

**401 KAR 59:001. Definitions and abbreviations of terms used in Title 401, Chapter 59.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

RELATES TO: KRS 224.01-010, 224.20-100, 224.20-110, 224.20-120; 40 CFR Chapter I; Appendices A through K to 40 CFR 50; 40 CFR 51.100(s); 40 CFR 53; 40 CFR 60; Appendices A and B to 40 CFR 60; Appendix B to 40 CFR 61; 42 USC 7410; 42 USC 741 1(a) (8)

STATUTORY AUTHORITY: KRS 224.10-100

NECESSITY AND FUNCTION: KRS 224. 10-100 requires the Natural Resources and Environmental Protection Cabinet to prescribe regulations for the prevention, abatement, and control of air pollution. This administrative regulation provides for the defining of terms used in Title 401, Chapter 59.

**Section 1. General definitions.** As used in the Division for Air Quality administrative regulations of Title 401, Chapter 59, unless the content clearly indicates otherwise in a specific administrative regulation, the following terms shall have the following meanings:

- (1) "Affected facility" means an apparatus, building, operation, road, or other entity or series of entities which emits or may emit an air contaminant into the outdoor atmosphere.
- (2) "Air contaminant" has the meaning given it in KRS 224.01-010.
- (3) "Air pollutant" means an air contaminant.
- (4) "Air pollution" has the meaning given it in KRS 224.01-010.
- (5) "Air pollution control equipment" means a mechanism, device or contrivance used to control or prevent air pollution, which is not, aside from air pollution control laws and regulations, vital to production of the normal product of the source or to its normal operation.
- (6) "Alteration" means:
  - (a) The installation or replacement of air pollution control equipment at a source;
  - (b) A physical change in or change in the method of operation of an affected facility which increases the potential to emit of a pollutant (to which a standard applies) emitted by the facility or which results in the emission of an air pollutant (to which a standard applies) not previously emitted.
- (7) "Alternative method" means a method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the cabinet's and the U.S. EPA's satisfaction to, in specific cases, produce results adequate for its determination of compliance.
- (8) "Ambient air" means that portion of the atmosphere, external to buildings, to which the general public has access.
- (9) "Ambient air quality standard" means a numerical expression of a

specified concentration level for a particular air contaminant and the time averaging interval over which that concentration level is measured and is a goal to be achieved in a stated time through the application of appropriate preventive or control measures.

- (10) "Cabinet" has the meaning given it in KRS 224.01-010.
- (11) "Capital expenditure" means an expenditure for a physical or operational change to an affected facility which exceeds the product of the applicable annual asset guideline repair allowance percentage" specified in the Internal Revenue Service (IRS) Publication 534 which has been incorporated by reference in 401 KAR 50:010, and the affected facility's basis, as defined by section 1012 of the Internal Revenue Code which has been incorporated by reference in 401 KAR 50:010. However, the total expenditure for a physical or operational change to an affected facility shall not be reduced by any "excluded additions" as defined in IRS Publication 534, as would be done for tax purposes.
- (12) "Commence" means that an owner or operator has undertaken a continuous program of construction, modification, or reconstruction of an affected facility, or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction, modification, or reconstruction of an affected facility.
- (13) "Compliance schedule" means a time schedule of remedial measures including an enforceable sequence of actions or operations leading to compliance with a limitation or standard.
- (14) "Construction" means fabrication, erection, installation or modification of an air contaminant source.
- (15) "Continuous monitoring system" means the total equipment, required under the applicable regulations used to sample, to condition (if applicable), to analyze and to provide a permanent record of emissions or process parameters.
- (16) "Design capacity" means the maximum rate at which a unit was designed to operate.
- (17) "Director" means Director of the Division for Air Quality of the Natural Resources and Environmental Protection Cabinet.
- (18) "District" has the meaning given it in KRS 224.01-010.
- (19) "Emission standard" means that numerical limit which fixes the amount of an air contaminant or air contaminants that may be vented into the atmosphere (open air) from an affected facility or from air pollution control equipment installed in an affected facility.
- (20) "Equivalent method" means a method of sampling and analyzing for an air pollutant which has been demonstrated to the cabinet's and the U.S. EPA's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.
- (21) "Exempt solvent" means an organic compound listed in the definition of volatile organic compound as not participating in atmospheric photochemical reactions.

- (22) "Existing source" means a source which is not a new source.
- (23) "Extreme nonattainment county" or "extreme nonattainment area" means a county or portion of a county designated extreme nonattainment in 401 KAR 51:010.
- (24) "Fixed capital cost" means the capital needed to provide all the depreciable components.
- (25) "Fuel" means natural gas, petroleum, coal, wood, and any form of solid, liquid, or gaseous fuel derived from these materials for the purpose of creating useful heat.
- (26) "Fugitive emissions" means the emissions of an air contaminant into the open air other than from a stack or air pollution control equipment exhaust.
- (27) "Hydrocarbon" means an organic compound consisting predominantly of carbon and hydrogen.
- (28) "Incineration" means the process of igniting and burning solid, semi-solid, liquid, or gaseous combustible wastes.
- (29) "Intermittent emissions" means emissions of particulate matter into the open air from a process which operates for less than any six (6) consecutive minutes.
- (30) "Major source" means a source of which the potential emission rate is equal to or greater than 100 tons per year of any one (1) of the following pollutants: particulate matter, sulfur oxides, nitrogen oxides, volatile organic compounds or carbon monoxide.
- (31) "Malfunction" means a failure of air pollution control equipment, or process equipment, or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.
- (32) "Marginal nonattainment county" or "marginal nonattainment area" means a county or portion of a county designated marginal nonattainment in 401 KAR 51:010.
- (33) "Moderate nonattainment county" or "moderate nonattainment area" means a county or portion of a county designated moderate nonattainment in 401 KAR 51:010.
- (34) "Modification" means a physical change in, or change in the method of operation of, an affected facility which increases the amount of an air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of an air pollutant (to which a standard applies) into the atmosphere not previously emitted. The following shall not, by themselves, be considered modifications:
- (a) Maintenance, repair, and replacement which the cabinet determines to be routine for a source category;
  - (b) An increase in production rate of an affected facility, if that increase can be accomplished without a capital expenditure on that facility;

- (c) An increase in the hours of operation;
  - (d) Use of an alternative fuel or raw material if, prior to the date any standard becomes applicable to that source type, the affected facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change. Conversion to coal required for energy considerations, as specified in 42 USC 7411(a)(8), shall not be considered a modification;
  - (e) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the cabinet determines to be less environmentally beneficial;
  - (f) The relocation or change in ownership of an existing facility.
- (35) "Monitoring device" means the total equipment, required in applicable regulations, used to measure and record (if applicable) process parameters.
  - (36) "New source" means a source, the construction, reconstruction, or modification of which commenced on or after the classification date as defined in the applicable regulation. A source, upon reconstruction, becomes a new source, irrespective of a change in emission rate.
  - (37) "Nitrogen oxides" means all oxides of nitrogen except nitrous oxide, as measured by test methods specified by the cabinet.
  - (38) "Opacity" means the degree to which emissions reduce the transmission of light and obscure the view of an object in the background.
  - (39) "Owner or operator" means a person who owns, leases, operates, controls, or supervises an affected facility or a source to which an affected facility is a part.
  - (40) "Particulate matter" means a material, except uncombined water, which exists in a finely divided form as a liquid or a solid as measured by the appropriate approved test method.
  - (41) "Particulate matter emissions" means, except as used in 40 CFR 60, all finely divided solid or liquid material, other than uncombined water, emitted to the ambient air as measured by applicable reference methods, or an equivalent or alternative method specified in 40 CFR Chapter 1, or by a test method specified in the approved state implementation plan.
  - (42) "Person" means an individual, public or private corporation, political subdivision, government agency, municipality, industry, co-partnership, association, firm, trust, estate, or other entity.
  - (43) "PM<sub>10</sub>" means particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers as measured by a reference method based on Appendix J to 40 CFR 50, which has been incorporated by reference in 401 KAR 50:015, and designated in accordance with 40 CFR 53, or by an equivalent method designated in accordance with 40 CFR 53.
  - (44) "PM<sub>10</sub> emissions" means finely divided solid or liquid material with an

aerodynamic diameter less than or equal to a nominal ten (10) micrometers emitted to the ambient air as measured by an applicable reference method, or an equivalent or alternative method, specified in 40 CFR 53, or by a test method specified in the approved state implementation plan.

- (45) "Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. A physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions shall not count in determining the potential to emit of a stationary source.
- (46) "Reconstruction" means the replacement of components of an existing affected facility to the extent that the fixed capital cost of the new components exceeds fifty (50) percent of the fixed capital cost that would be required to construct a comparable entirely new affected facility, and it is technologically and economically feasible to meet the applicable new source standards. Individual sections of these regulations may include specific provisions which refine and delimit the concept of reconstruction set forth in this subsection. The cabinet's determination as to whether the proposed replacement constitutes reconstruction shall be based on:
- (a) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new facility;
  - (b) The estimated life of the affected facility after the replacements compared to the life of a comparable entirely new affected facility;
  - (c) The extent to which the components being replaced cause or contribute to the emissions from the affected facility; and
  - (d) Economic or technical limitations on compliance with applicable standards of performance which are inherent in the proposed replacements.
- (47) "Reference method" means a method of sampling and analyzing for an air pollutant as prescribed by Appendices A through K to 40 CFR 50, Appendices A and B to 40 CFR 60, and Appendix B to 40 CFR 61, which has been incorporated by reference in 401 KAR 50:015. This term may be more narrowly defined within a specific regulation.
- (48) "Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.
- (49) "Secondary emissions" means emissions which occur as a result of the construction or operation of a major stationary source or major modification, but do not come from the major stationary source or major modification itself. Secondary emissions shall be specific, well defined, quantifiable, and shall impact the same general area as does the stationary source modification which causes the secondary emissions. Secondary emissions may include, but are not limited to emissions from an offsite support facility which would not otherwise be constructed or

increase its emissions as a result of the construction or operation of the major stationary source or major modification. Secondary emissions do not include emissions which come directly from a mobile source, such as the emissions from the tailpipe of a motor vehicle, from a train, or from a vessel.

- (50) "Serious nonattainment county" or "serious nonattainment area" means a county or portion of a county designated serious nonattainment in 401 KAR 51:010.
- (51) "Severe nonattainment county" or "severe nonattainment area" means a county or portion of a county designated severe nonattainment in 401 KAR 51:010.
- (52) "Shutdown" means the cessation of an operation.
- (53) "Source" means one (1) or more affected facilities contained within a given contiguous property line. The property shall be considered contiguous if separated only by a public thoroughfare, stream, or other right of way.
- (54) "Stack or chimney" means a flue, conduit, or duct arranged to conduct emissions to the atmosphere.
- (55) "Standard" means an emission standard, a standard of performance, or an ambient air quality standard as promulgated under the administrative regulations of the Division for Air Quality or the emission control requirements necessary to comply with Title 401, Chapter 51, of the administrative regulations of the Division for Air Quality.
- (56) "Standard conditions:"
  - (a) For source measurements means twenty (20) degrees Celsius (sixty-eight (68) degrees Fahrenheit) and a pressure of 760 mm Hg (29.92 in. of Hg);
  - (b) For the purpose of air quality determinations means twenty-five (25) degrees Celsius and a reference pressure of 760 mm Hg.
- (57) "Start-up" means the setting in operation of an affected facility.
- (58) "State implementation plan" means the most recently prepared plan or revision required by 42 USC 7410 which has been approved by the U.S. EPA.
- (59) "Total suspended particulate" means particulate matter as measured by the method described in Appendix B of 40 CFR 50, which has been incorporated by reference in 401 KAR 50:015.
- (60) "Uncombined water" means water which can be separated from a compound by ordinary physical means and which is not bound to a compound by internal molecular forces.
- (61) "Urban county" means a county which is a part of an urbanized area with a population of greater than 200,000 based upon the 1980 census. If a portion of a county is a part of an urbanized area, then the entire county shall be classified as urban with respect to the regulations of the Division for Air Quality.
- (62) "Urbanized area" means an area defined as such by the U.S. Department of

Commerce, Bureau of Census.

- (63) "Volatile organic compound" or "VOC" means an organic compound which participates in atmospheric photochemical reactions. This includes an organic compound other than the following compounds: methane; ethane; carbon monoxide; carbon dioxide; carbonic acid; metallic carbides or carbonates; ammonium carbonate; methylene chloride; 1,1,1-trichloroethane (methyl chloroform); trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorodifluoromethane (HCFC-22); trifluoromethane (HFC-23); 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113); dichlorotetrafluoroethane (CFC-114); chloropentafluoroethane (CFC-115); dichlorotrifluoroethane (HCFC-123); tetrafluoroethane (HFC-134a); dichlorofluoroethane (HCFC-141b); chlorodifluoroethane (HCFC-142b); 2chloro-1,1,1, 2-tetrafluoroethane (HCFC-124); pentafluoroethane (HFC-125); 1,1,2,2tetrafluoroethane (HFC-134); 1,1,1-trifluoroethane (HFC-143a); 1,1-difluoroethane (HFC152a); acetone; parachlorobenzotrifluoride (PCBTF); cyclic, branched, or linear completely methylated siloxanes; perchloroethylene (tetrachloroethylene) and perfluorocarbon compounds which fall into these classes:
- (a) Cyclic, branched, or linear, completely fluorinated alkanes;
  - (b) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
  - (c) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
  - (d) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine. These compounds have been determined to have negligible photochemical reactivity. For purposes of determining compliance with emission limits, VOCs shall be measured by test methods that have been approved by the cabinet and the U.S. EPA. If a method used also inadvertently measures compounds with negligible photochemical reactivity, an owner or operator may exclude these negligibly reactive compounds when determining compliance with an emissions standard.

## Section 2. Abbreviations.

The abbreviations used in the administrative regulations of Title 401, Chapters 50 to 65, shall have the following meanings:

AOAC - Association of Official Analytical Chemists

ANSI - American National Standards Institute

ASTM - American Society for Testing and Materials

BOD - Biochemical oxidant demand

BTU - British Thermal Unit

°C - Degree Celsius (centigrade)

Cal - calorie

cfm - cubic feet per minute

CFR - Code of Federal Regulations

CH<sub>4</sub> - methane

CO - Carbon monoxide

CO<sub>2</sub>- Carbon dioxide

COD - Chemical oxidant demand

dscf - dry cubic feet at standard conditions

dscm - dry cubic meter at standard conditions

°F - Degree Fahrenheit

ft - feet

g - grain

gal - gallon

gr - grain  
 hr - hour  
 HCl - Hydrochloric acid  
 Hg - mercury  
 HF - Hydrogen fluoride  
 H<sub>2</sub>O - water  
 H<sub>2</sub>S - Hydrogen sulfide  
 H<sub>2</sub>SO<sub>4</sub> - Sulfuric acid  
 in - inch  
 J - joule  
 KAR - Kentucky Administrative Regulations  
 kg - kilogram  
 KRS - Kentucky Revised Statutes  
 L - liter  
 lb - pound  
 m - meter  
 m<sup>3</sup> - cubic meter  
 min - minute  
 mg - milligram  
 MJ - megajoules  
 MM - million  
 mm - millimeter  
 mo - month  
 Ng - nanograms  
 N<sub>2</sub> - Nitrogen  
 NO - Nitric oxide  
 N<sub>2</sub>O - Nitrogen dioxide  
 NO<sub>x</sub> - Nitrogen oxides  
 oz - ounce  
 O<sub>2</sub> - oxygen  
 O<sub>3</sub> - ozone  
 ppb - parts per billion  
 ppm - parts per million  
 ppm (w/w) - parts per million (weight by weight)  
 µg - microgram  
 psia - pounds per square inch absolute  
 psig - pounds per square inch gage  
 S - at standard conditions  
 sec - second  
 SIP - State implementation plan  
 SO<sub>2</sub> - Sulfur dioxide  
 sq - square  
 TAPPI - Technical Association of the Pulp and Paper Industry  
 TSP - Total suspended particulates  
 TSS - Total suspended solids  
 U.S. EPA - United States Environmental Protection Agency  
 UTM - Universal Transverse Mercator  
 VOC - Volatile organic compound  
 yd - yard

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**401 KAR 59:005. General provisions.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 23.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation is to provide for the establishment of monitoring requirements, performance testing requirements, and other general provisions as related to new sources.

