

REGULATION 7.18 Standards of Performance For New 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 provides that the Air Pollution Control board may make and enforce all needful orders, rules, and regulations necessary or proper to accomplish the purposes of KRS Chapter 77. This regulation provides for the control of emissions from new solvent metal cleaning operations.

SECTION 1 Applicability

This regulation applies to each new affected facility which commences operation after the effective date of this regulation. Any source that is ever subject to this regulation will always be subject to it unless the source changes its process to one not covered by this regulation.

SECTION 2 Definitions

Terms used in this regulation not defined herein shall have the meaning given them in Regulation 1.02.

- 2.1 "Affected facility" means cold cleaners, open top vapor degreasers, and conveyORIZED degreasers that utilize VOCs to remove soluble impurities from metal surfaces.
- 2.2 "Cold cleaner" means a batch-loaded degreaser whose solvent is kept below its boiling point.
- 2.3 "ConveyORIZED degreasers" means a degreaser that is continuously loaded by means of a conveyor system. Its solvent may be boiling or nonboiling.
- 2.4 "Freeboard height" means, for a cold cleaner, the distance from the liquid solvent level in the degreaser tank to the lip of the tank. For a vapor degreaser, it is the distance from the solvent vapor level in the tank to the lip of the tank. For a vapor conveyORIZED degreaser, it is the distance from the vapor level to the bottom of the entrance or exit opening, whichever is lower. For a cold conveyORIZED degreaser, it is the distance from the liquid solvent level to the bottom of the entrance or exit opening, whichever is lower.
- 2.5 "Freeboard ratio" means the freeboard height divided by the width of the degreaser.
- 2.6 "Open top vapor degreaser" means a batch loaded degreaser whose solvent is heated to its boiling point creating a solvent vapor zone.
- 2.7 "Refrigerated chiller" means a second set of freeboard condenser coils that create a cold air blanket about the vapor zone and are located slightly above the primary condenser coils.
- 2.8 "Solvent" means volatile organic compounds.

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 requirements which apply to the type of degreaser specified in sections 4, 5, and 6.

SECTION 4 Cold Cleaners

4.1 Control Equipment

- 4.1.1 The cleaner shall be equipped with a cover. If the VOC volatility is greater than 15 mm Hg measured at 100 degrees F or if the VOC is agitated or heated, then the cover shall be designed so that it can be easily operated with one hand.
- 4.1.2 The cleaner shall be equipped with a drainage facility such that VOC that drains off parts removed from the cleaner will return to the cleaner. If the VOC volatility is greater than 32 mm Hg measured at 100 °F, then the drainage facility shall be internal so that parts are enclosed under the cover while draining. 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 in section 4.2 shall be installed on or near the cleaner.
- 4.1.4 If used, the VOC spray shall be a fluid stream (not a fine, atomized or shower type spray) at a pressure that does not cause excessive splashing.
- 4.1.5 If the VOC volatility is greater than 32 mm Hg measured at 100 °F or if the VOC is heated above 120 °F, then one of the following control devices shall be used:
 - 4.1.5.1 Freeboard that gives a freeboard ratio equal to or greater than 0.7;
 - 4.1.5.2 Water cover (VOC must be insoluble in and heavier than water); or
 - 4.1.5.3 Other systems of equivalent control, such as a refrigerated chiller or carbon absorption.

4.2 Operating Requirements

- 4.2.1 Do not dispose of waste VOC or transfer it to another party, such that greater than 20% by weight of the waste VOC can evaporate into the atmosphere. Store waste VOC only in covered containers.
- 4.2.2 Close degreaser cover whenever not handling a part in the cleaner.
- 4.2.3 Drain cleaned parts until dripping ceases (15 seconds is usually necessary).

