

REGULATION 6.18 Standards of Performance for Solvent Metal Cleaning Equipment

Air Pollution Control District of Jefferson County Jefferson County, Kentucky

Relates To: KRS Chapter 77 Air Pollution Control

Pursuant To: KRS Chapter 77 Air Pollution Control

Necessity and Function: KRS 77.180 authorizes the Air Pollution Control Board to adopt and enforce all orders, rules, and regulations necessary or proper to accomplish the purposes of KRS Chapter 77. This regulation provides for the control of emissions from solvent metal cleaning equipment.

SECTION 1 Definitions

Terms used in this regulation that are not defined in this regulation shall have the meaning given to them in Regulation 1.02 *Definitions*.

- 1.1 "Affected facility" means cold cleaners, open top vapor degreasers, and conveyORIZED degreasers that use volatile organic compounds (VOCs) to remove soluble impurities from metal surfaces.
- 1.2 "Cold cleaner" means a batch-loaded degreaser whose solvent is kept below its boiling point.
- 1.3 "Conveyorized degreaser" means a degreaser that is continuously loaded by means of a conveyor system. Its solvent may be boiling or non-boiling.
- 1.4 "Freeboard height" means the following:
 - 1.4.1 For a cold cleaner, the distance from the liquid solvent level in the degreaser tank to the lip of the tank,
 - 1.4.2 For a vapor degreaser, the distance from the solvent vapor level in the tank to the lip of the tank,
 - 1.4.3 For a vapor conveyorized degreaser, the distance from the vapor level to the bottom of the entrance or exit opening, whichever is lower, and
 - 1.4.4 For a cold conveyorized degreaser, the distance from the liquid solvent level to the bottom of the entrance or exit opening, whichever is lower.
- 1.5 "Freeboard ratio" means the freeboard height divided by the width of the degreaser.
- 1.6 "Open top vapor degreaser" means a batch-loaded degreaser whose solvent is heated to its boiling point creating a solvent vapor zone.
- 1.7 "Refrigerated chiller" means a second set of freeboard condenser coils that create a cold air blanket above the vapor zone and are located slightly above the primary condenser coils.
- 1.8 "Solvent" means VOCs.

SECTION 2 Applicability

This regulation applies to each affected facility. Any affected facility that is ever subject to this regulation shall always be subject to it unless the process of the affected facility is changed to a process that is not defined as an affected facility in section 1.1.

SECTION 3 Standard for Volatile Organic Compounds

The owner or operator of an affected facility shall install, maintain, and operate the control equipment and observe at all times the operating and material requirements that apply to the type of solvent metal cleaning equipment as specified in Sections 4, 5, and 6.

SECTION 4 Cold Cleaners

4.1 Equipment Requirements.

- 4.1.1 The cold cleaner shall be equipped with a tightly fitting cover that is free of cracks, holes, or other defects. If the solvent is agitated or heated, then the cover shall be designed so that it can be easily operated with 1 hand.
- 4.1.2 The cold cleaner shall be equipped with a drainage facility that is designed so that the solvent that drains off parts removed from the cleaner will return to the cold cleaner. The drainage facility may be external if the District determines that an internal type cannot fit into the cleaning system.
- 4.1.3 A permanent, conspicuous label summarizing the operating requirements specified in section 4.2 shall be installed on or near the cold cleaner.
- 4.1.4 If used, the solvent spray shall be a fluid stream, not a fine, atomized, or shower type spray, at a pressure that does not cause excessive splashing. Flushing of parts using a flexible hose or other flushing device shall be performed only within the freeboard area of the cold cleaner. Solvent flow shall be directed downward to avoid turbulence at the air-solvent interface and to prevent solvent from splashing outside of the cold cleaner.
- 4.1.5 If the solvent is heated above 120°F, then 1 of the following control devices shall be used:
 - 4.1.5.1 Freeboard with a freeboard ratio equal to or greater than 0.7,
 - 4.1.5.2 Water cover, provided that the solvent is insoluble in, and heavier than, water, or
 - 4.1.5.3 Another system, approved by the District, that provides equivalent control, such as a refrigerated chiller or carbon adsorber.
- 4.1.6 Work area fans shall be located and positioned so that they do not blow across the opening of the cold cleaner.
- 4.1.7 If a pump-agitated solvent bath is used, then the agitator shall be operated to produce no more than a rolling motion of solvent with no observable splashing of the solvent against the tank walls or the parts being cleaned. An air-agitated solvent bath shall not be used.
- 4.1.8 The solvent-containing portion of the cold cleaner shall be free of all liquid leaks. Auxiliary cold cleaner equipment such as pumps, water separators, steam traps, or distillation units shall not have any visible liquid leaks, visible tears, or cracks.

