent volatility is greater than 1 mm Hg. As a result, there will not be high cost for replacement.

**17. Comment:** The provisions should provide an exemption for certain electronics manufacturing operations because low solvents are not available to meet the cleaning needs for production of silicon wafers used for semiconductors. (4,8)

**Response:** The Department agrees. The final rulemaking applies only to the cleaning of contaminants from metal parts. Therefore, removal of contaminants such as photoresist during the production of silicon wafers is not subject to these final regulations.

**18. Comment:** The removal of the 10 ft<sup>2</sup> applicability limit for solvent cleaning machines should be retained. Eliminating the requirement will result in overly burdensome regulations being applied to equipment that has a relatively small impact on VOC emissions from solvent cleaning. (5,19)

**Response:** Individually, units smaller than 10 ft<sup>2</sup> are not significant sources of VOC. However, in aggregate, their emissions are significant, and reducing the VOC emissions from this class of sources is important to the Commonwealth's attaining the NAAQS for ozone. Consequently, the rulemaking will provide the 2-gallon applicability limit.

**19. Comment:** Use of low vapor pressure solvents creates a substantial risk if residual solvents are exposed to reactive atmospheres. An exception should be made to the volatility requirements in the regulation if there are compelling health and safety reasons. (5,19)

**Response:** The Department agrees. The final rulemaking specifies safety related exemptions. Cold cleaning machines used in extreme cleaning service, i.e., highly reactive or corrosive atmospheres are exempt from the solvent volatility requirements. In addition, if the owner or operator of the cold cleaning machine demonstrates that compliance with the volatility requirements will result in unsafe operating conditions, an exemption can be granted by the Department.

**20. Comment:** The regulation provides alternative compliance options for other types of solvent cleaning, but not for cold cleaning machines. The regulation should provide alternative compliance options for cold cleaners. (5,19)

**Response:** The final regulation provides that operators of immersion cold cleaning machines may comply by the use of a low volatility solvent and a freeboard ratio of 0.50 or greater, or by using a machine with a freeboard ratio of 0.75 or greater. In addition, the final regulation exempts units that are subject to the federal NESHAP for halogenated solvent cleaning.

**21. Comment:** The regulation should exempt halogenated solvent cleaning machines provided the solvent cleaning machine is subject to the federal National Emission Standard for Hazardous Air Pollutants, 40 CFR Part 63. (6)

**Response:** The Department agrees. The final rulemaking has been revised to provide this exemption for both cold cleaning machines and vapor cleaning machines.

**22. Comment:** The regulation should not apply the more stringent MACT provisions to machines using non-HAP solvents. (16)

**Response:** The Department agrees. Cold cleaning machines that use non-VOC solvents are not covered by the final rulemaking. Machines using HAP solvents that are also VOC's are subject to the final rule. However, the final rulemaking has been revised to specify that cold cleaning machines subject to the MACT are exempt from the provisions of Section 129.63.

The Department believes that it is necessary to have essentially the same level of control requirements for vapor cleaning machines using non-HAP VOC solvents as for HAP solvents. Lower levels of control requirements for non-HAP machines could result in switching from non-VOC HAP solvents to VOCs, with the resulting potential for increased ozone formation. This should not be misconstrued as the Department's encouraging the continued use of HAP solvents, but only as a measure to minimize VOC emissions to the extent practical.

- 23. Comment:** The Department has not explained why the CTG and RACT requirements for cold cleaning machines are inadequate to protect the public health. (9)

**Response:** Much of Pennsylvania is in nonattainment with the health related NAAQS for ozone. Reductions of the precursors of ozone formation, VOC and oxides of nitrogen are necessary to move the Commonwealth toward attainment of the health-related standard. Attaining the ambient ozone standard will reduce the incidence of respiratory problems in susceptible individuals, the young, asthmatics, the elderly and those with pre-existing respiratory problems. As a result, this regulation has been designed to be more protective to suit the current public health needs of the Commonwealth.

- 24. Comment:** The Department should clarify the language related to the requirements for a "vapor up" control switch for vapor degreasers. The change should clarify that a switch is needed only if the machine has a spray pump. (9)

**Response:** The Department agrees. The final regulation incorporates this suggested revision at Section 129.63(b)(iv).

- 25. Comment:** The Preamble does not explain the rationale for limiting the volatility of solvents used in cold cleaning machines. (9)

**Response:** The proposed cold cleaning machine solvent volatility limits are part of the Commonwealth's efforts to reduce ambient ozone levels to attain the NAAQS. Reduction of the solvent volatility levels will result in reduced emissions of VOC, an ozone precursor.