**Section 1. Applicability.**

The provisions of this chapter shall apply to the owner or operator of any new source for which a standard of performance has been promulgated under this chapter.

**Section 2. Performance Tests.**

- (1) Within sixty (60) days after achieving the maximum production rate at which the affected facility will be operated, but not later than 180 days after initial startup of such facility and at other such facility and at such other times as may be required by the department, the owner or operator of any affected facility except those affected facilities specified below shall conduct performance test(s) according to 401 KAR 50:045 and furnish the department a written report of the results of such performance test(s).
  - (a) Process operation with a process weight rate of less than 100 tons per hour;
  - (b) Indirect heat exchanger of 250 million BTU heat input per hour or less;
  - (c) Incinerator with a charging rate of forty-five (45) metric tons per day (fifty(50) tons/day) or less;
  - (d) Affected facilities specified in 401 KAR 59:046, 401 KAR 59:048, 401 KAR 59:050, 401 KAR 59:090, 401 KAR 59:095, 401 KAR 59:101, 401 KAR 59:175, 401 KAR 59:180, 401, KAR 59:185, 401 KAR 59:190, 401 KAR 59:195, 401 KAR 59:200, 401 KAR 59:210, 401 KAR 59:212, 401 KAR 59:214, 401 KAR 59:215, 401 KAR 59:220, 401 KAR 59:225, 401 KAR 59:230, 401 KAR 59:235, 401 KAR 59:240.
- (2) The department may require the owner or operator of any affected facility including those specified in subsection (1) of this section to conduct performance test(s) according to 401 KAR 50:045 and furnish a written report of the results of such performance test(s).

**Section 3. Notification and Recordkeeping.** Nothing in this section shall relieve the owner or operator from the responsibility of obtaining the appropriate permits required by 401 KAR 50:035.

- (1) Any owner or operator subject to the provisions of this regulation shall furnish the department written notification as follows:
  - (a) A notification of the date of construction, reconstruction, or modification of an affected facility is commenced, postmarked no later than thirty (30) days after such date;

- (b) A notification of the anticipated date of initial startup of an affected facility postmarked not more than sixty (60) days nor less than thirty (30) days prior to such date;
  - (c) A notification of the actual date of initial startup of an affected facility postmarked within fifteen (15) days after such date;
  - (d) A notification of any physical or operational change to an affected facility which may increase the emission rate of any air pollutant to which a standard applies. This notice shall be postmarked sixty (60) days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The department may request additional relevant information subsequent to this notice;
  - (e) A notification of the date upon which demonstration of the continuous monitoring system performance commences in accordance with Section 4(3). Notification shall be postmarked not less than thirty (30) days prior to such date.
- (2) Any owner or operator subject to the provisions of this chapter shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.
- (3) Each owner or operator required to install a continuous monitoring system shall submit for every calendar quarter a written report of excess emissions (as defined in applicable sections) to the department. Both a printed report and computer tape or cards shall be furnished in the format specified by the department. All quarterly reports shall be postmarked by the thirtieth (30th) day following the end of each calendar quarter and shall include the following information:
- (a) The magnitude of excess emissions computed in accordance with Section 4(8), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions;
  - (b) All hourly averages shall be reported for sulfur dioxide and nitrogen oxides monitors. The hourly averages shall be made available on computer tape or cards;
  - (c) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted;
  - (d) The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments;
  - (e) When no excess emissions have occurred or the continuous

monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

- (4) Any owner or operator subject to the provisions of this chapter shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurement; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performance on these systems or devices; and all other information required by this chapter recorded in a permanent form suitable for inspection. The file shall be retained for at least two (2) years following the date of such measurements, maintenance, reports, and records.

#### **Section 4. Monitoring Requirements.**

- (1) All continuous monitoring systems require under the regulations of this chapter shall be subject to the provisions of this section upon promulgation of performance specifications for continuous monitoring system under Appendix B of 40 CFR 60, filed by reference in 401 KAR 50:015, unless:
  - (a) The continuous monitoring system is subject to the provisions of subsection (3) (b) and (c) of this section; or
  - (b) Otherwise specified in the applicable regulation or by the department.
- (2) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting performance tests under Section 2. Verification of operational status shall, as a minimum, consist of the following:
  - (a) For continuous monitoring systems referenced in subsection (3) (a) of this section, completion of the conditioning period specified by applicable requirements in Appendix B to 40 CFR 60;
  - (b) For continuous monitoring systems referenced in subsection (3) (b) of this section, completion of the seven (7) days of operation;
  - (c) For monitoring devices referenced in applicable regulations, completion of the manufacturer's written requirements or recommendations for checking the operation or calibration of the device.
- (3) During any performance tests required under Section 2 or within thirty (30) days thereafter and at such other times as may be required by the department, the owner or operator of any affected facility shall conduct continuous monitoring system performance evaluations and furnish the department within sixty (60) days thereof a copy of a written report of the results of such tests. These continuous monitoring system performance evaluations shall be conducted in accordance with the following specifications and procedures:
  - (a) Continuous monitoring systems listed within this paragraph except as provided in paragraph (b) of this subsection shall be evaluated in accordance with the requirements and procedures contained in the applicable performance specification of Appendix B to 40 CFR 60 as follows:
    1. Continuous monitoring systems for measuring opacity of emissions shall comply with Performance Specification 1;

2. Continuous monitoring systems for measuring nitrogen oxides emissions shall comply with Performance Specification 2;
  3. Continuous monitoring systems for measuring sulfur dioxide emissions shall comply with Performance Specification 2;
  4. Continuous monitoring systems for measuring the oxygen content or carbon dioxide content of effluent gases shall comply with Performance Specification 3.
- (b) An owner or operator who, prior to September 11, 1974, entered into a binding contractual obligation to purchase specific continuous monitoring system components or who, prior to October 6, 1975, installed continuous monitoring equipment, shall comply with the following requirements:
1. Continuous monitoring systems for measuring opacity of emissions shall be capable of measuring emission levels within plus or minus twenty (20) percent with a confidence level of ninety-five (95) percent. The Calibration Error Test and associated calculation procedures set forth in Performance Specification 1 of Appendix B to 40 CFR 60 shall be used for demonstrating compliance with this specification;
  2. Continuous monitoring systems for measurements of nitrogen oxides or sulfur dioxide shall be capable of measuring emission levels within plus or minus twenty (20) percent with a confidence level of ninety-five (95) percent. The Calibration Error Test, the Field Test for Accuracy (Relative), and associated operating and calculation procedures set forth in Appendix B to 40 CFR 60 shall be used for demonstrating compliance with this specification;
  3. Owners or operators of all continuous monitoring systems installed on an affected facility prior to October 6, 1975, may be required to conduct tests under subparagraphs 1 and/or 2 of this paragraph if so requested by the department.
- (c) All continuous monitoring systems referenced by paragraph (b) of this subsection shall be upgraded or replaced (if necessary) with new continuous monitoring systems, and the new or improved systems shall be demonstrated to comply with applicable performance specifications under paragraph(a) of this subsection on or before September 11, 1979.
- (4) Owners or operators of all continuous monitoring systems installed in accordance with the provisions of this regulation shall check the zero and span the drift at least once daily in accordance with the method prescribed by the manufacturer of such systems unless the manufacturer recommends adjustments at shorter intervals, in which case such recommendations shall be followed. The zero and span shall, as a minimum, be adjusted whenever the twenty-four (24) hour zero drift or twenty-four (24) hour calibration drift limits of the applicable performance specifications in Appendix B to 40 CFR 60 are exceeded. For continuous monitoring systems measuring opacity of emissions, the optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero or span drift adjustments except that, for systems using automatic zero adjustments, the optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds four (4) percent

opacity. Unless otherwise approved by the department, the following procedures, as applicable, shall be followed:

- (a) For extractive continuous monitoring systems measuring gases, minimum procedures shall include introducing applicable zero and span gas mixtures into the measurement system as near the probe as is practical. Span and zero gases certified by their manufacturer to be traceable to National Bureau of Standards reference gases shall be used whenever these reference gases are available. The span and zero gas mixture shall be the same composition as specified in Appendix B to 40 CFR 60. Every six (6) months from date of manufacture, span and zero gases shall be re-analyzed by conducting triplicate analyses with Reference Method 6 for sulfur dioxide, Reference Method 7 for nitrogen oxides, and Reference Method 3 for oxygen and carbon dioxide;
  - (b) For non-extractive continuous monitoring systems measuring gases, minimum procedures shall include upscale check(s) using a certified calibration gas cell or test cell which is functionally equivalent to a known gas concentration. The zero check may be performed by computing the zero value from upscale measurements or by mechanically producing a zero condition;
  - (c) For continuous monitoring systems measuring opacity of emissions, minimum procedures shall include a method for producing a simulated zero opacity condition and an upscale (span) opacity condition using a certified neutral density filter or other related technique to produce a known obscuration of the light beam. Such procedures shall provide a system check of the analyzer internal optical surfaces and all electronic circuitry including the lamp and photodetector assembly.
- (5) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under subsection (4) of this section, all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements as follows:
- (a) All continuous monitoring systems referenced by subsection (3) (a) and (b) of this section for measuring opacity of emissions shall complete a minimum of one (1) cycle of sampling and analyzing for each successive ten (10) second period and one (1) cycle of data recording for each successive six (6) minute period.
  - (b) All continuous monitoring systems referenced by subsection (3) (a) of this section for measuring oxides of nitrogen, sulfur dioxide, carbon dioxide, or oxygen shall complete a minimum of one (1) cycle of operation (sampling, analyzing, and data recording) for each successive fifteen (15) minute period;
  - (c) All continuous monitoring systems referenced by subsection (3) (b) of this section, except opacity, shall complete a minimum of one (1) cycle of operation (sampling, analyzing, and data recording) for each successive one (1) hour period.
- (6) All continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained. Additional procedures for location of continuous monitoring systems contained in the applicable Performance Specifications of Appendix B to 40 CFR 60 shall be used.

- (7) When the effluents from a single affected facility or two (2) or more affected facilities subject to the same emission standard are combined before being released to the atmosphere, the owner or operator may install applicable continuous monitoring systems shall be installed on each effluent. When the effluent from one (1) affected facility is released to the atmosphere through more than one (1) point, the owner or operator shall install applicable continuous monitoring systems on each separate effluent unless the installation of fewer systems is approved by the department.
- (8) Owners or operators of all continuous monitoring systems for measurement of opacity shall reduce all data to six (6) minute averages and for systems other than opacity to one (1) hour averages. Six (6) minute opacity averages shall be calculated from twenty-four (24) or more data points equally spaced over each six (6) minute period. For systems other than opacity, one (1) hour averages shall be computed from four (4) or more data points equally spaced over each one (1) hour period. Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this subsection. An arithmetic or integrated average of all data may be used. The data output of all continuous monitoring systems may be recorded in reduced or nonreduced form (e.g. ppm pollutant and percent oxygen or lb/million BTU of pollutant). All excess emissions shall be converted into units of the standard using the applicable conversion procedures specified in regulations within this chapter. After conversion into units of the standard data may be rounded to the same number of significant digits used in the regulation to specify the applicable standard (e.g. rounded to the nearest one (1) percent opacity.)
- (9) Upon written application by an owner or operator, the department may allow alternative monitoring procedures or requirements which have been approved by the U.S. Environmental Protection Agency including, but not limited to the following:
- (a) Alternative monitoring requirements when installation of a continuous monitoring system or monitoring device specified by this chapter would not provide accurate measurements due to liquid water or other interferences caused by substances with the effluent gases;
  - (b) Alternative monitoring requirements when the affected facility is infrequently operated;
  - (c) Alternative monitoring requirements to accommodate continuous monitoring systems that require additional measurements to correct stack moisture conditions;
  - (d) Alternative locations for installing continuous monitoring systems or monitoring devices when the owner or operator can demonstrate that installation at alternate locations will enable accurate and representative measurements;
  - (e) Alternative methods of converting pollutant concentration measurements to units of the standards;
  - (f) Alternative procedures for performing daily checks of zero and span drift that do not involve use of span gases or test cells;
  - (g) Alternatives to the A.S.T.M. test methods, filed by reference in

401 KAR 50015, or sampling procedures specified by any regulation;

- (h) Alternative continuous monitoring systems that do not meet the design or performance requirements in Performance Specification 1, Appendix B to 40 CFR 60, but adequately demonstrate a definite and consistent relationship between its measurements and the measurements of opacity by a system complying with the requirements in Performance Specification 1. The department may require that such demonstration be performed for each affected facility;
- (i) Alternative monitoring requirements when the effluent from a single affected facility or the combined effluent from two (2) or more affected facilities are released to the atmosphere through more than one (1) point.

Effective Date: December 1, 1982

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	DEC 24, 1980	45 FR 84999
		JAN 25, 1980	45 FR 6092
		JUL 12, 1982	47 FR 30059
1st Revision	DEC 09, 1982	DEC 04, 1986	51 FR 43742

**401 KAR 59:010. New process operations.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS 224.20-100, 224.20-110, 224.20-120

Pursuant to: KRS 224.10-100

Necessity and Function: KRS 224.10-100 requires the Natural Resources and Environmental Protection Cabinet to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new process operations which are not subject to another particulate standard within this chapter.

**Section 1. Applicability.**

- (1) The provisions of this regulation shall apply to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in this chapter, commenced on or after the classification date defined below.
- (2) The provisions of this regulation which apply to affected facilities or sources located in non-attainment areas shall continue to apply to those affected facilities or sources if the area is redesignated to attainment or unclassified status in 401 KAR 51:010 or 40 CFR 81.318, unless a State Implementation Plan which provides for other controls is approved by the U.S. EPA.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

- (1) "Process operation" means any method, form, action, operation, or treatment of manufacturing or processing, and shall include any storage or handling of materials or products, before, during, or after manufacturing or processing.
- (2) "Process weight" means the total weight of all materials introduced into any affected facility which may cause any emission of particulate matter, but does not include liquid and gaseous fuels charged, combustion air, or uncombined water.
- (3) "Process weight rate" means a rate established as follows:
  - (a) For continuous or long-run steady state operations, the total process weight for the entire period of continuous operation or for a typical portion thereof, divided by the number of hours of such period or portion thereof.
  - (b) For cyclical or batch unit operations, or unit processes, the total process weight for a period that covers a complete operation or an integral number of cycles, divided by the hours of actual process operation during such a period.
  - (c) Where the nature of any process operation or the design of any equipment is such as to permit more than one (1) interpretation of this definition, the interpretation which results in the minimum value for allowable emission shall apply.
- (4) "Affected facility" as related to process operations means the last

operation preceding the emission of air contaminants which results:

- (a) In the separation of the air contaminant from the process materials; or
  - (b) In the conversion of the process materials into air contaminants, but does not include an air pollution abatement operation.
- (5) "Classification date" means July 2, 1975.
- (6) "Continuous emission" means a visible emission of particulate matter which persists for more than three (3) minutes, the opacity of which is measured in accordance with Reference Method 9, filed by reference in 401 KAR 50:015.
- (7) "Intermittent emission" means a visible emission of particulate matter which persists for three (3) minutes or less, the opacity of which is measured in accordance with Kentucky Method 150 (F-1), filed by reference in 401 KAR 50:015.