4.2 Operating Requirements.

- 4.2.1 Waste solvent shall neither be disposed of nor transferred to another party in a manner such that more than 20% by weight of the waste solvent can evaporate. Waste solvent shall be stored only in a covered container. A covered container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.
- 4.2.2 The solvent level in the cold cleaner shall not exceed the fill line.
- 4.2.3 The cold cleaner cover shall be closed whenever a part is not being handled in the cold cleaner.
- 4.2.4 Parts to be cleaned shall be racked or placed into the cold cleaner in a manner that will minimize drag-out losses.
- 4.2.5 Cleaned parts shall be drained for at least 15 seconds or until dripping ceases, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while the part is draining. During the draining, tipping, or rotating, the parts shall be positioned so that the solvent drains directly back to the cold cleaner.
- 4.2.6 A spill during solvent transfer shall be cleaned immediately, and the wipe rags or other sorbent material shall be immediately stored in a covered container for disposal or recycling unless enclosed storage of these items is not allowed by fire protection authorities.

- 4.2.7 Sponges, fabric, wood, leather, paper products, and other absorbent material shall not be cleaned in a cold cleaner.
- 4.3 Material Requirements. No person shall do either of the following:
 - 4.3.1 Cause or allow the sale of solvent with a vapor pressure that exceeds 1.0 mm Hg (0.019 psi) measured at 20°C (68°F) in units greater than 5 gallons for use in cold cleaners located in Jefferson County, Kentucky, and
 - 4.3.2 Operate a cold cleaner using a solvent with a vapor pressure that exceeds 1.0 mm Hg (0.019 psi) measured at 20°C (68°F).
- 4.4 Recordkeeping Requirements.
 - 4.4.1 A person subject to the requirements of section 4.3.1 shall maintain records that include the following for each sale:
 - 4.4.1.1 The name and address of the solvent purchaser,
 - 4.4.1.2 The date of the sale,
 - 4.4.1.3 The type of solvent,
 - 4.4.1.4 The unit volume of the solvent,
 - 4.4.1.5 The total volume of the solvent, and
 - 4.4.1.6 The vapor pressure of the solvent measured in mm Hg at 20°C (68°F).
 - 4.4.2 A person subject to the requirements of section 4.3.2 shall maintain records that include the following for each purchase:
 - 4.4.2.1 The name and address of the solvent supplier,
 - 4.4.2.2 The date of the purchase,
 - 4.4.2.3 The type of the solvent, and
 - 4.4.2.4 The vapor pressure of the solvent measured in mm Hg at 20°C (68°F).
 - 4.4.3 All records required by section 4.4 shall be retained for 5 years and made available to the District upon request.
- 4.5 Notwithstanding the material requirements of section 4.3, the owner or operator of a cold cleaner shall, by June 1, 2003:
 - 4.5.1 Determine whether a lower VOC-containing or non-VOC solvent is feasible to be used in place of the currently-used solvent during the time period June 15, 2003, to September 15, 2003, and
 - 4.5.2 Submit in writing, to the District, the results of the determination made pursuant to section 4.5.1 and a description of any changes, determined to be feasible, that the owner or operator has decided to make during that time period.
- 4.6 Before implementing a process change pursuant to section 4.5, the owner or operator of the cold cleaner should appropriately address any related safety issues.
- 4.7 To the extent that a process change is not prohibited to be made prior to the issuance of a permit pursuant to Regulation 2.16 *Title V Operating Permits* or Regulation 2.05 *Prevention of Significant Deterioration of Air Quality*, and notwithstanding the permit requirements of Regulation 2 *Permit Requirements*, the owner or operator of a cold cleaner may, after notifying the District pursuant to section 4.5, implement process changes pursuant to section 4.5, except for process changes that increase the capacity of the cold cleaner, up to September 15, 2003, without first obtaining an otherwise-required permit from the District pursuant to Regulation 2. Permanent implementation of a process change after September 15, 2003, is subject to the permit requirements of Regulation 2.