Currently, most residents of the Commonwealth are exposed to levels of ozone that exceed the levels determined by EPA to be necessary to protect the public health.

- 26. Comment:** If the Department is going to submit this regulation to EPA as part of the SIP for ozone, the Department should quantify the emission reduction that it anticipates from the regulation. (9)

**Response:** The Department estimates that the reduced solvent volatility limits for cold cleaning machines will result in VOC emission reductions of approximately 66 percent from currently enforceable levels. This assumption is based in part on similar SIP approved

regulatory programs in Maryland and Illinois. It is estimated that the reduced volatility limits will reduce enforceable VOC emissions by approximately 20 tons per day in the Southeast Pennsylvania ozone nonattainment area.

**27. Comment:** The proposed rulemaking does not discuss the impacts of the revised regulations and applicability levels on the Department's plan approval and permitting process. Major sources will be subject to RACT, Title V, and perhaps the NESHAP. (9)

**Response:** The Department currently exempts certain sources and classes of sources from plan approval and permitting requirements for a number of reasons, including insignificant levels of emissions. This regulation will not alter those determinations already made under the provisions of Section 127.14(a)(8).

If an existing source is so large as to be considered a major source, the source could be affected by other programs such as RACT, Title V, and the NESHAP. The requirements in this regulation will affect those determinations.

**28. Comment:** The proposed rulemaking does not explain why the Department is deviating from the NESHAP for halogenated solvent cleaning operations. (9)

**Response:** The Department has proposed reduced solvent volatility limits for VOC solvents to reduce emissions of ozone precursors and therefore ozone concentrations to protect the public health. In the final rulemaking, the Board is providing an exemption from the volatility limits for operations that are subject to the NESHAP requirements in 40 CFR Part 63.

**29. Comment:** The Department has not identified any non-regulatory alternatives to this rulemaking or explained why it disagrees with EPA's conclusion that existing regulations are adequate to protect the public health. (9)

**Response:** The emission reductions that will result from this rulemaking are a significant component of the Commonwealth's strategy to continue toward attainment of the health-based NAAQS for ozone throughout Pennsylvania. Although certain of the requirements in the regulation may be being met through voluntary measures, in order for the emission reductions to be creditable in the SIP, there must be an enforceable program to assure that they are permanent.

**30. Comment:** The Department contends that the Degreasing Stakeholders indicated that the best way to implement the regulation was through outreach and education. The proposed rulemaking package does not discuss or define this approach, especially as it relates to small business. (9)

**Response:** The Department's principal mechanism for outreach will be through the Department's Small Business Compliance Assistance Program. In addition, because the requirements are, for the most part, pollution prevention activities, DEP's Office of Pollution Prevention and Compliance Assistance will be involved. Many small business operators of cold cleaning machines use contract services to provide and maintain the machines. It is anticipated that the contractor will assure that the equipment is in compliance.

**31. Comment:** The preamble indicates that the Department is adverse to companies substituting less toxic solvents for more toxic solvents. (14)

**Response:** This is an incorrect interpretation of the statement in the preamble. The Department is proposing the same level of control for both HAP and non-HAP solvents to remove incentives for converting from nonreactive compounds to reactive compounds that will increase ozone concentrations. The Department is not averse to companies making the change from HAP solvents, but such a change should not be made if the result is an increase in emissions.

**32. Comment:** The Department indicates in Section 10 of the Regulatory Analysis Form that there is no legal reason to adopt these requirements. (14)

**Response:** Section 10 of the Regulatory Analysis Form relates to whether there is a "mandate" for a regulatory initiative. There is not a mandate specifically for these requirements. The reduction of VOC emissions from solvent cleaning operations was a recommendation of the Ozone Stakeholder Working Groups. The emission reductions are a significant component of the Commonwealth's efforts to meet and maintain the NAAQS for ozone throughout the Commonwealth.