### **Section 3. Standard for Particulate Matter.**

- (1) Opacity standard.
- (a) No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity.
  - (b) No person shall cause, suffer, allow, or permit any continuous or intermittent fugitive emission into the open air from any affected facility or source located in any area designated non-attainment for total suspended particulates under 401 KAR 51:010 which is equal to or greater than twenty (20) percent opacity, or which remains visible beyond the line of the property on which the emission originates.
  - (c) For sources commenced on or after the classification date of this regulation, but before September 4, 1986, variation with the standards specified in paragraph (b) of this subsection, when supported by adequate technical information, will be considered by the cabinet on a case-by-case basis to allow for technical or economic circumstances which are unique to a source, provided that such a variance has been approved by the U.S. EPA.
- (2) Mass emission standard. For emissions from a control device or stack no person shall cause, suffer, allow or permit the emission into the open air of particulate matter from any affected facility which is in excess of the quantity specified in Appendix A to this regulation.

### **Section 4. Test Methods and Procedures.**

Except as provided in 401 KAR 50:045, performance tests used to demonstrate compliance with Section 3 of this regulation shall be conducted according to the following methods. Kentucky Methods 50 and 150(F-1) and other methods are filed by reference in 401 KAR 50:015.

- (1) For sources located in or having significant impact upon areas designated non-attainment for total suspended particulates under 401 KAR 51:010, Kentucky Method 50 for the emission rates of particulate matter and the associated moisture content. In all other Reference Method 5 shall be used.

- (2) Reference Method 1 for sample and velocity traverses.
- (3) Reference Method 2 for velocity and volumetric flow rate.
- (4) Reference Method 3 for gas analysis.
- (5) Reference Method 9 for opacity of continuous emissions
- (6) Kentucky Method 150(F-1) for opacity of intermittent emissions.
- (7) For Kentucky Method 50, or Reference Method 5, Reference Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 0.85 dscm (thirty (30) dscf) except that smaller sampling time or volumes, when necessitated by process variables or other factors, may be approved by the cabinet.

**[SIP Compilation Table After Appendix]**

**APPENDIX A TO 401 KAR 59:010**  
**ALLOWABLE RATE OF PARTICULATE EMISSION**  
**BASED ON PROCESS WEIGHT RATE**

Process Weight Rate		Maximum Allowable Emission Rate
Lb/Hr.	Ton/Hr.	Lb/Hr
1,000 or less	0.50 or less	2.34
1,500	0.75	3.00
2,000	1.00	3.59
2,500	1.25	4.12
3,000	1.50	4.62
3,500	1.75	5.08
4,000	2.00	5.52
5,000	2.50	6.34
6,000	3.00	7.09
7,000	3.50	7.81
8,000	4.00	8.48
9,000	4.50	9.12
10,000	5.00	9.74
12,000	6.00	10.90
16,000	8.00	13.03
18,000	9.00	14.02
20,000	10.00	14.97
30,000	15.00	19.24
40,000	20.00	23.00
50,000	25.00	26.41
60,000	30.00	29.57
70,000	35.00	30.57
80,000	40.00	31.23
90,000	45.00	31.83
100,000	50.00	32.37
120,000	60.00	33.33
140,000	70.00	34.16
160,000	80.00	34.90
200,000	100.00	36.17
1,000,000	500.00	46.79
2,000,000	1,000.00	52.28
6,000,000	3,000.00	62.32

Interpolation of the data for process weight rates up to 60,000 lb/hr. shall be accomplished by use of the equation  $E=3.59P^{0.62}$ , and interpolation and extrapolation of the data for process weight rates in excess of 60,000 lb/hr. shall be accomplished by the use of the equation  $E=17.31 P^{0.16}$ , where E = rate of emission in lb/hr and P=process weight in tons/hr.

Effective Date: April 14, 1988

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	DEC 24, 1980	45 FR 84999
1st Revision	DEC 09, 1982	DEC 04, 1986	51 FR 43472
3rd Revision	SEP 19, 1986	MAY 04, 1989	54 FR 19169
4th Revision	JUL 07, 1988	FEB 07, 1990	55 FR 4169

**401 KAR 59:015. New indirect heat exchangers.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new indirect heat exchangers.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility commenced on or after the applicable classification date defined below. Any affected facility subject to 401 KAR 59:016 is not subject to this regulation.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

- (1) "Affected facility" means an indirect heat exchanger having a heat input capacity of more than one (1) million BTU per hour.
- (2) "Indirect heat exchanger" means any piece of equipment, apparatus or contrivance used for the combustion of fuel in which the energy produced is transferred to its point of usage through a medium that does not come in contact with or add to the products of combustion.
- (3) "Classification date" means:
  - (a) August 17, 1971 for affected facilities with capacity of more than 250 million BTU per hour heat input with respect to particulate emissions, sulfur dioxide emissions and (if fuels other than lignite are burned) nitrogen oxide emissions;
  - (b) April 9, 1972 for affected facilities with a capacity of 250 million BTU per hour heat input or less with respect to particulate emissions and sulfur dioxide emissions;
  - (c) December 22, 1976 for affected facilities with a capacity of more than 250 million BTU per hour heat input with respect to nitrogen oxides if lignite is the fuel burned.

**Section 3. Method for Determining Allowable Emission Rates.**

- (1) Except as provided in subsection (3) of this section, the total rated heat input capacity of all affected facilities within a source, including those for which an application to construct, modify or reconstruct has been submitted to the department, shall be used as specified in Sections 4 and 5 to determine the allowable emissions in terms of pounds of effluent per million BTU input.
- (2) At such time as any affected facility is assigned an allowable emission rate by the department, at no time thereafter shall that rate be changed due to inclusion or shutdown of any affected facility at the source.

- (3) (a) A source may petition the department to establish an allowable emission rate which may be apportioned without regard to individual heat input provided that the conditions specified in paragraphs (b), (c), (d) and (e) of this subsection are met. Such allowable emission rate shall be determined according to the following equation:

$F = (AB + DE) / C$  Where:

- A = the allowable emission rate (in pounds per million BTU input) as determined according to subsection (1) of this section;
- B = the total rated heat input (in millions of BTU per hour) of all affected facilities commenced on or after the applicable classification date within a source, including those for which an application to construct, modify, or reconstruct has been submitted to the department;
- C = the total rated heat input (in millions of BTU per hour) of all affected facilities within a source, including those for which an application to construct, modify, or reconstruct has been submitted to the department;
- D = the allowable emission rate (in pounds per million BTU input) as determined according to 401 KAR 61:015, Section 3(1);
- E = the total rated heat input (in millions of BTU per hour) of all affected facilities commenced before the applicable classification date.
- F = the alternate allowable emission rate (in pounds per actual million BTU input).
- (b) At no time shall the owner or operator of the source allows the total emissions (in pounds per hour) from all affected facilities within the source divided by the total actual heat input (in millions of BTU per hour) of all affected facilities within the source to exceed the alternate allowable emission rate as determined by paragraph (a) of this subsection.
- (c) At no time shall the owner or operator of any source subject to federal new source performance standards allow the emissions from any affected facility commenced on or after the applicable classification date to exceed the allowable emission rate determined by use of that affected facility's rated heat input (instead of the heat input as determined by subsection (1) of this section) as specified in Sections 4 and 5.
- (d) The owner or operator of the source must demonstrate compliance with this subsection by conducting a performance test according to 401 KAR 50:045 on each affected facility under such conditions as may be specified by the department.
- (e) Upon petition, the department will establish an alternate emission rate in accordance with this subsection if the owner or operator

demonstrates to the department's satisfaction that the source will maintain compliance with this subsection on a continual basis.

**Section 4. Standard for Particulate Matter.**

Except as provided in Section 3(3), no owner or operator of an affected facility subject to the provisions of this regulation shall cause to be discharged into the atmosphere from that affected facility, particulate matter in excess of that specified below:

- (1) For sources having a total heat input capacity, as determined by Section 3(1), which is:
  - (a) Ten (10) million BTU per hour or less, the standard is 0.56 pounds per million BTU actual heat input;
  - (b) 250 million BTU per hour or more, the standard is 0.10 pounds per million BTU actual heat input;
  - (c) For heat input values between those specified in paragraphs (a) and (b) of this subsection, the standard in pounds per million BTU actual heat input, is equal to:

0.9634 times that quantity obtained by raising the total heat input capacity (in millions of BTU per hour) to the -0.2356 power;
- (2) Emissions which exhibit greater than twenty (20) percent opacity except:
  - (a) That, for indirect heat exchangers with heat input capacity of 250 million BTU per hour or more, a maximum of twenty-seven (27) percent opacity shall be permissible for not more than one (1) six (6) minute period in any sixty (60) consecutive minutes.
  - (b) That, for indirect heat exchangers with heat input capacity of less than 250 million BTU per hour, a maximum of forty (40) percent opacity shall be permissible for not more than six (6) consecutive minutes in any sixty (60) consecutive minutes during cleaning the fire box or blowing soot.
  - (c) For emissions from an indirect heat exchanger during building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations.

**Section 5. Standard for Sulfur Dioxide.**

Except as provided in Section 3(3), no owner or operator of an affected facility subject to the provisions of this regulation shall cause to be discharged into the atmosphere from that affected facility, any gases which contain sulfur dioxide in excess of that specified below:

- (1) For sources which have a total heat input capacity, as determined by Section 3(1), which is:
  - (a) Ten (10) million BTU per hour or less, the standard is three (3.0) pounds per million BTU actual heat input for combustion of liquid and gaseous fuels and five (5.0) pounds per million BTU actual heat input for combustion of solid fuels;
  - (b) 250 million BTU per hour or more, the standard is 0.8 pounds per million BTU actual heat input for combustion of liquid and gaseous fuels and 1.2 pounds per million BTU actual heat input for

combustion of solid fuels;

- (c) For heat input values between those specified in paragraphs (a) and (b) of this subsection, the standard in pounds per million BTU actual heat input, is equal to:
  - 1. For combustion of liquid and gaseous fuels, 7.7223 times that quantity obtained by raising the total heat input capacity (in millions of BTU per hour) to the  $-0.4106$  power;
  - 2. For combustion of solid fuels, 13.8781 times that quantity obtained raising the total heat input capacity (in millions of BTU per hour) to the  $-0.44434$  power.
- (2) When different gases are burned simultaneously in any combination the applicable standard shall be determined by proration using the equation given in Appendix A of this regulation.
- (3) Compliance shall be based on the total heat input from all fuels burned, including gaseous fuels.

#### **Section 6. Standard for Nitrogen Oxides.**

- (1) No owner or operator of an affected facility with a heat input capacity of 250 million BTU per hour or more subject to the provisions of this regulation shall cause to be discharged into the atmosphere any gases which contain nitrogen oxides expressed as nitrogen dioxide in excess of:
  - (a) 0.20 lb. per million BTU heat input (0.36 g. per million cal) derived from gaseous fuel;
  - (b) 0.30 lb. per million BTU heat input (0.54 g. per million cal) derived from liquid fuel;
  - (c) 0.70 lb. per million BTU heat input (1.26 g. per million cal) derived from solid fuel (except lignite);
  - (d) 0.60 lb. per million BTU heat input (1.08 g. per million cal) derived from lignite or lignite and wood residue except as provided under paragraph (e) of this subsection;
  - (e) 0.80 lb. per million BTU derived from lignite which is mined in North Dakota, South Dakota, or Montana and which is burned in a cyclone-fired unit.
- (2) Except as provided in subsections (3) and (4) of this section, when different fuels are burned simultaneously in any combination, the applicable standard shall be determined by proration using the equation given in Appendix B to this regulation.
- (3) When a fossil fuel containing at least twenty-five (25) percent by weight, of coal refuse is burned in combination with gaseous, liquid, or other solid fossil fuel or wood residue, the standard for nitrogen oxides does not apply.
- (4) Cyclone-fired units which burn fuel containing at least twenty-five (25) percent of lignite that is mined in North Dakota, South Dakota, or Montana remain subject to subsection (1)(e) of this section regardless of the types of fuel combusted in combination with that lignite.

**Section 7. Emission and Fuel Monitoring.**

The provisions of this section shall apply to any affected facility of more than 250 million BTU per hour rated heat input capacity.

- (1) Each owner or operator shall install, calibrate, maintain, and operate continuous monitoring systems for measuring the opacity of emissions, sulfur dioxide emissions, nitrogen oxides emissions and either oxygen or carbon dioxide except as provided in subsection (2) of this section.
- (2) Certain of the continuous monitoring system requirements under subsection (1) of this section do not apply to owners or operators under the following conditions:
  - (a) For an indirect heat exchanger that burns only gaseous fuel, continuous monitoring systems for measuring the opacity of emissions are not required;
  - (b) For an indirect heat exchanger that burns only natural gas, wood, wood residue, or any combination thereof, continuous monitoring systems for measuring sulfur dioxide emissions are not required;
  - (c) Notwithstanding 401 KAR 59:005, Section 4(2), installation of a continuous monitoring system for nitrogen oxides may be delayed until after the initial performance tests under 401 KAR 59:005, Section 2, have been conducted. If the owner or operator demonstrates during the performance test that emissions of nitrogen oxides are less than seventy (70) percent of the applicable standards in Section 6, a continuous monitoring system for measuring nitrogen oxide emissions is not required. If the initial performance test results show that nitrogen oxide emissions are greater than seventy (70) percent of the applicable standard, the owner or operator shall install a continuous monitoring system for nitrogen oxides within one (1) year after the date of the initial performance tests under 401 KAR 59:005, Section 2, and comply with all other applicable monitoring requirements under this chapter;
  - (d) If an owner or operator does not install any continuous monitoring systems for sulfur oxides and nitrogen oxides, as provided under paragraphs (a) and (c) or paragraphs (b) and (c) of this subsection, a continuous monitoring system for measuring either oxygen or carbon dioxide is required.
  - (e) For an indirect heat exchanger that does not use a flue gas desulfurization device, a continuous monitoring system for measuring sulfur dioxide emissions is not required if the owner or operator monitors sulfur dioxide emissions by fuel sampling and analysis under subsection (6) of this section.
- (3) For performance evaluation under 401 KAR 59:005, Section 4(3) and calibration checks under 401 KAR 59:005, Section 4(4), the following procedures shall be used:
  - (a) Reference Methods 6 or 7, filed by reference in 401 KAR 50:015, as applicable, shall be used for conducting performance evaluations of sulfur dioxide and nitrogen oxides continuous monitoring systems;
  - (b) Sulfur dioxide or nitric oxide, as applicable, shall be used for preparing calibration gas mixtures under Performance Specification 2 of Appendix B to 40 CFR 60, filed by reference in 401 KAR 50:015;

- (c) For affected facilities burning fossil fuel(s), the span value for a continuous monitoring system measuring the opacity of emissions shall be eighty (80), ninety(90), or 100 percent and for a continuous monitoring system measuring sulfur oxides or nitrogen oxides the span value shall be determined as shown in Appendix C of this regulation;
  - (d) All span values computed under paragraph (c) of this subsection for burning combinations of fuels shall be rounded to the nearest 500 ppm;
  - (e) For an indirect heat exchanger that simultaneously burns fossil fuel and nonfossil fuel, the span value of all continuous monitoring systems shall be subject to the department's approval.
- (4) A continuous monitoring system for measuring either oxygen or carbon dioxide in the flue gases, shall be installed, calibrated, maintained and operated by the owner or operator.
- (5) For any continuous monitoring system installed under subsection (1) of this section, the following conversion procedures shall be used to convert the continuous monitoring data into units of the applicable standards (ng/J,lb/million BTU):
- (a) When a continuous monitoring system for measuring oxygen is selected, the measurement of the pollutant concentration and oxygen concentration shall each be on a consistent basis (wet or dry). Alternative procedures approved by the department and the U.S. Environmental Protection Agency shall be used when measurements are on a wet basis. When measurements are on a dry basis, the following conversion procedure shall be used:  
  

$$E = (20.9CF)/(20.9 - \% \text{ oxygen}), \text{ where:}$$

E, C, F, and % oxygen are determined under subsection (6) of this section.
  - (b) When a continuous monitoring monitoring system for measuring carbon dioxide is selected, the measurement of a pollutant concentration and carbon dioxide concentration shall each be on a consistent basis (wet or dry) and the following conversion procedure shall be used:  $E = (100CFc)(\% \text{ carbon dioxide})$  where: E,C,Fc and % carbon dioxide are determined under subsection (6) of this section.
- (6) The values used in the equations under subsection (5) (a) and (b) of this section are derived as follows:
- (a)  $E =$  Pollutant emission, g/million cal (lb/million BTU).
  - (b)  $C =$  Pollutant concentration, g/dscm (lb/dscf), determined by multiplying the average concentration (ppm) for each one (1) hour period by .0000415 M g/dscm per ppm (2.59 times ten (10) raised to the negative nine (9) power times M lb/dscf per ppm) where M = pollutant molecular weight, g/g-mole (lb/lb-mole).  
  