SECTION 5 Open Top Vapor Degreasers

5.1 Control Equipment

- 5.1.1 The degreaser shall be equipped with a cover that can be opened and closed easily without disturbing the vapor zone.
- 5.1.2 The degreaser shall be equipped with the following safety switches:
 - 5.1.2.1 Condenser flow switch and thermostat to shut off sump heat if condenser coolant either is not circulating or is too warm;
 - 5.1.2.2 Spray safety switch to shut off 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 which shuts off sump heat 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 degreaser shall be equipped with at least one of the following major control devices:
 - 5.1.3.1 Freeboard ratio equal to or greater than 0.75, and if degreaser opening is greater than ten square feet, 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 the dry part is actually entering or exiting the degreaser;
- 5.1.3.4 Carbon absorption system, with ventilation equal to or greater than 50 cfm/square foot of air/vapor interface area (when cover is open), and exhausting less than 25 ppm by volume VOC averaged over one complete absorption 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 in section 5.1.2 shall be installed on or near the degreaser.
- 5.2 Operating Requirements
 - 5.2.1 Keep the cover closed at all times except when processing work loads through the degreaser.
 - 5.2.2 Minimize VOC carry-out by the following measures:
 - 5.2.2.1 Rack parts to allow complete drainage;
 - 5.2.2.2 Move parts in and out of the degreaser at vertical speed less than 11 ft/min;
 - 5.2.2.3 Degrease the work load in the vapor zone until condensation ceases;
 - 5.2.2.4 Tip out any pools of VOC on the cleaned parts before removal; and
 - 5.2.2.5 Allow part to dry within the degreaser above the vapor zone until visually dry.
 - 5.3 Do not degrease porous or absorbent materials such as cloth, leather, wood, or rope.
 - 5.4 Work load should not occupy more than half of the degreaser's open top area.
 - 5.5 The vapor level should not drop more than four inches when the work load enters or leaves the vapor zone.
 - 5.6 Never spray above the vapor level.
 - 5.7 Repair VOC leaks immediately or shut down the degreaser.
 - 5.8 Do not dispose of waste VOC or transfer it to another party such that greater than 20% by weight of the waste VOC can evaporate into the atmosphere. Store waste VOC only in closed containers.
 - 5.9 Exhaust ventilation should not exceed 65 cfm per sq ft of degreaser area unless necessary to meet OSHA requirements or control device requirements. Ventilation fans should not be used near the degreaser opening.
 - 5.10 Water should not be visually detectable in the VOC exiting the water separator.

SECTION 6 Conveyorized Degreasers

- 6.1 Control Equipment
 - 6.1.1 A conveyorized degreaser shall be enclosed (such that in-plant air movement does not impinge upon the internal atmosphere of the degreaser) except for work load entrances and exits.
 - 6.1.2 The degreaser shall be equipped with a drying tunnel or another means such as rotating baskets sufficient to prevent cleaned parts from carrying out VOC liquid or vapor.
 - 6.1.3 Minimized openings: entrances and exits shall silhouette work loads so that the average clearance between the largest part and the edge of the degreaser opening is either less than four inches or less than 10% of the width of the opening.
 - 6.1.4 Down-time covers: the degreaser shall be equipped with covers for closing off the entrance and exit during shutdown hours.

- 6.1.5 If the degreaser has an air/VOC interface area or an air/vapor interface area equal to or greater than 20 sq ft, it shall be equipped with at least one of the following major devices:
 - 6.1.5.1 Refrigerated chiller.
 - 6.1.5.2 Carbon absorption system with ventilation greater than or equal to 50 cfm/sq ft of air/vapor interface area (when down-time covers are open) and exhausting less than 25 ppm of VOC by volume averaged over a complete absorption cycle; or
 - 6.1.5.3 A 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 degreaser is a vapor type, it shall be equipped with the following safety switches:
 - 6.1.6.1 Condensor flow switch and thermostat which will shut off the sump heat if coolant is either not circulating or is too warm;
 - 6.1.6.2 Spray safety switch which will shut off the spray pump or conveyor if the vapor level drops more than four inches below the bottom condenser coil in order to prevent spraying above the vapor level; and
 - 6.1.6.3 Vapor level control thermostat which will shut off sump heat 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 cleaner.
- 6.2 Operating Requirements
 - 6.2.1 Exhaust ventilation should not exceed 65 cfm per sq ft of degreaser opening unless necessary to meet OSHA requirements or control device requirements. Work place fans should not be used near the degreaser opening.
 - 6.2.2 Minimize VOC carry-out by the following measures:
 - 6.2.2.1 Rack parts so that entrainment of VOC is avoided and full drainage is accomplished;
 - 6.2.2.2 Maintain vertical conveyor speed at less than 11 ft/min;
 - 6.2.3 Do not dispose of waste VOC or transfer it to another party such that greater than 20% by weight of the waste VOC can evaporate into the atmosphere. Store waste VOC only in closed containers;
 - 6.2.4 Repair VOC leaks immediately or shut down the degreaser;
 - 6.2.5 Water should not be visually detectable in the VOC exiting the water separator; and
 - 6.2.6 Down-time covers shall be placed over entrances and exits of the degreaser immediately after the conveyor and exhaust are shut down, and removed just before they are started up.

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