SECTION 5 Open Top Vapor Degreasers

- 5.1 Equipment Requirements.

- 5.1.1 The open top vapor degreaser shall be equipped with a cover that can be opened and closed easily without disturbing the vapor zone. The cover shall be free of cracks, holes, and other defects. If the degreaser opening is greater than 10 square feet, the cover must be powered. If a lip exhaust is used, the closed cover shall be below the level of the lip exhaust.
- 5.1.2 The open top vapor degreaser shall be equipped with the following safety switches:
 - 5.1.2.1 Condenser flow switch and thermostat to shut off the sump heater if the condenser coolant either is not circulating or is too warm,
 - 5.1.2.2 Spray safety switch to shut off the spray pump if the vapor level drops more than 4 inches below the bottom condenser coil in order to prevent spraying above the vapor level, and
 - 5.1.2.3 Vapor level control thermostat to shut off the sump heater if the vapor zone rises above the design level, or
 - 5.1.2.4 Equivalent safety systems as approved on a case-by-case basis by the District.
- 5.1.3 The open top vapor degreaser shall be equipped with at least 1 of the following major control devices:
 - 5.1.3.1 Freeboard with a freeboard ratio equal to or greater than 0.75, and, if the open top vapor degreaser opening is greater than 10 square feet, then the cover shall be powered or mechanically assisted,
 - 5.1.3.2 Refrigerated chiller,
 - 5.1.3.3 Enclosed design such that the cover or door opens only when a dry part is actually entering or exiting the degreaser,
 - 5.1.3.4 Carbon adsorption system, with ventilation, when the cover is open, equal to or greater than 50 cfm/sq ft of air/vapor interface area, and exhausting less than 25 ppm by volume VOC averaged over 1 complete adsorption cycle, or
 - 5.1.3.5 Control system demonstrated to the District's satisfaction to have a control efficiency equivalent to or better than any of the above.
- 5.1.4 A permanent, conspicuous label summarizing the operating procedures specified in section 5.1.2, shall be installed on or near the open top vapor degreaser.
- 5.2 Operating Requirements.
 - 5.2.1 The cover shall be closed at all times except when processing work loads through the open top vapor degreaser.
 - 5.2.2 Solvent carry-out shall be minimized by the following measures:
 - 5.2.2.1 Parts shall be racked to allow complete drainage,
 - 5.2.2.2 Parts shall be moved in and out of the open top vapor degreaser at a vertical speed of less than 11 ft/min,
 - 5.2.2.3 The work load shall be degreased in the vapor zone until condensation ceases,
 - 5.2.2.4 Any pools of solvent on the cleaned parts shall be tipped out before removal, and
 - 5.2.2.5 Parts shall be allowed to dry within the open top vapor degreaser above the vapor zone until visually dry.
- 5.3 Porous or absorbent materials such as cloth, leather, wood, or rope shall not be degreased.
- 5.4 The work load shall not occupy more than half of the degreaser's open top area.
- 5.5 The vapor level shall not drop more than 4 inches when the work load enters or leaves the vapor zone.
- 5.6 Solvent shall not be sprayed above the vapor level.
- 5.7 Any solvent leak shall either be repaired immediately or the open top vapor degreaser shall be shut down until the leak is repaired.