**33. Comment:** The commentator indicates that the regulation will become federally enforceable as part of the SIP and that the requirements must be included in the Title V permit. This will pose compliance certification problems because of the sweeping nature of the requirements. (14)

**Response:** Whether or not the regulations are part of the SIP, the requirements will be included in the Title V permit, and the operator will be required to certify compliance. The final rulemaking contains a number of revisions that should minimize the compliance certification concerns. Among these is the establishment of a de minimis level of two gallons for cold cleaners and limiting the applicability to the cleaning of metal parts.

**34. Comment:** The commentator indicates that the documentation does not present any evidence that the regulation will have any specific benefit on air quality in Pennsylvania or describe who will benefit. In addition, the Department has described no compelling public interest that demands stronger regulation than the federal requirements. (14)

**Response:** Much of Pennsylvania is in nonattainment with the health-related NAAQS for ozone. Reductions of the precursors of ozone formation, VOC and oxides of nitrogen are necessary to move the Commonwealth toward attainment of the health-related standard. Attaining the ambient ozone standard will reduce the incidence respiratory problems in susceptible individuals, the young, asthmatics, the elderly and those with pre-existing respiratory problems. In addition, the emission reductions that will result from this rulemaking are a significant component of the Commonwealth's strategy to continue toward attainment of the health-based NAAQS for ozone throughout Pennsylvania.

**35. Comment:** The proposed regulation does not indicate how business will save money by switching to lower volatility solvent. (14)

**Response:** Operators will save money because of a reduced need to replace solvent lost due to evaporation.

**36. Comment:** The Department did not consider the increased costs for additional chemicals needed to control rust on parts cleaned in non-solvent cleaners, nor did the Department consider the parts damage that will result from the use of solvent alternatives. The provisions of the regulation will drive business to non-solvent cleaners. (14)

**Response:** The business decision to abandon solvent cleaning in favor of non-solvent cleaning will be primarily on the basis of least cost while maintaining product quality. Switching to non-solvent cleaning systems will be done because it is a lower cost option than remaining with a solvent cleaning system.

**37. Comment:** The Department did not take into account the number of businesses that will cease operation because of the requirements of this rule. (14)

**Response:** The Department is not aware of any businesses that will be forced to cease operations because of the requirements in this regulation. Because many businesses have already complied with these requirements as a cost-efficiency measure, it is anticipated that no business will be forced to close.

**38. Comment:** The commentator indicates that the proposed regulation will have significant adverse impact on the public, business and government because of its broad applicability. (14)

**Response:** The final regulation has limited the applicability of the requirements for the program. Specifically, the final regulation applies only to metal parts cleaning using VOC; cold cleaning activities where the VOC quantity is less than 2 gallons are exempted; and operations subject to the federal NESHAPs are not regulated.

**39. Comment:** The Department's estimates of costs and benefits are inaccurate. (14)

**Response:** The Department believes that its cost and benefit assessments are accurate. The Board based its estimates on the value of the solvent that would not be lost if the anticipated emission reductions occur. The emission reduction estimates are consistent with estimates for similar SIP-approved programs in Maryland and Illinois.

Other cost data have not been provided to the Department.

- 40. Comment:** The commentator asserts that the Department did not consider any non-regulatory options. (14)

**Response:** The Department considered non-regulatory approaches, but in order to obtain approval of emission reductions for SIP purposes, the emission reduction strategy must be enforceable. Other than through permits, a regulatory approach is the only way to make the reductions enforceable. It is estimated that there are in excess of 10,000 small cold cleaners in Pennsylvania. Permitting of this number of sources is not practical or cost effective.

- 41. Comment:** The regulation will impact certain waste disposal activities by small quantity generators who will no longer be able to allow solvent-contaminated rags to evaporate as a method of waste disposal. (14)

**Response:** Managing solvent-contaminated rags and hazardous volatile materials by evaporative drying is not an environmentally sound practice. Ozone levels throughout much of Pennsylvania continue to exceed the health-based ozone NAAQS. Toxic pollutants in the air, especially in urban environments, are a growing concern.

The final regulation does not require that hand-wipe cleaning rags be placed in covered containers. However, the Department recommends that operators develop alternative disposal techniques or implement non-solvent based cleaning alternatives.

- 42. Comment:** The definition of “hand-wipe cleaning operation” is overly broad and should be eliminated. (16)

**Response:** The Department agrees. Consistent with eliminating from the final regulation the requirements for placing of hand-wipe rags in closed containers, the Department will not expand the existing definition of “hand-wipe cleaning operation” adopted as part of the Department’s VOC regulations for the aerospace industry.