 $M = 64.07$  for sulfur dioxide and  $46.01$  for nitrogen oxides.
  - (c)  $F, Fc =$  a factor representing a ratio of the volume of dry flue gases generated to the calorific value of the fuel combusted (f), and a factor representing a ratio of the volume of carbon dioxide

generated to the calorific value of the fuel combusted (Fc), respectively, as follows (ASTM designations are filed by reference in 401 KAR 50:015):

1. For anthracite coal as classified according to ASTM D388-66(72), F = 10,140 dscf/million BTU and Fc = 1980 scf CO<sub>2</sub>/million BTU.
2. For sub-bituminous coal as classified according to ASTM D388-66(72), F = 10,140 dscf/million BTU and Fc = 1980 scf CO<sub>2</sub>/million BTU.
3. For liquid fossil fuels including crude, residual, and distillate oils, F = 9220 dscf/million BTU and Fc = 2430 scf CO<sub>2</sub>/million BTU.
4. For gaseous fossil fuels, F = 8740 dscf/million BTU. For natural gas, propane and butane fuels, Fc = 1040 scf CO<sub>2</sub>/million BTU for natural gas, 1200 scf CO<sub>2</sub>/million BTU for propane, and 1260 scf CO<sub>2</sub>/million BTU for butane.
5. For bark, F = 9575 dscf/million BTU and Fc = 1927 scf CO<sub>2</sub>/million BTU. For wood residue other than bark, F = 9233 dscf/million BTU and Fc = 1842 scf CO<sub>2</sub>/million BTU.
6. For lignite coal as classified according to ASTM D388-66(72), F = 9900 dscf/million BTU and Fc = 1920 scf CO<sub>2</sub>/million BTU.

(d) The owner or operator may use the equation given in Appendix D of this regulation to determine an F factor (dscm/million cal, or dscf/million BTU) on a dry basis (if it is desired to calculate F on a wet basis, consult with the department) or Fc factor (scm CO<sub>2</sub>/million cal, or scf CO<sub>2</sub>/million BTU) on either basis in lieu of the F or Fc factors specified in paragraph (c) of this subsection.

1. H,C,S,N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent), respectively, as determined on the same basis as GCV by ultimate analysis of the the fuel fired using ASTM method D3178-73 or D3176-74 (solid fuels) or computed from results using ASTM methods D1137-53 (75), D1945-64(73), or D1946-67(72) (gaseous fuels) as applicable.
2. GVC is the gross calorific value (cal/g, BTU/lb) of the fuel combusted determined by ASTM test methods D2015-66(72) for solid fuels and D1826-64(70) for gaseous fuels as applicable.

(e) For affected facilities firing combinations of fuels, the F or Fc factors determined by paragraphs (c) and (d) of this subsection shall be prorated in accordance with the applicable formula as given in Appendix E of this regulation.

(7) For the purpose of reports required under 401 KAR 59:005, Section 3(3), periods of excess emissions that shall be reported are defined as follows:

- (a) Excess emissions are defined as any six (6) minute period during which the average opacity of emissions exceeds twenty (20) percent

opacity, except that one (1) six (6) minute average per hour of up to twenty-seven (27) percent opacity need not be reported.

- (b) Sulfur dioxide. Excess emissions for affected facilities are defined as: Any three(3) hour period during which the average emissions (arithmetic average of three(3) contiguous one (1) hour periods) of sulfur dioxide as measured by a continuous monitoring system exceed the applicable standard under Section 5.
  - (c) Nitrogen oxides. Excess emissions for affected facilities using a continuous monitoring system for measuring nitrogen oxides are defined as any three (3) hour period during which the average emissions (arithmetic average of three (3) contiguous one (1) hour periods) exceed the applicable standards under Section 6.
- (8) The department may require for any indirect heat exchanger unit of 250 million BTU per hour heat input or less any or all the emission and fuel monitoring required by this section.

#### **Section 8. Test Methods and Procedures.**

- (1) The reference methods in Appendix A of 40 CFR 60 except as provided in 401 KAR 50:045 shall be used to determine compliance with the standards as prescribed in Sections 4,5, and 6 as follows:
  - (a) Reference Method 1 for the selection of sampling site and sample traverses;
  - (b) Reference Method 3 for gas analysis to be used when applying Reference Methods 5,6, and 7;
  - (c) Reference Method 5 for concentration of particulate matter and the associated moisture content;
  - (d) Reference Method 6 for the concentration of sulfur dioxide;
  - (e) Reference Method 7 for the concentration of nitrogen oxides; and
  - (f) Reference Method 9 for visible emissions.
- (2) For Reference Method 5, Reference Method 1 shall be used to select the sampling site and the number of traverse sampling points. The sampling time for each run shall be at least sixty (60) minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller sampling times or volumes, when necessitated by process variables or other factors, may be approved by the department. The probe and filter holder heating systems in the sampling train shall be set to provide a gas temperature no greater than 160 °C (320 °F).
- (3) For Reference Methods 6 and 7, the sampling site shall be the same as that selected for Reference Method 5. The sampling point in the duct shall be at the centroid of the cross section or at a point no closer to the walls than one (1) m (3.28 ft.) For Reference Method 6, the sample shall be extracted at a rate proportional to the gas velocity at the sampling point.
- (4) For Reference Method 6, the minimum sampling time shall be twenty (20) minutes and the minimum sampling volume shall be 0.02 dscm (0.71 dscf) for each sample. The arithmetic mean of two (2) samples shall constitute one (1) run. Samples shall be taken at approximately thirty

- (30) minute intervals.
- (5) For Reference Method 7, each run shall consist of at least four (4) grab samples taken at approximately fifteen (15) minute intervals. The arithmetic mean of the samples shall constitute the run value.
- (6) For each run using the methods specified by subsection (1)(a), (b) and (c) of this section, the emissions expressed in g/million cal (lb/million BTU) shall be determined by the following procedure:  $E = (20.9 \text{ CF})(20.9 - \% \text{ oxygen})$  where:
- (a)  $E =$  pollutant emission, g/million cal (lb/million BTU),
  - (b)  $C =$  pollutant concentration, g/dscm (lb/dscf), determined by Reference Methods 5, 6 or 7.
  - (c)  $\% \text{ oxygen} =$  oxygen content by volume (expressed as percent), dry basis. Percent oxygen shall be determined by using the integrated or grab sampling and analysis procedures as Reference Method 3 as applicable. The sample shall be obtained as follows:
    1. For determination of sulfur dioxide and nitrogen oxides emissions, the oxygen sample shall be obtained simultaneously at the same point in the duct as used to obtain the samples for Reference Methods 6 and 7 determinations, respectively. For Reference Method 7, the oxygen sample shall be obtained using the grab sampling and analysis procedures of Reference Method 3.
    2. For determination of particulate emissions, the oxygen sample shall be obtained simultaneously by traversing the duct at the same sampling location used for each run of Reference Method 5 under subsection (2) of this section. Reference Method 1 shall be used for selection of the number of traverse points except that no more than twelve (12) sample points are required.
  - (d)  $F =$  a factor as determined in Section 7(6)(c), (d), or (e).
- (7) When combination of fossil fuels are fired, the heat input, expressed in cal/hr (BTU/hr), shall be determined during each testing period by multiplying the gross calorific value of each fuel fired by the rate of each fuel burned. Gross calorific value shall be determined in accordance with ASTM methods D 2015- 66(72) (solid fuels), D240-76 (liquid fuels), or D1826- 64(70) (gaseous fuels) as applicable. The rate of fuels burned during each testing period shall be determined by suitable methods and shall be confirmed by a material balance over the steam generation system.

**[SIP Compilation Table after Appendices]**

**APPENDIX A TO 401 KAR 59:015**  
**DETERMINATION OF ALLOWABLE SULFUR DIOXIDE EMISSION**

Allowable sulfur dioxide emission in pounds per million BTU per hour heat input

$$= \frac{y (a) + z (b)}{y + z}$$

Where:

- y is the percent of total heat input derived from liquid or gaseous fuel,
- z is the percent of total heat input derived from solid fuel,
- a is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from liquid or gaseous fuel, and
- b is the allowable sulfur dioxide emission in pounds per million BTU heat input derived from solid fuel.

**APPENDIX B TO 401 KAR 59:015**  
**DETERMINATION OF ALLOWABLE NITROGEN DIOXIDE EMISSION**

Allowable nitrogen dioxide emission in pounds per million BTU/hour heat input

$$= \frac{x(0.20) + y(0.30) + z(0.70) + w(0.60)}{x + y + z + w}$$

Where:

- x is the percent of total heat input derived from gaseous fuel,
- y is the percent of total heat input derived from liquid fuel,
- z is the percent of total heat input derived from solid fuel (except lignite), and
- w is the percent of total heat input derived from lignite.

**APPENDIX C TO 401 KAR 59:015**  
**DETERMINATION OF SPAN VALUE**  
**(in parts per million)**

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Fossil Fuel	Span Value for Sulfur Dioxide	Span Value for Nitrogen Oxides
Gas	*	500
Liquid	1,000	500
Solid	1,500	500
Combinations	$1,000y + 1,500z$	$500(x+y)+1,000z$

\*Not applicable

Where:

- x = the fraction of total heat input derived from gaseous fossil fuel,
- y = the fraction of total heat input derived from liquid fossil fuel,  
and
- z = the fraction of total heat input derived from solid fossil fuel.

**APPENDIX D TO 401 KAR 59:015**  
**DETERMINATION OF F OR F<sub>c</sub> FACTOR**

$$F = \frac{227.2(\%H) + 95.5(\%C) + 35.6(\%S) + 8.7(\%N) - 28.7(\%O)}{GCV}$$

(metric units)

$$F = \frac{10^6 [3.64(\%H) + 1.53(\%C) + 0.57(\%S) + 0.14(\%N) - 0.46(\%O)]}{GCV}$$

(English units)

$$F_c = \frac{2.0 \times 10^{-5}(\%C)}{GCV} \quad (\text{metric units})$$

$$F_c = \frac{321 \times 10^3(\%C)}{GCV} \quad (\text{English units})$$

Where:

H, C, S, N, and O are content by weight of hydrogen, carbon, sulfur, nitrogen, and oxygen (expressed as percent) respectively, as determined on the same basis as GCV by ultimate analysis of the fuel fire, using A.S.T.M. methods D1137-74 (solid fuels) or computed from results using A.S.T.M. methods D1137-53(75), D1945-64(73), or D1946-67(72) (gaseous fuels) as applicable.

GCV is the gross calorific value (cal/g, BTU/lb) of the fuel combusted, determined by A.S.T.M. test methods D2015-66(72) for solid fuels and D1826-64(70) for gaseous fuels as applicable.

**APPENDIX E TO 401 KAR 59:015  
DETERMINATION OF F OR Fc FACTOR FOR FIRING COMBINATIONS**

$$F = xF_1 + yF_2 + zF_3$$

Where:

$x, y, z =$  the fraction of total heat input derived from gaseous, liquid, and solid fuel, respectively.

$F_1, F_2, F_3 =$  the value of F for gaseous liquid, and solid fuels respectively under Section 7(6)(c) and (d).

$$F_c = \sum_{i=1}^n X_i (F_c)_i$$

Where:

$X_i =$  the fraction of total heat input derived from each type fuel (e.g., natural gas, butand, crude bituminous coal, etc.)

$(F_c)_i =$  the applicable Fc factor for each fuel type determined in accordance with Section 7(6)\*c) and (d).

Effective Date: January 7, 1981

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JUL 12, 1982	47 FR 30059
1st Revision	SEP 24, 1982	MAR 22, 1983	48 FR 11945

**401 KAR 59:020 New incinerators.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation is to provide standards of performance for new incinerators.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility which means each incinerator commenced on or after the applicable classification date defined below.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

- (1) "Incinerator" means any furnace used in the process of burning waste for the purpose of reducing the volume of the waste by removing combustible matter.
- (2) "Day" means twenty-four (24) hours.
- (3) "Auxiliary fuel" means a substance burned in an incinerator to supply additional heat to attain temperature sufficiently high to dry and ignite a waste material and to maintain ignition of the waste material.
- (4) "Classification date" means:
  - (a) August 17, 1971 for incinerators with a charging rate of more than fifty (50) tons/day;
  - (b) April 9, 1972 for incinerators with a charging rate of fifty (50) tons/day or less, subject to Section 3(2)(b); and

June 6, 1979 for incinerators with a charging rate of fifty (50) tons/day or less subject to Section 3(2)(a).

**Section 3. Standards for Particulate Matter.**

- (1) No owner or operator of any affected facility shall cause, suffer, allow, or permit the emission produced by the incineration of any substance to have greater than twenty (20) percent opacity.
- (2) (a) No owner or operator of an affected facility of 500 lb/hr up to and including forty-five (45) metric tons per day charging rate (fifty(50) tons/day) commenced on or after June 6, 1979 shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.23 g/dscm (0. gr/dscf) corrected to twelve (12) percent carbon dioxide excluding the contribution of carbon dioxide from auxiliary fuel.
- (b) No owner or operator of an affected facility of 500 lb/hr up to and including forty-five (45) metric tons per charging rate (fifty (50)

tons/day) commenced on or after April 9, 1972 but before June 6, 1979 shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.45 g/dscm (0.2 gr/dscf) corrected to twelve (12) percent carbon dioxide excluding the contribution of carbon dioxide from auxiliary fuel.

- (3) On and after the date on which the performance test required to be conducted by 401 KAR 59:005 is completed, no owner or operator of an affected facility of more than forty-five (45) metric tons per day charging rate (fifty(50) tons/day) shall cause to be discharged into the atmosphere from any affected facility any gases which contain particulate matter in excess of 0.18 g/dscm (0.08 gr/dscf) corrected to twelve (12) percent carbon dioxide excluding the contribution of carbon dioxide from auxiliary fuel.

#### **Section 4. Monitoring of Operations.**

The owner or operator of an affected facility of more than forty- five (45) metric tons per day charging rate (fifty (50) tons per day) shall record the daily charging rates and hours of operations.

#### **Section 5. Nameplate.**

All affected facilities shall have a nameplate installed in a conspicuous place on the unit giving the manufacturer's name, model number, rated capacity, and the types of waste material for which the unit is designed.

#### **Section 6. Test Methods and Procedures.**

- (1) The reference methods as defined in Appendix A of 40 CFR 60, filed by reference in 401 KAR 50:015, except as provided for in 401 KAR 50:045, shall be used to determine compliance with the standards prescribed in Section 3 as follows:
  - (a) Reference Method 5 for the concentration of particulate matter and the associated moisture content;
  - (b) Reference Method 1 for sample and velocity traverses;
  - (c) Reference Method 2 for velocity and volumetric flow rate;
  - (d) Reference Method 3 for gas analysis and calculation of excess air, using the integrated sample technique; and
  - (e) Reference Method 9 for visible emissions.
- (2) The sampling time for each run shall be at least sixty (60) minutes and the minimum sample volume shall be 0.85 dscm (30.0 dscf) except that smaller sampling times or sample volumes, when necessitated by process variables or other factors, may be approved by the department.
- (3) If a wet scrubber is used, the gas analysis sample shall reflect flue gas conditions after the scrubber, allowing for carbon dioxide absorption by sampling the gas on the scrubber inlet and outlet sides according to either the procedure under paragraphs (a) through (f) of this subsection or the procedure under Section 7.
  - (a) The inlet site shall be selected according to Reference Method 1 or as specified by the department.
  - (b) The outlet sample site shall be the same as for the particulate matter measurement.