- 5.8 Waste solvent shall neither be disposed of nor transferred to another party in a manner such that more than 20% by weight of the waste solvent can evaporate. Waste solvent shall be stored only in closed containers.
- 5.9 The exhaust ventilation shall not exceed 65 cfm/sq ft of degreaser area unless necessary to meet OSHA requirements or control device requirements. Ventilation fans shall not be used near the degreaser opening.
- 5.10 Water shall not be visually detectable in the solvent exiting the water separator.

SECTION 6 ConveyORIZED Degreasers

6.1 Equipment Requirements.

- 6.1.1 A conveyORIZED degreaser shall be enclosed, except for work load entrances and exits, so that in-plant air movement does not impinge upon the internal atmosphere of the degreaser.
- 6.1.2 The conveyORIZED degreaser shall be equipped with a drying tunnel or another means, such as rotating baskets, sufficient to prevent cleaned parts from carrying out solvent in either liquid or vapor form.
- 6.1.3 The parts entrance and exit openings for the conveyORIZED degreaser shall be minimized by providing covers that silhouette work loads so that the average clearance between the largest part and the edge of the entrance and exit openings is either less than 4 inches or less than 10% of the width of the opening.
- 6.1.4 The conveyORIZED degreaser shall be equipped with down-time covers for closing off the entrance and exit openings during shutdown hours.
- 6.1.5 If the conveyORIZED degreaser has an air/solvent interface area or an air/vapor interface area equal to or greater than 20 square feet, then the conveyORIZED degreaser shall be equipped with at least 1 of the following major devices:
 - 6.1.5.1 Refrigerated chiller,
 - 6.1.5.2 Carbon adsorption system, with ventilation, when the down-time covers are open, greater than or equal to 50 cfm/sq ft of air/vapor interface area, and exhausting less than 25 ppm by volume of VOC averaged over 1 complete adsorption cycle, or
 - 6.1.5.3 Control system demonstrated to the District's satisfaction to have a control efficiency equivalent to or better than either of the above.
- 6.1.6 If the conveyORIZED degreaser is a vapor type, then it shall be equipped with the following safety switches:
 - 6.1.6.1 Condenser flow switch and thermostat to shut off the sump heater if the condenser coolant is either not circulating or is too warm,
 - 6.1.6.2 Spray safety switch to shut off the spray pump or conveyor if the vapor level drops more than 4 inches below the bottom condenser coil in order to prevent spraying above the vapor level, and
 - 6.1.6.3 Vapor level control thermostat to shut off the sump heater if the vapor level rises above the design level, or
 - 6.1.6.4 Equivalent safety systems as approved on a case-by-case basis by the District.
- 6.1.7 A permanent, conspicuous label, summarizing the operating requirements in section 6.2, shall be installed on or near the conveyORIZED degreaser.

6.2 Operating Requirements.

- 6.2.1 The exhaust ventilation shall not exceed 65 cfm/sq ft of degreaser opening unless necessary to meet OSHA requirements or control device requirements. Work place ventilation fans shall not be used near the conveyORIZED degreaser openings.
- 6.2.2 Solvent carry-out shall be minimized by the following measures:

- 6.2.2.1 Parts shall be racked to allow complete drainage, and
- 6.2.2.2 The vertical conveyor speed shall be less than 11 ft/min.
- 6.2.3 Waste solvent shall neither be disposed of nor transferred to another party in a manner such that more than 20% by weight of the waste solvent can evaporate. Waste solvent shall be stored only in closed containers.
- 6.2.4 Any solvent leak shall either be repaired immediately or the conveyorized degreaser shall be shut down until the leak is repaired.
- 6.2.5 Water shall not be visually detectable in the solvent exiting the water separator.
- 6.2.6 Down-time covers shall be placed over the parts entrance and exit openings for the conveyorized degreaser immediately after the conveyor and exhaust are shut down and removed just before they are started up.

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