- 43. Comment:** The proposed language of Section 129.63 varies from the comparable federal provisions at 40 CFR 63.463. The Department should either conform its requirements to the federal requirements or adopt the federal NESHAP by reference. (8,19)



**Response:** The Department agrees. The final rule exempts from the requirements of Section 129.63 those machines subject to the federal MACT. Therefore, there are no inconsistent provisions applicable to solvent cleaning machines.

**44. Comment:** The commentator supports comments submitted by The PA Chamber of Business and Industry and Lucent Technologies and encourages the Environmental Quality Board to consider the experiences and recommendations offered in those comments. (20)

**Response:** The Department has taken their comments into consideration and has made changes where appropriate.

**45. Comment:** The EQB has not estimated the emission reductions that will be achieved through implementation of the regulation, nor has it quantified the extent to which it will help Pennsylvania attain the required reductions under the Clean Air Act. (21)

**Response:** The Department estimates that the reduced solvent volatility limits for cold cleaning machines will result in VOC emission reductions of approximately 66 percent from currently enforceable levels. This assumption is based in part on similar SIP-approved regulatory programs in Maryland and Illinois. Solvent cleaning VOC emission reductions are necessary for Pennsylvania's efforts to attain and maintain the NAAQS for ozone statewide. It is estimated that this regulation will result in approximately 14,375 tons of enforceable emission reductions statewide.

**46. Comment:** The EQB should explain the compelling public interest and environmental benefit of extending the more stringent MACT to non-HAP solvents. (21)

**Response:** The Department's intention in specifying the MACT level of control for non-HAP solvents was to assure that changes from HAP solvents to non-HAP VOCs would not be made at the expense of the environment. The Department is proposing the same level of control for both HAP and non-HAP solvents to remove incentives for converting from non-reactive compounds to reactive compounds that will increase ozone concentrations. The Department is not averse to companies making the change from HAP solvents, but such a change should not be made if the result is an increase in ozone precursor emissions.

**47. Comment:** The Department should justify the expansion of the requirements to include non-metal parts cleaning. Consideration should be given to exempting electronics industry and limiting the requirements to only metal parts. In addition, the Department should provide a more accurate estimate of the costs associated with the applicability of the requirements to include non-metal parts. (21)

**Response:** The final rulemaking limits the applicability to the removal of grease, oil and soils from metal parts. The final requirements do not apply to the removal of paints, inks or coatings, or to non-metal parts cleaning.

**48. Comment:** The Department should explain the reasonableness of eliminating the de minimis threshold and for not applying some smaller exemption level and should quantify the amount of VOC reductions that will result from the elimination of the de minimis threshold. (21)

**Response:** Most cold cleaning units presently in use are below the existing size threshold. These are units used primarily in mobile equipment service facilities and industrial maintenance shops. The bulk of the VOC emissions from cold cleaners reported in the emission inventory for solvent cleaning arise from these historically unregulated repair and maintenance degreasing operations. The final regulation provides a de minimis level of 2 gallons of solvent for cold cleaning operations. This level is consistent with the MACT for cold cleaning.

The existing requirements for vapor cleaning machines are based on equipment technology more than 25 years old. The technology specified for vapor cleaning machines is readily available to reduce emissions from the machines. As an alternative to meeting the hardware/technology requirements, the operator can show that the VOC emissions from the vapor cleaning machine meet certain specified levels.

**49. Comment:** The Department should clarify the effect of this rulemaking on Title V permits, including whether operators will be required to revise their Title V permits to reflect the revisions.(10,21)

**Response:** Facility operators may be required to revise their Title V operating permits following the adoption of the final regulation. For those Title V permits with three or more years remaining before the permit expiration, the operator will be required to revise the permit. A review of Title V permit data indicates that approximately 240 of the approximately 600 Title V permits will have more than three years remaining as of the fall of 2002, the compliance date for the revised cold cleaner requirements. It is not clear that all of these facilities will be affected.

The Department will develop a process for opening and revising those permits with longer than 3 years to the permit expiration that will require minimal effort for the affected facilities.

**50. Comment:** The Department should provide a more accurate estimate of the costs of the rulemaking. (21)

**Response:** The Department believes that the cost estimates reflect the upper limits of the new costs due to the requirements and are the most accurate costs. Most cold cleaning machines are already using low volatility solvents and should experience no additional costs.