- (C) Randomly select nine (9) sampling points within the cross section at both the inlet and outlet sampling sites. Use the first set of three (3) for the first run, the second set for the second run, and the third set for the third run.
- (d) Simultaneously with each particulate matter run, extract and analyze for carbon dioxide an integrated gas sample traversing the three (3) sample points and sampling at each point for equal increments of time. Conduct the runs at both inlet and outlet sampling sites.
- (e) Measure the volumetric flow rate at the inlet during each particulate matter run using the full number of traverse points. For the inlet makes two (2) full velocity traverse approximately one (1) hour apart during each run and average the results. The outlet volumetric flow rate may be determined from the particulate matter run.
- (f) Calculate the adjusted carbon dioxide percentage using the equation in Appendix A of this regulation.

**Section 7.** Alternatively, the following procedures may be substituted for the procedures under Section 6(3) (d), (e) and (f).

- (1) Simultaneously with each particulate matter run, extract and analyze for carbon dioxide, oxygen, and nitrogen an integrated gas sample traversing the three (3) sample points and sampling for equal increments of time at each point. Conduct the runs at both the inlet and outlet sampling sites.
- (2) After completing the analysis of the gas sample, calculate the percentage of excess air for both the inlet and outlet sampling sites.
- (3) Calculate the adjusted carbon dioxide percentage using the equation in Appendix B of this regulation.
- (4) Particulate matter emissions, expressed in g/dscm, shall be corrected to twelve (12) percent carbon dioxide by using the formula in Appendix C of this regulation.

**[SIP Compilation Table After Appendices]**

**APPENDIX A TO 401 KAR 59:020**  
**CALCULATION FOR ADJUSTED CARBON DIOXIDE PERCENTAGE FOR INCINERATORS**

$$\%CO_2A = \%CO_2D (Q_i/Q_o)$$

where:

$\%CO_2A$  is the adjusted carbon dioxide percentage which removes the effect of carbon dioxide adsorption and dilution air.

$\%CO_2D$  is the percentage of carbon dioxide measured before the scrubber, dry basis.

$Q_i$  is the volumetric flow rate before the scrubber average of two (2) runs, dscf/min, and

$Q_o$  is the volumetric flow rate after the scrubber, dscf/min.

**APPENDIX B TO 401 KAR 59:020  
CALCULATION FOR ADJUSTED CARBON DIOXIDE PERCENTAGE  
INCINERATOR, ALTERNATE PROCEDURE**

$$\%CO_2A = CO_2D \frac{100 + EA_i}{100 + \%EA_o}$$

where:

- CO<sub>2</sub>A is the adjusted outlet carbon dioxide percentage,
- CO<sub>2</sub>D is the percentage of carbon dioxide measured before the scrubber, dry basis,
- %Ea<sub>i</sub> is the percentage of excess air at the inlet, and
- Ea<sub>o</sub> is the percentage of excess air at the outlet.

**APPENDIX C TO 401 KAR 59:020  
PARTICULATE EMISSIONS CORRECTION CALCULATION FOR  
INCINERATORS, ALTERNATE PROCEDURE**

$$C_{12} = \frac{12C_p}{\%CO_2}$$

where:

- $C_{12}$  is the concentration of particulate matter corrected to twelve (12) percent carbon dioxide,
- $C_p$  is the concentration of particulate matter and,
- $\%CO_2$  is the percentage of measured carbon dioxide or when applicable, the adjusted outlet carbon dioxide percentage as determined by Appendix B to this regulation.

Effective Date: June 6, 1979

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JUL 12, 1982	47 FR 30059



**401 KAR 59:046. Selected new petroleum refining processes and equipment.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 224.10-100

Necessity and Function: KRS 224.10.100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of hydrocarbon emissions from selected new petroleum refining processes and equipment.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility commenced on or after the classification date defined below which is located:

- (1) In an urban county designated non-attainment for ozone under 401 KAR 51:010; or
- (2) In any other county and is part of a major source of volatile organic compounds.

**Section 2. Definitions.**

- (1) "Affected facility" means vacuum producing systems and process unit turnarounds associated with a petroleum refinery.
- (2) "Vacuum producing systems" means equipment which produces a partial vacuum in a vessel.
- (3) "Process unit turnaround" means the shutting down, depressurization, and purging of a process unit or vessel.
- (4) "Classification date" means the effective date of this regulation.

**Section 3. Standard for Hydrocarbons.**

The owner or operator of an affected facility shall install, operate, and maintain all equipment necessary to accomplish the following:

- (1) Vacuum producing systems. All gaseous hydrocarbons emitted from condensers, hot wells, vacuum pumps, and accumulators shall be collected and vented to a firebox, flare or other control device of equivalent efficiency as determined by the department.
- (2) Process unit turnaround. The gaseous hydrocarbons purged from a process unit or vessel shall be vented to a firebox, flare, or other control device of equivalent efficiency as determined by the department until the pressure in the process unit is less than five (5) psig.

**Section 4. Monitoring and Reporting Requirements.**

- (1) The owner or operator shall:
  - (a) Keep a record of each process unit turnaround;
  - (b) Record the approximate hydrocarbon concentration when the hydrocarbons were first discharged to the atmosphere;

- (c) Record the approximate total quantity of hydrocarbons emitted to the atmosphere.
- (2) The owner or operator shall retain these records for at least two (2) years and submit them to the department upon request.

Effective Date: June 29, 1979

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980 AUG 07, 1981	45 FR 6092 46 FR 40188

**401 KAR 59:050. New storage vessels for petroleum liquids.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 13.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new storage vessels for petroleum liquids.

**Section 1. Applicability.**

- (1) The provisions of this regulation shall apply to each affected facility with a storage capacity less than or equal to 151,400 liters (40,000 gallons) commenced on or after the classification date defined in Section 2(12), which is located:
  - (a) In an urban county designated non-attainment for ozone under 401 KAR 51:010; or
  - (b) In any other county and is a part of a major source of volatile organic compounds.
- (2) The provisions of this regulation shall apply to each affected facility with a storage capacity greater than 151,400 l (40,000 gallons) commenced on or after the classification date defined in Section 2(12).
- (3) The provisions of Section 3(3) and (4), 4(3) and 6 shall apply only to each affected facility with a storage capacity greater than 151,400 liters (40,000 gallons) commenced on or after May 19, 1978.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

- (1) "Affected facility" means a storage vessel for petroleum liquids which has a storage capacity of greater than 2,195 l (580 gallons).
- (2) "Storage vessel" means each tank, reservoir, or container used for the storage of petroleum liquids, but does not include:
  - (a) Pressure vessels which are designed to operate in excess of 204.9 kPa (fifteen (15) pounds per square inch gauge) without emissions to the atmosphere except under emergency conditions;
  - (b) subsurface caverns or porous rock reservoirs; or
  - (c) Underground tanks if the total volume of petroleum liquids added to and taken from a tank annually does not exceed twice the volume of the tank.
- (3) "Petroleum liquids" means petroleum, condensate, and any finished or intermediate products manufactured in a petroleum refinery but does not mean Number 2 through Number 6 fuel oils, turbine fuel oil Numbers 2-GT through 4-GT, or diesel fuel oils Numbers 2-D and 4-D as specified by the department.
- (4) "Petroleum refinery" means each facility engaged in producing gasoline, kerosene, distillate fuel oils, residual fuel oils, lubricants, or other

products through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives.

- (5) "Petroleum" means the crude oil removed from the earth and the oils derived from tar sands, shale, and coal.
- (6) "Condensate" means hydrocarbon liquid separated from natural gas which condenses due to changes in the temperature and/or pressure and remains liquid at standard conditions.
- (7) "True vapor pressure" means the equilibrium partial pressure exerted by a petroleum liquid as determined in accordance with methods specified by the department.
- (8) "Floating roof" means a storage vessel cover consisting of a double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the petroleum liquid being contained and is equipped with a closure seal or seals to close the space between the roof edge and tank wall.
- (9) "Vapor recovery system" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from the storage vessel and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere.
- (10) "Reid vapor pressure" is the absolute vapor pressure of volatile crude oil and volatile petroleum liquids, except liquefied petroleum gases, as determined by methods specified by the department.
- (11) "Submerged fill pipe" means any fill pipe the discharge of which is entirely submerged when the liquid level is six (6) inches above the bottom of the tank; or when applied to a tank which is loaded from the side, shall mean every fill pipe the discharge opening of which is entirely submerged when the liquid level is two (2) times the fill pipe diameter above the bottom of the tank.
- (12) "Classification date" means April 9, 1972.
- (13) "Volatile organic compounds (VOC)" means chemical compounds of carbon (excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, and ammonium carbonate) which have a vapor pressure greater than one-tenth (0.1) mm Hg at conditions of twenty (20) degrees Celsius and 760 mm Hg.
- (14) "Custody transfer" means the transfer of produced petroleum and/or condensate, after processing and/or treating in the producing operations, from storage tanks or automatic transfer facilities to pipelines or any other forms of transportations.
- (15) "External floating roof" means a storage vessel cover in an open top tank consisting of a double deck or pontoon single deck which rests upon and is supported by the petroleum liquid being contained and is equipped with closure seals to close the space between the roof edge and tank shell.
- (16) "Internal floating roof" means a cover or roof in a fixed roof tank which rests upon or is floated upon the petroleum liquid being contained, and is equipped with closure seals to close the space between

the roof edge and tank shell.

- (17) "Liquid-mounted seal" means a foam or liquid-filled primary seal mounted in contact with the liquid between the tank wall and the floating roof continuously around the circumference of the tank.
- (18) "Vapor-mounted seal" means a foam-filled primary seal mounted continuously around the circumference of the tank so there is an annular vapor space underneath the seal. The annular vapor space is bounded by the bottom of the primary seal, the tank wall, the liquid surface, and the floating roof.
- (19) "Metallic shoe seal" includes but is not limited to a metal sheet held vertically against the tank wall by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof.
- (20) "kPa" means kilopascal.

### **Section 3. Standard for Volatile Organic Compounds.**

- (1) The owner or operator of any storage vessel commenced on or after April 9, 1972 and prior to May 19, 1978 to which this regulation applies shall store petroleum liquids as follows:
  - (a) If the storage vessel has a storage capacity greater than 151,400 l (40,000 gallons) and if the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than seventy-eight (78) mm Hg (1.5 psia) but not greater than 574 mm Hg (11.1 psia) the storage vessel shall be equipped with a floating roof, a vapor recovery system, or their equivalents. If the vessel is equipped with an external floating roof the vessel shall be retrofitted and operated according to the provisions of 401 KAR 61:050, Sections 3(4), 4(3), 6(2) and 7 if the vessel is located:
    - 1. In a urban county designated non-attainment for ozone under 401 KAR 51:010; or
    - 2. In any other county which is designated non-attainment or unclassified for ozone under 401 KAR 51:010 and is a part of a major source of volatile organic compounds.
    - 3. The provisions of 401 KAR 61:050 Sections 3(4) and 4(3) shall not apply to vessels located in the following counties: Garrard, Graves, Hopkins, Laurel, Montgomery, Nelson, Pulaski, Scott, Taylor, Trigg, and Union prior to designation of such counties non-attainment for ozone under 401 KAR 51:010.
  - (b) If the storage vessel has a storage capacity greater than 151,400 l (40,000 gallons) and if the true vapor pressure of the petroleum liquid as stored is greater than 574 mm Hg (11.1 psia), the storage vessel shall be equipped with a vapor recovery system or its equivalent.
- (2) The owner or operator of each storage vessel commenced on or after April 9, 1972 to which this regulation applies shall store petroleum liquids as follows: If the storage vessel has a storage capacity greater than 2,195 (580 gallons), and if the true vapor pressure of the petroleum liquid, as stored, is equal to or greater than 10.3 kPa (1.5 psia), as a

minimum it shall be equipped with a permanent submerged fill pipe.

- (3) The owner or operator of each storage vessel commenced on or after May 19, 1978, with storage capacity greater than 151,400 l (40,000 gallons) which contains a petroleum liquid which, as stored, has a true vapor pressure equal to or greater than 10.3 kPa (1.5 psia) but not greater than 76.6 kPa (11.1 psia) shall equip the storage vessel with one (1) of the following:
  - (a) An external floating roof, consisting of a pontoon-type or double-deck-type cover that rests on the surface of the liquid contents and is equipped with a closure device between the tank wall and the roof edge. Except as provided in subparagraph 3. of this paragraph, the closure device is to consist of two (2) seals, one (1) above the other. The lower seal is referred to as the primary seal and the upper seal is referred to as the secondary seal. Each seal is to meet the following requirements:
    1. The primary seal is to be either a metallic shoe seal, a liquid-mounted seal, or a vapor-mounted seal.
    2. The secondary seal is to be installed above the primary seal so that it completely covers the space between the roof edge and the tank wall except as provided in Section 4(3)(c).
    3. The owner or operator is exempted from the requirements for secondary seals and the secondary seal gap criteria when performing gap measurements or inspections of the primary seal.
  - (b) A fixed roof with an internal floating type cover equipped with a continuous closure device between the tank wall and the cover edge.
  - (c) A vapor recovery system which collects all VOC vapors and gases discharged from the storage vessel, and a vapor return or disposal system which is designed to process such VOC vapors and gases so as to reduce their emission to the atmosphere by at least ninety-five (95) percent weight.
  - (d) A system equivalent to those described in paragraphs (a) to (c) of this subsection as determined by the department.
- (4) The owner or operator of each storage vessel commenced on or after May 19, 1978 with a storage capacity greater than 151,400 l (40,000 gallons) which contains a petroleum liquid which, as stored, has a true vapor pressure greater than 76.6 kPa (11.1 psia), shall equip the storage vessel with a vapor recovery system which collects all VOC vapors and gases discharged from the storage vessel, and a vapor return or disposal system which is designed to process such VOC vapors and gases so as to reduce their emission to the atmosphere by at least ninety-five (95) percent by weight.

#### **Section 4. Operating Requirements.**

- (1) There shall be no visible holes, tears, or other openings in the seal, any seal fabric, shoe, or seal envelope.
- (2) All openings, except stub drains, automatic bleeder vents, rim space vents, and leg sleeves, shall be equipped with covers, lids, or seals such that:

- (a) The cover, lid, or seal in the closed position at all times (i.e. no visible gap) except when in actual use or as described in subsection (3)(f) of this section;
  - (b) Automatic bleeder vents are closed at all times except when the roof is floated off or landed on the roof leg supports; and
  - (c) Rim vents, if provided, are set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.
- (3) External and internal floating roof tanks commenced on or after May 19, 1978 shall meet the additional requirements:
- (a) The roof is to be floating on the liquid at all times (i.e., off the roof leg supports) except during initial fill and when the tank is completely emptied and subsequently refilled. The process of emptying and refilling when the roof is resting on the leg supports shall be continuous and shall be accomplished in the minimum time necessary.
  - (b) For each primary seal associated with an external floating roof tank the accumulated area of gaps between the tank wall and the metallic shoe seal or the liquid-mounted seal shall not exceed 212 sq. cm/m (10.0 sq. in/ft) of tank diameter and the width of any portion of any gap shall not exceed 3.81 cm (1.5 in).
  - (c) For each primary and secondary seal associated with an external floating roof tank the accumulated area of gaps between the tank wall and the vapor-mounted seal or between the tank wall and the secondary seal shall not exceed 21.2 sq. cm/m (1.0 sq. in/ft) of tank diameter and the width of any portion of any gap shall not exceed 1.27 cm (one-half(1/2) in).
  - (d) One (1) end of the metallic shoe associated with an external floating roof tank shall extend into the stored liquid and the other end shall extend a minimum vertical distance of sixty-one (61) cm (twenty-four(24) in) above the stored liquid surface.
  - (e) Each opening in the roof except for automatic bleeder vents and rim space vents is to provide a projection below the liquid surface.
  - (f) Each emergency roof drain associated with an external floating roof tank is to be provided with a slotted membrane fabric cover that covers at least ninety (90) percent of the area of the opening.