**51. Comment:** The Department should provide an estimate of the benefits of eliminating the de minimis threshold and should address whether the reduced solvent volatility will result in significant VOC emission reductions. (21)

**Response:** Based on EPA emission factor estimates, the majority of the emissions from cold cleaning operations result from activities at automobile repair facilities where small cold cleaning machines are the predominate sources. Emission factor estimates indicate emissions of approximately 2.5 pounds per person per year from automobile repair cold cleaning activities. An additional estimated 1.1 pounds per person per year results from manufacturing cold cleaning activities. Total solvent cleaning emission factor estimates are approximately 4.3 pounds per person per year, including vapor and in-line cleaning machines. The reduced volatility is estimated to result in emission reductions of approximately 66 percent from unregulated levels from cold cleaning activities.

**52. Comment:** The commentator supports appropriate handling of solvent bearing cloths, but is concerned about permitting and enforcement issues related to the proposed regulatory requirements. (9)

**Response:** The Department believes that the proper management of solvent-soaked cloths can result in significant reductions of HAPs and VOCs. Other commentators have expressed that allowing the cloths to air dry, releasing the solvent to the atmosphere, permits the disposal of the cloths as general waste, rather than as hazardous waste. Although the requirement for properly managing these cloths may result in reduced emissions and exposure for workers and the public, the implementation of such a program through regulatory requirements may not be practical at this time. Therefore, the requirement for placing solvent-bearing cloths into closed containers has been removed from the final rulemaking.

**53. Comment:** The Board indicates that the proposed requirements are consistent with the requirements in effect in Maryland and Illinois. However, those rules contain exemptions not provided for in the proposed regulation. (8)

**Response:** The major differences between the proposed regulation and the rules in other states relate to the applicability to the types of parts cleaned and the materials removed during the cleaning. The proposed regulation applied to the removal of all types of coatings, inks, greases, oil and other soils from all materials. The final regulation applies only to the removal of grease, oil and similar soils from metal parts. It does not apply to the removal of coatings, inks or such materials as photoresist, and it does not apply to cleaning of non-metal parts.

**54. Comment:** The Department has not identified non-regulatory alternatives to this proposal. (9)

**Response:** The emission reductions that will result from this rulemaking are a significant component of the Commonwealth's strategy to continue toward attainment and maintenance of the health-based NAAQS for ozone throughout Pennsylvania. Although certain of the requirements in the regulation may be being met through voluntary measures, in order for the emission reductions to be creditable in the SIP, there must be an enforceable program to assure that they are permanent.

**55. Comment:** The Department has not identified the outreach efforts it will use to assist in the implementation of the requirements. (9)

**Response:** Because most of the affected solvent cleaning machines are located at small businesses such as automotive repair facilities, the Department will work closely with the Small Business Compliance Assistance Program to alert these operators. In addition, because many of these machines are installed and operated under contract with service providers, the Department will coordinate its outreach efforts closely with these businesses.

**56. Comment:** The Department has not identified the emission reductions that will result from the implementation of the requirements. (9,21)

**Response:** EPA emission factor estimates indicate that unregulated emissions from cold cleaning activities from facilities such as automobile repair facilities where small cold cleaning units predominate and from manufacturing cold cleaning are approximately 3.6 pounds per person per year. Based on an estimated population of 12.1 million and this emission factor, unregulated emissions are estimated to be 21,780 tons per year statewide. Based on determinations of emission reduction benefits of approximately 66 percent resulting from reduced solvent volatility for the Maryland state implementation plan (SIP) approved by EPA, the Board estimates that the requirements will result in enforceable emission reductions of approximately 14,375 tons per year statewide.

**57. Comment:** The Department does not explain the rationale for limiting the volatility of solvents used in cold cleaning machines. (9)

**Response:** Establishment of limits on the volatility of solvents used in cold cleaning machines is a part of the Board's efforts to move to attainment of the anticipated standard designations throughout the Commonwealth.

**58. Comment:** The Department does not explain why the proposed rulemaking requirements deviate from the federal MACT. (9)

**Response:** The Department did not intend that the requirements in the proposed rulemaking deviate from or conflict with the federal MACT. The final rulemaking has been revised to exempt from the requirements in Section 129.63 any solvent cleaning units subject to the federal MACT.