**Section 5. Monitoring of operations.**

- (1) The owner or operator of any storage vessel with a capacity of greater than 151,400 liters (40,000 gallons) to which this regulation applies shall maintain a record of the petroleum liquid stored, the period of storage, and the maximum true vapor pressure of that liquid during the respective storage period.
- (2) Available data on the typical Reid vapor pressure and the maximum expected storage temperatures of the stored product may be used to determine the maximum true vapor pressure as specified by the department, unless the department specifically requests that the liquid

be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample(s).

- (3) The true vapor pressure of each type of crude oil with a Reid vapor pressure less than 13.8 kPa (2.0 psia) or whose physical properties preclude determination by the recommended method is to be determined from available data and recorded if the estimated true vapor pressure is greater than 6.9 kPa (1.0 psia).
- (4) The following are exempt from the requirements of this section:
  - (a) The owner or operator of each storage vessel storing a petroleum liquid with a Reid vapor pressure of less than 6.9 kPa (1.0 psia) provided the maximum true vapor pressure does not exceed 6.9 kPa (1.0 psia).
  - (b) Each owner or operator of each storage vessel equipped with a vapor recovery and return or disposal system in accordance with the requirements of Section (1) (a) and (b), (3) (c) and (4).

#### **Section 6. Testing and procedures.**

Compliance with the requirements prescribed in Sections 3(3) and (4), and 4(3) shall be determined as follows or in accordance with an equivalent procedure as approved by the department. The owner or operator of each storage vessel to which this section applies which has an external floating roof shall meet the following requirements:

- (1) Determine the gap areas and maximum gap widths between the primary seal and the tank wall, and the secondary seal and the tank wall according to the following frequency and furnish the department with a written report of the results within sixty (60) days of performance of gap measurements:
  - (a) For primary seals, gap measurements shall be performed within sixty (60) days of the initial fill with petroleum liquid and at least once every year thereafter.
  - (b) For secondary seals, gap measurements shall be performed within sixty (60) days of the initial fill with petroleum liquid and at least once every year thereafter.
  - (c) If any storage vessel is out of service for a period of one (1) year or more, subsequent refilling with petroleum liquid shall be considered initial fill for the purposes of paragraphs (a) and (b) of this subsection.
- (2) Determine gap widths in the primary and secondary seals individually by the following procedures:
  - (a) Measure seal gaps, if any, at one (1) or more floating roof levels when the roof is floating off the roof leg supports.
  - (b) Measure seal gaps around the entire circumference of the tank in each place where a one-eighth (1/8) inch diameter uniform probe passes freely (without forcing or binding against seal) between the seal and the tank wall and the measure the circumferential distance of each such location.
  - (c) The total surface area of each gap described in paragraph (b) of this subsection shall be determined by using probes of various widths to accurately measure the actual distance from the tank wall to the seal and multiplying each such width by its respective

circumferential distance.

- (3) Add the gap surface area of each gap location for the primary seal and the secondary seal individually. Divide the sum for each seal by the nominal diameter of the tank and compare each ratio to the appropriate ratio in the standard in Section 4(3)(b) and (c).
- (4) Provide the department thirty (30) days prior notice of the gap measurement to afford the opportunity to have an observer present.

Effective Date: February 4, 1981

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092
1st Revision	FEB 05, 1981	NOV 24, 1981	46 FR 57486
		MAR 30, 1983	48 FR 13168

**401 KAR 59:080. New kraft (sulfate) pulp mills.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new kraft (sulfate) pulp mills.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility which:

- (1) Is associated with a kraft (sulfate) pulp mill;
- (2) Is not subject to another standard of performance within this chapter with respect to particulates or total reduced sulfur;
- (3) Commenced on or after the classification date defined below but before September 24, 1976.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given to them in 401 KAR 50:010.

- (1) "Total reduced sulfur (TRS)" means all reduced sulfur compounds including but not limited to hydrogen sulfide, methyl mercaptan, dimethyl sulfide, and dimethyl disulfide expressed in terms of hydrogen sulfide.
- (2) "Classification date" means April 9, 1972.

**Section 3. Standard for Particulate Matter.**

No person shall cause, suffer, allow, or permit particulate emissions from the following affected facilities in excess of:

- (1) Recovery furnace: 2.3 pounds per ton of equivalent unbleached dried pulp produced;
- (2) Lime kilns: 1.0 pounds per ton of equivalent unbleached air dried pulp produced;
- (3) Dissolving smelt tanks: 0.5 pounds per ton of equivalent unbleached air dried pulp produced;
- (4) No person shall cause, suffer, allow, or permit visible emissions in excess of thirty-five (35) percent capacity.

**Section 4. Standard for Total Reduced Sulfur (TRS).**

- (1) No person shall cause, suffer, allow, or permit total reduced sulfur emissions from the recovery furnace of any kraft (sulfate) pulp mill in excess of an exit stack gas concentration of fifteen (15) parts per million by volume expressed as an arithmetic average over any consecutive twenty-four (24) hour period.

- (2) No person shall cause, suffer, allow, or permit total reduced sulfur emissions from the recovery furnace of any kraft (sulfate) pulp mill in excess of an exit stack gas concentration of forty (40) parts per million by volume for more than sixty (60) total minutes in any twenty-four (24) hour period.
- (3) No person shall cause, suffer, allow, or permit the emissions of various noncondensable gas streams from digester relief, blow tank relief, evaporator hot wells, or multiple effect evaporators containing total reduced sulfur in any affected facility unless treated by thermal oxidation or an equivalent method with ninety-eight (98) percent efficiency.
- (4) Control of other points of emission of total reduced sulfur, shall be considered on an individual basis as determined by the department.

**Section 5. Test Methods and Procedures.**

Except as provided in 401 KAR 50:045, performance tests used to demonstrate compliance with Sections 3 and 4 shall be conducted according to the following methods, filed by reference in 401 KAR 50:015:

- (1) Reference Method 5 for the emission rates of particulate matter and the associated moisture content.
- (2) Reference Method 1 for sample and velocity traverses.
- (3) Reference Method 2 for velocity and volumetric flow rate.
- (4) Reference Method 3 for gas analysis.
- (5) Reference Method 9 for visible emissions.
- (6) Reference Method 16 for the concentration of TRS. All concentrations of TRS from the lime kiln and recovery furnace that are measured as required by this subsection shall be corrected to ten (10) percent by volume oxygen and eight (8) percent by volume oxygen, respectively, when the oxygen concentrations exceed these values.
- (7) Reference Method 17 (in-stack filtration) may be used as an alternative method for Reference Method 5 provided that a constant value of 0.009 g/dscm (0.004 gr/dscf) is added to the results of Reference Method 17 and the stack temperature is no greater than 205°C. (400°F).
- (8) For particulate tests, the sampling time for each run shall be at least sixty (60) minutes and the sampling rate shall be at least 0.85 dscm/hr (0.53 dscf/hr) except that shorter sampling times, when necessitated by process variables or other factors, may be approved by the department. Water should be used as the clean up solvent instead of acetone in the sample recovery procedure outlined in Reference Method 5 or 17.

Effective Date: June 6, 1979

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092



**401 KAR 59:085. New sulfite pulp mills.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new sulfite pulp mills.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility which:

- (1) Is associated with a sulfite pulp mill;
- (2) Is not subject to another standard of performance within this chapter with respect to sulfur oxides;
- (3) Commenced on or after the classification date defined below.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010. "Classification date" means April 9, 1972.

**Section 3. Standards for Sulfur Oxides Emissions.**

No person shall cause or permit sulfur oxides emissions from blow pits, washer vents, storage tanks, digester relief, recovery system, etc., to exceed 9.0 lb. per air dried ton of pulp produced.

**Section 4. Test Methods and Procedures**

Except as provided in 401 KAR 50:045, performance tests used to demonstrate compliance with Section 3 shall be conducted according to the following methods, filed by reference in 401 KAR 50:015:

- (1) Reference Method 1 for velocity traverses.
- (2) Reference Method 2 for velocity and volumetric flow rate.
- (3) Reference Method 3 for gas analysis.
- (4) Reference Method 6 for sulfur oxide emission rates.
  - (a) The sampling point shall be at the centroid of the duct or stack or at a point no closer to the walls than one (1) meter (3.28 ft.). The sample shall be extracted at a rate proportional to the gas velocity at the sampling point.
  - (b) The minimum sampling time shall be twenty (20) minutes and the minimum sample volume shall be 0.02 dscm (0.71 dscf) for each sample. The arithmetic average of two (2) samples shall constitute one (1) run. Three (3) runs are needed for a compliance test. Samples shall be taken at approximately thirty (30) minute intervals.

Effective Date: June 6, 1979

Date Submitted to EPA	Date Approved by EPA	Federal Register
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Original Reg

JUN 29, 1979

JUL 12, 1982

47 FR 30059

**401 KAR 59:090. New ethylene producing plants.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new ethylene producing products.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility which means each waste gas stream of any ethylene producing plant commenced on or after the classification date defined below.

**Section 2. Definitions.**

As used in this regulation all terms not defined herein shall have the meaning given them in 401 KAR 50:010. "Classification date" means April 9, 1972.

**Section 3. Standard for Hydrocarbons.**

No person shall emit into the atmosphere a waste gas stream from any ethylene producing plant unless the waste gas stream is subjected to 1,300 degrees Fahrenheit for 0.3 seconds or greater in a direct-flame afterburner or equally effective catalytic vapor incinerator. Either device must be equipped with an indicating pyrometer which is positioned in the working area at the operator's eye level.

Effective Date: June 6, 1979

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980 JUL 12, 1982	45 FR 6092 47 FR 30059

**401 KAR 59:095. New oil-effluent water separators.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new oil-effluent water separators.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility commenced on or after the classification date defined below, which is located:

- (1) In an urban county designated non-attainment for ozone under 401 KAR 51:010; or
- (2) In any other county and is a part of a major source of volatile organic compounds.
- (3) Oil-effluent water separators used exclusively in conjunction with the production of crude oil shall be exempted from this regulation.

**Section 2. Definitions.**

As used in this regulation all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

- (1) "Affected facility" means any oil-effluent water separator which recovers 200 gallons a day or more of any petroleum products from any equipment which processes, refines, stores, or handles hydrocarbons with a Reid vapor pressure of 0.5 psia or greater.
- (2) "Oil-effluent water separator" means any tank, box, sump, or other container in which any petroleum or product thereof, floating on or entrained or contained in water entering such tank, box, sump, or other container, is physically separated and removed from such water prior to outfall, drainage, or recovery of such water.
- (3) "Floating roof" means a vessel cover consisting of double deck, pontoon single deck, internal floating cover or covered floating roof, which rests upon and is supported by the liquid being contained, and is equipped with a closure seal or seals to close the space between the roof edge and vessel wall.
- (4) "Classification date" means April 9, 1972.
- (5) "Vapor recovery system" means a vapor gathering system capable of collecting all hydrocarbon vapors and gases discharged from a vessel and a vapor disposal system capable of processing such hydrocarbon vapors and gases so as to prevent their emission to the atmosphere.

**Section 3. Standard for Hydrocarbons.**

An oil-effluent water separator shall be one (1) of the following types of vessels: a vessel equipped with a floating roof, a vessel equipped with a vapor recovery system, or their equivalent. All gauging and sampling devices shall be gas-tight except when gauging and sampling is taking place.

Effective Date: June 29, 1979

Date Submitted to EPA	Date Approved by EPA	Federal Register
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for ozone in 401 KAR 51:010.

(2) Each affected facility commenced on or after the classification date defined in Section 1 of this administrative regulation but prior to the effective date of this administrative regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this administrative regulation except that control devices and procedures required by a previous version of this administrative regulation except that control devices and procedures required by a previous version of this administrative regulation at the time it commenced shall continue to be operated and maintained.

### **Section 3. Standard for VOCs.**

- (1) The owner or operator of an affected facility shall install, maintain, and operate:
  - (a) Stationary storage tank control devices according to the of 401 KAR 59:050 or 401 KAR 61:050.
  - (b) A vapor balance system or an equivalent control approved by the cabinet and the U.S. EPA for:
    1. Filling of stationary storage tanks from transport vehicle tanks; and
    2. Filling of transport vehicle tanks from stationary storage tanks.
  - (c) For loading into transport vehicle tanks either:
    1. A submerged fill tube system; or
    2. A bottom - fill system.
- (2) The vapor balance system shall be equipped with fittings which are vapor tight and automatically close upon disconnection so as to prevent the release of organic material.
- (3) The cross-sectional area of the vapor return hose must be at least fifty (50) percent of the cross-sectional area of the liquid fill line and free of flow restrictions.
- (4) Transport vehicle tank hatches shall be closed at all times during loading operations.
- (5) There shall be no leaks from the pressure-vacuum relief valves and hatch covers of the stationary storage tanks or transport vehicle tanks during loading.
- (6) The pressure relief valves on storage vessels and tank trucks or trailers shall be set to release at no less than 0.7 psig unless a lower setting is required by applicable fire codes.
- (7) The owner or operator shall not load gasoline into any transport vehicle or receive gasoline from any transport vehicle which does not have proper fittings for connection of the vapor balance system, nor shall the owner or operator load or receive gasoline unless the vapor balance system is properly connected and in good working order. Except as provided in subsection (8) of this section the fittings on the transport vehicle tanks must be vapor tight and automatically close upon

disconnection so as to prevent the release of organic material.

- (8) The following shall apply to the loading of a transport vehicle tank by means of a submerged fill tube system:
  - (a) When inserted into the tank, the submerged fill tube system must form a vapor tight seal with the tank.
  - (b) Tank hatches are to be opened only for the minimum time necessary to insert or remove the submerged fill tube system.
- (9) No owner or operator shall permit gasoline to be spilled, discarded in sewers, stored in open containers, or handled in any other manner that would result in evaporation.
- (10) No owner or operator of a bulk gasoline plant subject to this administrative regulation and located in a county or portion of a county designated as nonattainment for ozone in 401 KAR 51:010 for any classification except marginal, shall allow loading of a tank truck unless the following provisions are met:
  - (a) The tank truck has a valid Kentucky pressure-vacuum test sticker as required by 401 KAR 63:031 attached and visibly displayed;
  - (b) The vapor balance system and associated equipment are designed and operated to prevent gauge pressure in the tank truck from exceeding 450 mm water eighteen (18) in water and prevent vacuum from exceeding 150 mm water (six (6) in. water);
  - (c) A pressure tap or equivalent system as approved by the department is installed on the vapor balance system so that a liquid manometer, can be connected by an inspector to the tap in order to determine compliance with paragraph (b) of this subsection. The pressure tap shall be installed by the owner or operator as close as possible to the connection with the delivery tank, and shall consist of a one-quarter (1/4) inch tubing connector which is compatible with the use of the three-sixteenth (3/16) inch inside diameter plastic tubing; and
  - (d) During loading operations there is no reading greater than or equal to 100 percent of the lower explosive limit (LEL, measured as propane) at a distance of two and five-tenths (2.5) centimeters around the perimeter of a potential leak source associated with the vapor balance system of a bulk gasoline plant as detected by a combustible gas detector using the test procedure referenced in Section 5 of this administrative regulation.

#### **Section 4.**

The owner or operator may elect to use an alternate control system if it can be demonstrated to the department's satisfaction that the alternate system will achieve equivalent control efficiency.

#### **Section 5. Compliance.**

On or after December 31, 1982, the test procedure as defined in Appendix B to "Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems" (OAQPS 1.2-119, U.S. EPA, Office of air Quality Planning and Standards), which has been incorporated by reference in 401 KAR 50:015, or an equivalent procedure approved by the cabinet, shall be used by the cabinet to determine compliance with the standard prescribed in Section 3(10)(d) of this administrative regulation during inspections conducted pursuant to KRS 224.10-100(10).

**Section 6. Compliance Timetable.**

(1) Affected facilities which were subject to this administrative regulation as in effect on August 24, 1982, shall have achieved final compliance upon startup.

(2) the owner or operator of an affected facility that, on or after the effected date of this administrative regulation, becomes subject to this administrative regulation for a reason other than construction, modification, or reconstruction shall be required to complete the following:

(a) Submit a final control plan for achieving compliance with this administrative regulation no later than eight (8) months after the date the affected facility becomes subject to this administrative regulation.

(b) Award a contract for the control system no later than nine (9) months after the date the affected facility becomes subject to this administrative regulation.

(c) Initiate on-site construction or installation of emission control equipment no later than ten (10) months after the date the affected facility becomes subject to this administrative regulation.

(d) On-site construction or installation of emission control equipment shall be completed no later than eleven(11) months after the date the affected facility becomes subject to this administrative regulation.

(e) final compliance shall be achieved no later than twelve (12) months after the date the affected facility becomes subject to this administrative regulation.

**Section 7. Exemptions.**

An affected facility shall be exempt from this administrative regulation if the throughput is less than 4,000 gal/day. A rolling thirty (30) day average shall be allowed for determining applicability.

Effective Date: September 28, 1994

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092
		AUG 07, 1981	46 FR 40188
1st Revision	SEP 24, 1982	MAR 30, 1983	48 FR 13168
2nd Revision	DEC 29, 1994	JUN 28, 1996	61 FR 33674

**401 KAR 59:105. New process gas streams.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 13.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of emissions from new process gas streams.

**Section 1. Applicability.**

The provisions of this regulation shall apply to each affected facility which means any process gas stream which:

- (1) It is not elsewhere subject to a standard of performance within this chapter with respect to hydrogen sulfide, sulfur dioxide, or carbon monoxide;
- (2) Commenced on or after the classification date defined below.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given them in 401 KAR 50:010.

- (1) "Classification date" means the effective date of this regulation;
- (2) "Process gas stream" means any gas stream emitted from any process including, but not limited to, petroleum refineries, by-product coke plants, gray iron cupolas, blast furnace, basic oxygen steel furnace and coal conversion plants, except process upset gas as defined in this section.
- (3) "Process upset gas" means any gas generated by a process unit as a result of startup, shutdown, upset, or malfunction.
- (4) "process unit" means any segment of the plant in which a specific processing operation is conducted.

**Section 3. Standard for Hydrogen Sulfide.**

No person shall cause, suffer, allow or permit the emission or combustion of hydrogen sulfide in a process gas stream to exceed ten (10) grains per 100 dscf (165 ppm by volume) at zero percent oxygen except that sources whose combined process gas stream emission rate totals less than two (2) tons per day of hydrogen sulfide shall reduce such emissions by eighty-five (85) percent.

**Section 4. Standard for Sulfur Dioxide.**

No person shall cause, suffer, allow or permit the emission of sulfur dioxide in a process gas stream to exceed 28.63 grains per 100 dscf (250 ppm by volume) at zero percent oxygen except that sources whose combined process gas stream emission rate totals less than four (4) tons per day of sulfur dioxide shall reduce such emissions by eighty-five (85) percent.

**Section 5. Standard for Carbon Monoxide.**

No person shall cause, suffer, allow or permit the emission of carbon monoxide

in a process gas stream or a waste gas stream unless the gases are burned at 1,300 o F for 0.5 seconds or greater in a direct flame afterburner or equivalent device equipped with an indicating pyrometer which is positioned in the working area at the operator's eye level.

**Section 6. Test Methods and Procedures.**

Except as provided in 401 KAR 50:045, performance tests used to demonstrate compliance with Sections 3, 4 and 5 shall be conducted according to the following methods, filed by reference in 401 KAR 50:015:

- (1) Reference Method 11 for Hydrogen Sulfide. The sample shall be drawn from a point near the centroid of the gas line. The minimum sampling time shall be ten (10) minutes and the minimum sample volume shall be 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two (2) samples shall constitute one (1) run. Samples shall be taken at approximately one (1) hour intervals.
  
- (2) Reference Method 6 for Sulfur Dioxide. Reference Method 1 shall be used for velocity traverses and Reference Method 2 for determining velocity and volumetric flow rate. The sampling site for determining sulfur dioxide concentration by Reference Method 6 shall be the same as for determining volumetric flow rate by Reference Method 2. The sampling point in the duct for determining sulfur dioxide concentration Reference Method 6 shall be at the centroid of the cross section or at a point no closer to the walls than one (1) m (thirty-nine (39) inches) if the cross-sectional area is five (5) square meters or more and the centroid is more than one (1) meter from the wall. The minimum sampling time shall be ten (10) minutes and the minimum sampling volume shall be 0.01 dscm (0.35 dscf) for each sample. The arithmetic average of two (2) samples shall constitute one (1) run. Three (3) runs will constitute compliance test. Samples shall be taken at approximately one (1) hour intervals.

Effective Date: April 7, 1982

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092
		JUL 12, 1982	47 FR 30059
1st Revision	SEP 24, 1982	MAR 22, 1983	48 FR 11945

**401 KAR 59:174. Stage II controls at gasoline dispensing facilities.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

RELATES TO: KRS 224.01-010, 224.10-100, 224.20-100, 224.20-110, 224.20-120,  
42 USC 7511a(b) (1) (A)

STATUTORY AUTHORITY: KRS 224.10-100, 42 USC 7511a(b) (3), 7521(a) (5), 7624, and  
7625

NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100 requires the Natural Resources and Environmental Protection Cabinet to prescribe administrative regulations for the prevention, abatement, and control of air pollution. This administrative regulation provides for the control of emissions from gasoline dispensing facilities.

**Section 1. Definitions.** Terms not defined in this section shall have the meaning given them in 401 KAR 59:001.

(1) "Average monthly throughput" means:

(a) For an existing facility, the total gallons of gasoline dispensed during the months of operation in the previous twelve (12) months, divided by the number of months of operation during those twelve (12) months; or

(b) For a facility which commenced construction on or after the effective date of this administrative regulation, an estimate provided by the owner or operator and approved by the cabinet, of the total gallons of gasoline that will be dispensed during the first twelve (12) months of operation divided by twelve (12).

(2) "Balance system" means a Stage II vapor recovery system which uses direct displacement to force vapor out of the receiving container and back into the space of the container from where the liquid product was withdrawn.

(3) "Boot" means an accordion-like tubular cover used over the spout of a gasoline nozzle to provide a return-path for gasoline vapors displaced during refueling.

(4) "CARB" means the California Air Resources Board.

(5) "CARB certification" means a document such as an executive order or approval letter provided by CARB or by an equivalent authority which certifies that a vapor recovery system or system components achieve at least a ninety-five percent (95%) reduction in the VOC emissions during refueling, and which identifies the performance standards required for the system or system components. An executive order may also identify the range of permissible components, permissible construction configurations, and the required tests for compliance.

(6) "Classification date" means the date on which this administrative regulation becomes applicable in a county or portion of a county.

(7) "Coaxial hose" means a hose-within-a-hose which provides separate passages for the flow of gasoline and vapor return.

(8) "Dry break" means a spring-loaded valve that prevents vapor from escaping through the vapor recovery riser pipe opening of a storage tank.

(9) "Equivalent authority" means an authority recognized by the cabinet and by the U.S. EPA as having a program for certification of vapor recovery systems equivalent to that of CARB.

(10) "Faceplate" means a soft, donut-shaped device attached to the boot of a balance nozzle which forms a tight seal with the vehicle fill pipe during refueling.

(11) "Facility" or "gasoline dispensing facility" means a site, except a farm not engaged in the sale of gasoline, where gasoline is transferred from a stationary storage tank to a motor vehicle fuel tank.

(12) "Facility representative" means a facility employee who has been trained to serve at that facility as prescribed in Section 5 of this

administrative regulation.

(13) "Flexible cone" means a cone-shaped device attached to the boot of a vacuum-assist nozzle that prevents too low a vacuum from forming in the vehicle fuel tank.

(14) "Leak" means liquid or vapor loss from the gasoline dispensing system or vapor recovery system as determined by visual inspection or operation of the equipment.

(15) "Modification" or "modify" means:

(a) The repair, replacement, or upgrade of a facility's Stage II equipment at a cost equal to seventy-five (75) percent or more of the cost of a total system replacement at the time of modification; or

(b) A change, such as the removal of a CARB certified component and the addition or removal of piping or fittings, which may cause the vapor recovery system to be incapable of maintaining an overall control efficiency of at least a ninety-five (95) percent reduction in the VOC emissions.

(16) "Month" means calendar month.

(17) "Month of operation" means a month during which a facility is not closed for the purpose of dispensing gasoline for more than four (4) consecutive days.

(18) "Motor vehicle" means a vehicle, machine, or mechanical contrivance propelled by an internal combustion engine and licensed for operation and operated upon the public highways.

(19) "Stage I vapor recovery system" means a vapor recovery system certified by CARB or by an equivalent authority to reduce the emissions of VOCs by ninety-five (95) percent or more during the transfer of gasoline to a stationary storage tank at a facility.

(20) "Stage II vapor recovery system" means a vapor recovery system certified by CARB or by an equivalent authority to reduce the emissions of VOCs during the refueling of a motor vehicle at a facility by ninety-five (95) percent or more.

(21) "Storage tank" means a tank at a gasoline dispensing facility which is used for the storage of gasoline.

(22) "Vacuum assist system" means a Stage II vapor recovery system which uses a vacuum inducing device to collect vapor from the receiving container and direct it back into the space of the container from where the liquid product was withdrawn.

**Section 2. Applicability.** (1) This administrative regulation shall apply to the owner or operator of a gasoline dispensing facility located in a county in which the entire county, as of the effective date of this administrative regulation, is designated severe, serious, or moderate nonattainment for ozone pursuant to 401 KAR 51:010, Attainment status designations, except as exempted in Section 9 of this administrative regulation.

(2) After the date specified in Section 8 of this administrative regulation, an owner or operator of a facility shall not transfer or allow the transfer of gasoline from a storage tank at that facility into a motor vehicle fuel tank unless the displaced vapors are collected by a Stage II vapor recovery system and the requirements of this administrative regulation are met.

**Section 3. Registration and Notification Requirements.** The owner or operator shall submit registration and notification forms to the Division for Air Quality as specified in this section. These forms are incorporated by reference in Section 10 of this administrative regulation.

(1) Registration of Facilities. DEP 7105, Gasoline Dispensing Facility Registration Form, shall be submitted at least thirty (30) days prior to installing or modifying a Stage II vapor recovery system.

(2) Compliance Test Notification. DEP 7105A, Compliance Test

Notification Form, shall be submitted at least thirty (30) days prior to the performance of the compliance tests required in Section 6 of this administrative regulation.

(3) Stage II Post Inspection Report. DEP 7105B, Stage II Post Inspection Form, shall be submitted within ten (10) work days after the applicable compliance tests have been performed.

**Section 4. Control Measures and Operating Requirements.**

(1) The Stage II vapor recovery system shall:

- (a) Be designed and operated to be at least ninety-five (95) percent effective in recovering displaced vapors;
- (b) Be certified by CARB or an equivalent authority;
- (c) Employ only coaxial hoses at the dispensers;
- (d) Contain no components that would impede the performance of the functional or compliance tests of the system;
- (e) Be integrated with a Stage I vapor recovery system; and
- (f) Meet the testing requirements contained in Section 6 of this administrative regulation.

(2) The owner or operator shall comply with the following operational restrictions for the Stage II vapor recovery system:

(a) The system shall be installed, operated, and maintained in accordance with the manufacturer's specifications and the applicable certification granted by CARB.

(b) The system shall be free of defects listed in this subsection. The facility representative shall inspect the equipment daily for these defects. If a defect is discovered, through this inspection or otherwise, an "Out of Order" sign shall be posted and the defective equipment shall be rendered inoperable. Defects include:

- 1. The absence or disconnection of any component that is part of the Stage II vapor recovery system;
- 2. The use of equipment not in accord with the system certification;
- 3. A vapor hose that is crimped or flattened so that:
  - a. The vapor passage is completely blocked, or
  - b. The pressure drop through the vapor hose is greater than two (2) times the certification requirements;
- 4. A boot that is torn in one (1) or more of the following ways:
  - a. A triangular shaped or similar tear more than one-half (1/2) inch on a side, or
  - b. A hole more than one-half (1/2) inch in diameter, or
  - c. A slit more than one (1) inch in length;
- 5. A faceplate or flexible cone on a boot that is damaged so that the ability to achieve a seal with a fill pipe interface is impaired for at least one quarter (1/4) of the total circumference of the faceplate or flexible cone;
- 6. A malfunctioning nozzle shutoff mechanism;
- 7. Vapor return lines, including components such as swivels, anti-recirculation valves, and underground piping, that malfunction or are blocked, or are restricted so that the pressure drop through the line is greater than two (2) times the certification requirement;
- 8. An inoperative vapor processing unit;
- 9. An inoperative vacuum producing device;
- 10. An inoperative pressure/vacuum relief valve, vapor check valve, or dry break;
- 11. Leaks; and
- 12. An equipment defect which substantially impairs the control efficiency of the system.

(c) A defect in a component of the Stage II vapor recovery system which is not listed in paragraph (b) of this section shall not prevent operation but shall be repaired or replaced within fifteen (15) days after

being identified as defective.

(d) If the cabinet identifies a defect specified in paragraph (b) of this subsection, the cabinet shall affix a tag to the defective equipment stating that the equipment is out of order. The tag shall not be removed until the cabinet has been notified that the defect has been corrected, and the tagged equipment has been approved for use by the cabinet.

(3) The owner or operator shall ensure that safe access to the system components and monitoring equipment is maintained for inspection and compliance determination by the cabinet.

(4) The owner or operator shall display instructions for dispensing gasoline on or near each dispenser, in a print type and size that is easily readable, which include at a minimum:

(a) A description of how to use the equipment;

(b) A warning not to dispense fuel after automatic shutoff; and

(c) A telephone number established by the cabinet to report problems with equipment.

(5) At least one (1) person at the facility shall be trained pursuant to Section 5 of this administrative regulation.

**Section 5. Training of Facility Representative.** (1) The owner or operator shall ensure that at least one (1) person at the facility is trained to operate the vapor recovery system. The facility representative shall not be required to be present at the facility at all times, but shall perform or oversee the daily inspection of vapor recovery equipment for the defects listed in Section 4(1)(b) of this administrative regulation.

(2) Training may be provided by the vapor recovery equipment manufacturer or distributor, by the person constructing or modifying the Stage II vapor recovery system, by a trained facility representative, or by training manuals provided by the manufacturer, distributor, or the person constructing or modifying the Stage II vapor recovery system. If training manuals are used, they shall be kept at the facility and made available to the cabinet upon request.

(3) Training shall include the following topics:

(a) Purposes of the Stage II vapor recovery program;

(b) Operation of the vapor recovery system at that facility;

(c) Daily equipment inspections;

(d) How to repair or replace faulty equipment without voiding the equipment warranties;

(e) Procedures for posting and removing "Out of Service" signs;

(f) The executive orders of CARB (or the equivalent authority certifying the system), the range of components certified for use in the system, and the requirements placed on the owner or operator;

(g) Maintenance schedules and requirements for the system and its components; and

(h) Equipment warranties.

(4) The training shall include a practical demonstration on how to operate and inspect the equipment and how to perform a start-up and shut-down of the facility. This demonstration may be performed at another facility with a similar vapor recovery system. The cabinet may require that this demonstration be witnessed by the cabinet as a condition for compliance.