**59. Comment:** The Department does not explain the implications of the rulemaking for permitted sources. (9,10,15,21)

**Response:** The establishment of these requirements will impact only those sources with Title V permits that have more than three years remaining in the life of the permit. As is discussed in the response to Comment 49, the Department will develop a program to minimize the impact on the facilities that are affected. The revisions do not specifically require permitting activities.

**60. Comment:** The Department should change the definition of immersion cold cleaners to include the phrase “an open top...” (12)

**Response:** The Department agrees. This change has been made in the final rulemaking.

**61. Comment:** The Department should consider exempting from the 0.75 freeboard requirements immersion cold cleaning machines that are kept closed except when parts or solvent are being added or removed. (12)

**Response:** The freeboard ratio requirement of 0.75 is applicable only to those machines that use a solvent with volatility greater than 1.0 mm Hg. The operator may use 0.50 if the machine uses solvent with a volatility of 1.0 mm Hg or less.

**62. Comment:** The Department should revise the definition of remote reservoir cold cleaning machine to include certain machines that drain solvent into a covered container. (12)

**Response:** The Department agrees. The definition of “remote reservoir cold cleaning machine” has been revised in the final rulemaking to include the phrase suggested by the commentator.

**63. Comment:** The Department should consider changing the title of the requirements to more accurately describe the section of the regulations. (13)

**Response:** The Department agrees. The title of section 129.63 has been revised in the final rulemaking to reflect that it applies to “VOC Cleaning Operations.”

**64. Comment:** The word “parts” should be defined to specifically include size, material and/or shape. (13)

**Response:** The term “parts” is not defined in the final rulemaking. The common meaning of the word is adequate.

**65. Comment:** The definition of “freeboard ratio” should be changed to be consistent with the definition in the MACT. (17,18)

**Response:** The Department agrees. The definition of “freeboard ratio” has been revised in the final rulemaking to be consistent with the MACT definition.

**66. Comment:** The Department should add definitions for “idling mode” and “vapor pressure.” (17,18)

**Response:** The Department agrees. The final rulemaking includes definitions for these terms.

**67. Comment:** A de minimis level should be included for machines using low volatility solvent. (17,18)

**Response:** The Department disagrees. Setting a de minimis exemption level for small units is not a practical alternative. The majority of anticipated emission reductions will result from comparatively small units. In order for emission reductions to be creditable for SIP purposes, they must result from enforceable requirements.

**68. Comment:** The Department should identify the costs of recordkeeping associated with the elimination of the de minimis exemption level. (21)

**Response:** The additional recordkeeping costs associated with the elimination of the de minimis threshold for cold cleaners should not increase recordkeeping significantly. As commentators noted, the records relating to solvent volatility are available as part of the MSDS record and are kept as a normal business practice, as are the bills of lading, purchase receipts or other information necessary to demonstrate compliance. The elimination of the threshold for vapor cleaning machines will require significant additional recordkeeping.

**69. Comment:** The Department should provide an estimate of the increased costs associated with compliance with the cold cleaning machine volatility requirements. (21)

**Response:** The final rulemaking provides compliance options for affected facilities. The operator can elect to use low volatility solvents or to increase the cleaning machine freeboard ratio. In most cases, compliance can be achieved by the use of low volatility solvents. Inasmuch as many facilities have switched to low volatility solvents, the cost has already been incurred. For facilities that prefer to continue to use higher volatility solvents, increasing the height in the solvent tank should be nominal.

**70. Comment:** The Department should assure that the regulation addresses situations where low volatility solvents or the specified compliance options are not viable options for solvent cleaning machines. (21)

**Response:** The final rulemaking provides operators of affected cold cleaning machines the option of using low volatility solvent, or increasing the freeboard ratio for the machine to 0.75 or greater. In addition, affected facilities have the option of demonstrating that an alternative program is as effective as the regulation under the equivalency provisions in Section 129.51 of Chapter 129. Operators of cold cleaning machines subject to the federal MACT are not affected by the requirements of Section 129.63.

**71. Comment:** The term “solvent cleaning machine idle time” is not used in Section 129.63, and the definition in Section 121.1 is not necessary. (21)

**Response:** The Department agrees. The definition has been deleted from the final regulation.

**72. Comment:** The terms “solvent vapor zone” and “vapor zone” appear to be used interchangeably. One or the other should be defined and used. (21)

**Response:** The Department agrees. The term “solvent vapor zone” is defined and used in the final regulation.

**73. Comment:** The terms “solvent vapor layer” and “solvent vapor” are undefined. If the terms are the same, one or the other should be defined and used. If they are different, each should be defined. (21)

**Response:** These terms are used in definitions used in the federal MACT and are undefined in the MACT. To assure consistency with the MACT interpretation, no definitions are provided for the terms.

**74. Comment:** The definition of the term “vapor cleaning machine” adds the phrase “or that heats liquid solvent,” which is inconsistent with the federal definition. The EQB should explain why it has diverted from the federal definition. (21)

**Response:** The technical stakeholders who worked to formulate the regulation suggested the proposed definition. In the final rulemaking the definition is revised to be consistent with the federal MACT definition.

**75. Comment:** Section 129.63(a)(3)(v) prohibits the use of air agitated baths. 40 CFR 63.462(c)(6) does not. The Board should explain this difference. (21)

**Response:** Air agitated baths “strip” solvent from the solvent cleaning machine and increase VOC emissions. Other agitation mechanisms are available that result in reduced emissions.

**76. Comment:** The EQB should address whether low volatility solvents are readily available to the affected industry. (21)

**Response:** The major cold cleaner service provider and other equipment suppliers have indicated to the Board that the majority of cold cleaning machines have been using lower volatility solvents for several years. Adequate supplies of complying solvents do not appear to be an issue.

**77. Comment:** The EQB should clarify what is meant by the term “new in-line cleaning machine” in paragraph 129.63(f)(1)(ii). (21)

**Response:** The Department agrees. The meaning of the phrase has been clarified. For purposes of machines subject only to the provisions of Section 129.63, the phrase means sources constructed or re-constructed after the date of publication of the final rulemaking.

**78. Comment:** The EQB should clarify whether the alternative compliance provisions in the proposed Section 129.63(f) apply to all solvent cleaning machines, including cold cleaning machines. (21)

**Response:** The Department did not intend that these alternative provisions would apply to cold cleaning machines. This has been corrected in the final rulemaking.

**79. Comment:** The EQB should correct what appear to be numbering inconsistencies in the tables in Section 129.63. (21)

**Response:** Corrections have been made in the final regulation.

**80. Comment:** The EQB should determine the applicability of requirements similar to the proposed rulemaking in other states. (21)

**Response:** Presently, Maryland’s low volatility requirements apply in the Baltimore nonattainment area. The Maryland requirements affect removal of grease, oil and soils from metal parts and exempt non-metal cleaning activities. In Illinois, low volatility cold cleaning solvent requirements affect the cleaning of oil, grease, and soils from metal parts.

Most other states that regulate VOC emissions from solvent cleaning apply the requirements only to metal parts cleaning and do not specify maximum solvent volatility limits.



**81. Comment:** The commentator supports proper handling and disposal of hand-wipe cleaning cloths. However, the commentator expressed general concern about the hand-wipe cleaning provision including: the lack of a de minimis level in the proposed regulation; no information concerning costs and benefits; fire hazards related to rag storage; and possible Title V permitting and enforcement issues. (7)

**Response:** The Department believes that all reasonable measures should be implemented to reduce emission from the evaporative drying of solvent and HAP materials from cloths. However, the Department has removed the hand-wipe cleaning requirements from the final rulemaking and will not, at this time, impose new regulatory requirements for general hand-wipe cleaning activities.

**82. Comment:** The commentator provided cost data related to development of alternative solvent programs for a number of the company's facilities. These facilities are involved in printing and surface coating operations. The company estimates total development costs of approximately \$500,000 with an estimated \$220,000 in annual operating costs if the company's facilities are affected by the requirements. (15)

**Response:** Several changes made in the final rulemaking will minimize the potential cost impact to the regulated community, including the operations at the commentator's facilities. The final rulemaking has been revised to apply only to the removal of oils, waxes, greases and soils from metal parts where VOCs are used. It does not apply to the removal of coatings and inks. In addition, the final rulemaking exempts operations that are subject to the federal NESHAP for solvent cleaning. The provisions of Section 129.51 allow an operator the option of developing an alternative compliance plan. The final rulemaking also provides exemptions based on safety considerations.

**83. Comment:** The requirements for recordkeeping regarding the volatility of cold cleaning solvent are redundant and should be eliminated. (15)

**Response:** The requirements for maintenance of the documentation regarding solvent volatility are retained in the final rulemaking. If the operator can relate the Material Safety Data Sheet (MSDS) on file to the solvent in use, that will be satisfactory for demonstration of compliance.

**84. Comment:** The proposed rulemaking provides alternative compliance options for batch vapor and in-line cleaning machines, but does not provide options for cold cleaning machines. This could force operators to switch to vapor cleaning machines for cleaning small parts. (15)

**Response:** The final rulemaking provides compliance alternatives for affected cold cleaning machines. Operators can use either low volatility solvents or increased freeboard

ratio as means of compliance. Also, operators can demonstrate that some alternative compliance program is equivalent under the provisions of Section 129.51 of Chapter 129.

**85. Comment:** The commentator indicated that the Department should maintain the 10<sup>2</sup> foot exemption for cold cleaners and should exempt those units using solvent with a volatility less than 1mm Hg. (15)

**Response:** The majority cold cleaning machines are units less than 10<sup>2</sup> feet. Creditable emission reductions are a significant part of the Commonwealth's efforts to attain and maintain the ozone standard throughout the Commonwealth.

**86. Comment:** The Regulatory Analysis does not adequately support the Department's contention that the proposed rulemaking will save the regulated community \$7.3 million the first year and \$14.6 million in subsequent years. (9)

**Response:** These estimates were based on the value of the solvent that would not be lost if the anticipated emission reductions occur. The emission reduction estimates are consistent with estimates for similar SIP-approved programs in Maryland and Illinois.

**87. Comment:** The commentators indicated that the regulation should clarify that the hand-wipe cleaning provisions do not apply to consumer products already regulated by federal requirements. (17,18)

**Response:** Except for pre-existing requirement related to hand-wipe cleaning at aerospace facilities, the final rulemaking does not contain provisions regarding handling and disposal of hand-wipe cleaning rags. Therefore, language clarifying this exemption is not necessary.

**88. Comment:** The commentator indicated that the Department should revise its cost estimates to account for commentators' concerns. (21)

**Response:** Commentators indicated that the broadened scope of the requirements to include removal of materials other than grease, oil, and the like, and the applicability to non-metal parts could impose additional costs for development of solvent systems for these uses. The final rulemaking narrows the scope of applicability to cleaning of oil, grease, and similar materials from metal parts. Further, the requirements apply only to machines using VOC as the cleaning solvent, and provide exemptions for machines subject to the federal NESHAP. These changes have eliminated most of the areas of cost concern raised by the commentators. The availability of compliance options for affected facilities allows operators to chose the least-cost option.

**89. Comment:** The commentator indicated that the definitions of "dwell" and "dwell time" are inconsistent and should be clarified in the final regulation. (21)

**Response:** The Department agrees. These terms have been clarified in the final regulation.

**90. Comment:** The commentator questioned whether a waiver process would be included in the final rulemaking. (21)

**Response:** The final rulemaking provides a number of exemptions, including one related to safety and another for sources subject to the federal NESHAP. In addition, the scope of the final rulemaking has been narrowed to include only machines using VOC for cleaning of metal parts.

**91. Comment:** The commentator raised several issues related to hand- wipe cleaning, including: the applicability of the provisions to janitorial supplies and consumer products; enforcement and de minimis provisions; and uncertainty about how the requirements would reduce emissions. (21)

**Response:** The hand-wipe cleaning provisions have been removed from the final rulemaking.

**92. Comment:** The Department should revise terminology related to hand-wipe cleaning in Sections 129.63 (c)(vi) and (d)(7)(v). (21)

**Response:** The final rulemaking does not contain provisions relating to hand-wipe cleaning rags. However, the final rulemaking does require that wipe rags used for the clean-up of solvent spills be placed into closed containers for storage and disposal.

**93. Comment:** Section 129.63(d)(3) in the proposed rulemaking requires the operator of a machine to operate the machine in conformance with “good air pollution control practices.” To improve clarity, the EQB should define or reference what these practices are. (21)

**Response:** These “good air pollution control practices” can vary with individual machines, so a general definition of the practices that would apply to all machines is not practical. Therefore, the EQB has deleted the requirement from the final rulemaking.