(5) The owner or operator shall maintain a record for each facility representative which includes the following:

(a) The name of the facility representative and the date training was received;

(b) Proof of attendance and successful completion of training;

(c) If applicable, the date the facility representative left the employ of the owner or operator.

(6) The owner or operator shall not operate the facility for more than thirty (30) consecutive days without a facility representative.

**Section 6. Compliance Demonstration Test.** (1) Within sixty (60) days after the installation or modification of a Stage II vapor recovery system, the owner or operator shall comply with the applicable test procedures specified in this subsection. These tests are incorporated by reference in Section 10 of this administrative regulation.

(a) A leak test shall be performed in accordance with the applicable procedure specified in this paragraph. The vapor recovery system shall comply with the leak rate criteria specified in the applicable test procedure.

1. Vapor Recovery Test Procedure TP-201.3, Determination of two (2) Inch (WC) Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities;

2. Vapor Recovery Test Procedure TP-201.3A, Determination of five (5) Inch (WC) Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities; or

3. Vapor Recovery Test Procedure TP-201.3B, Determination of Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities with Above-Ground Storage Tanks.

(b) A dynamic back pressure test shall be performed in accordance with Vapor Recovery Test Procedure TP-201.4, Determination of Dynamic Pressure Performance of Vapor Recovery Systems of Dispensing Facilities.

1. The cabinet may require that this test be conducted simultaneously on all the nozzles of a dispenser for which gasoline can be dispensed simultaneously.

2. The vapor recovery system shall comply with the maximum allowable average dynamic pressures given in the test procedure.

(c) Vapor Recovery Test procedure TP-201.5, Determination (by Volume Meter) of Air to Liquid Volume Ratio of Vapor Recovery Systems of Dispensing Facilities, shall be performed for a system if required by the applicable CARB certification. The vapor recovery system shall comply with the criteria specified in the test procedure.

(d) Vapor Recovery Test Procedure TP-201.6, Determination of Liquid Removal of Phase II Vapor Recovery Systems of Dispensing Facilities, shall be performed for a system if required by the applicable CARB certification. The vapor recovery system shall comply with the criteria specified in the test procedure.

(2) At intervals not to exceed five (5) years, the owner or operator shall demonstrate compliance with the requirements of the applicable test procedure specified in subsection (1)(a) of this section. The notification requirements of Section 3(2) of this administrative regulation shall apply for these tests.

(3) The cabinet may require the owner or operator to perform other tests if necessary to demonstrate the adequacy of a vapor recovery system.

**Section 7. Recordkeeping Requirements.** (1) The owner or operator shall maintain the following documents:

(a) Current CARB certification for the Stage II vapor recovery system installed at the facility;

(b) Proof of training for the current facility representative; and

(c) Test results which verify that the vapor recovery system meets or exceeds the requirements of the compliance tests required in Section 6 of this administrative regulation.

(2) The following records shall be maintained for a period not less than three (3) years:

(a) A log of the quantity of gasoline delivered to the facility during each month;

(b) A log of maintenance records including any repaired or replacement parts and description of the problem;

(c) Inspection reports issued by the cabinet, kept in chronological order;

- (d) Compliance records including warnings or notices of violation issued by the cabinet, kept in chronological order; and
  - (e) The facility representative record specified in Section 5(3) of this administrative regulation.
- (3) Records shall be kept current and made available to the cabinet upon request.

**Section 8. Compliance Timetable.** The owner or operator shall comply with this administrative regulation in the following manner:

- (1) Facilities with an average monthly throughput of 100,000 gallons or more, which commenced construction on or before the classification date, shall comply within one (1) year of the classification date.
- (2) Facilities with an average monthly throughput between 25,000 and 100,000 gallons, which commenced construction on or before the classification date, shall comply within two (2) years of the classification date.
- (3) Facilities commencing construction after the effective date shall comply before beginning to dispense gasoline.

**Section 9. Exemptions.** (1) The fuels and facilities specified in this subsection shall be exempt from this administrative regulation

- (a) Diesel fuel and kerosene. These fuels shall not be used in calculating the average monthly throughput to determine the applicability of this administrative regulation.
  - (b) A facility with an average monthly throughput of 25,000 gallons or less. This exemption shall cease to apply if the average monthly throughput exceeds 25,000 gallons.
  - (c) A facility located in an air quality control region which has implemented a Stage II program that has been approved by the U.S. EPA.
- (2) Recordkeeping for exempted facilities. An exempted facility shall maintain records for a period not less than two (2) years which demonstrate that the facility's average monthly throughput has not exceeded the applicable throughput limit.
- (3) Loss of exemption status. If a monthly record documents an average monthly throughput equal to or greater than the applicable throughput limit, the owner or operator shall notify the division by phone or fax within thirty (30) days. If the exemption ceases to apply, the owner or operator shall comply with this administrative regulation within one (1) year of notification by the cabinet.

**Section 10. Material Incorporated by Reference** (1) The following forms are incorporated by reference:

- (a) "DEP 7105, Gasoline Dispensing Facility Registration, August 1997;"
  - (b) "DEP 7105A, Compliance Demonstration Notification, August 1997;"
- and
- (c) "DEP 7105B, Stage II Post Inspection Form, August 1997."
- (2) The test methods specified in this subsection, as published by California Environmental Protection Agency, Air Resources Board, in the "Stationary Source Test Methods, Volume 2, Certification and Test Procedures for Vapor Recovery Systems, April 12, 1996," is incorporated by reference. This document is available from the California Air Resources Board, P.O. Box 2815, 2020 L St., Sacramento, CA 95812, Phone (916) 322-2990.
- (a) Vapor Recovery Test Procedure TP-201.3, Determination of 2 Inch (WC) Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities;
  - (b) Vapor Recovery Test Procedure TP-201.3A, Determination of 5 Inch (WC) Static Pressure Performance of Vapor Recovery Systems of Dispensing Facilities;
  - (c) Vapor Recovery Test Procedure TP-201.3B, Determination of Static

Pressure Performance of Vapor Recovery Systems of Dispensing Facilities with Above-Ground Storage Tanks.

(d) Vapor Recovery Test Procedure TP-201.4, Determination of Dynamic Pressure Performance of Vapor Recovery Systems of Dispensing Facilities.

(e) Vapor Recovery Test Procedure TP-201.5, Determination (by Volume Meter) of Air to Liquid Volume Ratio of Vapor Recovery Systems of Dispensing Facilities.

(f) Vapor Recovery Test Procedure TP-201.6, Determination of Liquid Removal of Phase II Vapor Recovery Systems of Dispensing Facilities.

(3) The material incorporated by reference may be obtained, inspected, or copied at the following offices of the Division for Air Quality, Monday through Friday, 8:00 a.m. to 4:30 p.m.:

(a) Division for Air Quality, 803 Schenkel Lane, Frankfort, Kentucky 40601-1403, (502) 573-3382;

(b) Ashland Regional Office, 3700 Thirteenth Street, Ashland, Kentucky 41105-1507, (606) 920-2067;

(c) Bowling Green Regional Office, 1508 Westen Avenue, Bowling Green, Kentucky 42104, (502) 746-7475;

(d) Florence Regional Office, 7964 Kentucky Drive, Suite 8, Florence, Kentucky 41042, (606) 292-6411;

(e) Hazard Regional Office, 233 Birch Street, Suite 2, Hazard, Kentucky 41701, (606) 435-6022;

(f) London Regional Office, 85 State Police Road, London, Kentucky, 40741, (606) 878-0157;

(g) Owensboro Regional Office, 3032 Alvey Park Drive W., Suite 700, Owensboro, Kentucky 42303, (502) 687-7304; and

(h) Paducah Regional Office, 4500 Clarks River Road, Paducah, Kentucky 42003, (502) 898-8468.

Effective Date: January 12, 1998

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	FEB 03, 1998	DEC 08, 1998	63 FR 67586

**401 KAR 59:175. New service stations.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 13.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new service stations.

**Section 1. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given to them in 401 KAR 50:001.

- (1) "Affected facility" means the gasoline storage tanks at a service station.
- (2) "Classification date" means June 6, 1979.
- (3) "Service station" means any public or private establishment which dispenses gasoline into vehicle fuel tanks.
- (4) "Submerged fuel pipe" means any fill pipe the discharge of which is entirely submerged when the liquid level is six (6) inches above the bottom of the tank; or when applied to a tank which is loaded from the side, shall mean any fill pipe the discharge opening of which is entirely submerged when the liquid level is two (2) times the fill pipe diameter above the bottom of the tank.
- (5) "Vapor balance system" means a system which conducts vapors displaced from storage tanks during filling operations to the storage compartment of the transport vehicle delivering the fuel.
- (6) "Vent line restriction" means:
  - (a) An orifice of one-half (1/2) to three-quarters (3/4) inch inside diameter;
  - (b) A pressure-vacuum relief valve set to open at not less than eight (8) oz. per square inch pressure and not less than one-half (1/2) oz. per square inch vacuum unless a different vacuum relief setting is required by safety or fire authorities; or
  - (c) A vent shut-off valve which is activated by connection of the vapor return hose.
- (7) "Interlocking system" means devices which keep the storage tank sealed unless the vapor hose is connected or which prevent delivery of fuel until the vapor hose is connected.

**Section 2. Applicability.**

The provisions of this regulation shall apply to each affected facility located in urban counties designated non-attainment for ozone according to 401 KAR 51:010 which commenced on or after the classification date defined below.

**Section 3. Standard for Volatile Organic Compounds.**

- (1) The owner or operator of an affected facility shall install, maintain, and operate the following devices:
  - (a) Submerged fill pipe;
  - (b) Vent line restriction on the affected facility vent line; and
  - (c) Vapor balance system with an interlocking system and vapor tight connections on the liquid fill line and the vapor return line. The cross-sectional area of the vapor return hose must be at least fifty (50) percent of the liquid fill hose, and free of flow restrictions to achieve acceptable recovery. The size and design of the vapor return line and connections, including coaxial systems, are subject to the approval of the department.
  - (d) If the gasoline storage tank is equipped with a separate gauge well, a gauge well drop tube shall be installed which extends to within six (6) inches of the bottom of the tank.
- (2) The owner or operator may elect to use an alternate control system if that system can be demonstrated to the department's satisfaction to achieve an equivalent control efficiency.
- (3) The owner or operator shall not allow any transport vehicle to deliver fuel to an affected facility until the transport vehicle is properly connected to the vapor balance system or alternate control system.

**Section 4. Exemptions.**

Any affected facility shall be exempt from the provisions of Section 3 if the annual throughput is less than or equal to 120,000 gal.

Effective Date: February 8, 1993

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092
		AUG 07, 1981	46 FR 40188
1st Revision	SEP 24, 1982	MAR 30, 1983	48 FR 13169
2nd Revision	FEB 17, 1993	JUN 23, 1994	59 FR 32343

**401 KAR 59:185. New solvent metal cleaning equipment.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS 224.20-100, 224.20-110, 224.20-120

Pursuant to: KRS 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of volatile organic compounds from new solvent metal cleaning equipment.

**Section 1. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means cold cleaners, open top vapor degreasers, and conveyorized degreasers which utilize volatile organic compounds (VOCs) to remove soluble impurities from metal surfaces.
- (2) "Classification date" means June 29, 1979.
- (3) "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.
- (4) "Freeboard ratio" means the freeboard height divided by the width of the degreaser.
- (5) "Refrigerated chiller" means a second set of freeboard condenser coils located slightly above the primary condenser coils which create a cold air blanket above the vapor zone.
- (6) "Cold cleaner" means a batch-loaded degreaser whose solvent is kept below its boiling point.
- (7) "Open top vapor degreaser" means a batch-loaded degreaser whose solvent is heated to its boiling point creating a solvent vapor zone.
- (8) "Conveyorized degreasers" means a degreaser which is continuously loaded by means of a conveyer system. Its solvent may be boiling or non-boiling.
- (9) "Solvent" means, in this regulation, VOCs.

**Section 2. Applicability.**

- (1) This regulation shall apply to:
  - (a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as nonattainment for ozone in 401 KAR 51:010, for any classification except marginal ; and
  - (b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a

county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.

- (2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be operated and maintained.

### **Section 3. Standard for VOCs.**

The owner or operator of an affected facility to which this regulation applies shall install, maintain and operate the control equipment and observe at all times the operating requirements which apply to this type of degreaser as specified in Sections 4,5, and 6 of this regulation.

### **Section 4. Cold Cleaners.**

- (1) Control equipment:
- (a) The cleaner shall be equipped with a cover. If the solvent volatility is greater than fifteen (15) mm Hg measured at 100 o F or if the solvent is agitated or heated, then the cover shall be designed so that it can be easily operated with one (1) hand.
  - (b) The cleaner shall be equipped with a drainage facility so that solvent that drains off parts removed from the cleaner will return to the cleaner. If the solvent volatility is greater than thirty-two (32) mm Hg measured at 100 oF 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 department determines that an internal type cannot fit into the cleaning system.
  - (c) A permanent, conspicuous label, summarizing the operating requirements specified in subsection (2) of this section shall be installed on or near the cleaner.
  - (d) If used, the solvent spray shall be a fluid stream (not a fine, atomized or shower type spray) and at a pressure which does not cause excessive splashing.
  - (e) If the solvent volatility is greater than thirty-two (32) mm Hg measured at 100°F or if the solvent is heated above 120°F, then one (1) of the following control devices shall be used:
    - 1. Freeboard that gives a freeboard ratio greater than or equal to 0.7.
    - 2. Water cover (solvent shall be insoluble in and heavier than water).
    - 3. Other systems of equivalent control, such as a refrigerated chiller or carbon adsorption.
- (2) Operating requirements:
- (a) Waste solvent shall not be disposed of or transferred to another party so that greater than twenty (20) percent by weight of the waste solvent can evaporate into the atmosphere. Waste solvent shall be stored only in covered containers.

- (b) Degreaser cover shall be closed if not handling parts in the cleaner.
- (c) Cleaned parts shall be drained until dripping ceases (fifteen (15) seconds is usually necessary).

**Section 5. Open Top Vapor Degreasers.**

- (1) Control equipment:
  - (a) The degreaser shall be equipped with a cover that can be opened and closed easily without disturbing the vapor zone.
  - (b) The degreaser shall be equipped with the following safety switches:
    - 1. Condenser flow switch and thermostat to shut off sump heat if condenser coolant either is not circulating or is too warm.
    - 2. Spray safety switch to shut off spray pump if the vapor level drops more than four (4) inches below the bottom condenser coil in order to prevent spraying above the vapor level.
    - 3. Vapor level control thermostat which shuts off sump heat if the vapor zone rises above the design level.
    - 4. Equivalent safety systems as approved on a case-by-case basis by the department.
  - (c) The degreaser shall be equipped with at least one (1) of the following major control devices:
    - 1. Freeboard ratio greater than or equal to 0.75, and if the degreaser opening is greater than ten (10) square feet, the cover shall be powered or mechanically assisted.
    - 2. Refrigerated chiller.
    - 3. Enclosed design so that the cover or door opens only if the dry part is actually entering or exiting the degreaser.
    - 4. Carbon adsorption system, with ventilation greater than or equal to fifty (50) cfm/square foot of air-vapor interface area (if cover is open), and exhausting less than twenty-five (25) ppm by volume solvent averaged over one (1) complete adsorption cycle.
    - 5. Control system demonstrated to have control efficiency equivalent to or better than any of the above.
  - (d) A permanent, conspicuous label, summarizing the operating procedures specified in subsection (2) of this section shall be installed on or near the degreaser.
- (2) Operating requirements:
  - (a) The cover shall be closed at all times unless processing work loads through the degreaser.
  - (b) Solvent carry-out shall be minimized by the following measures:
    - 1. Parts shall be racked so that entrainment of solvent is avoided and full drainage is accomplished.

2. Parts shall be moved in and out of the degreaser at a vertical speed less than eleven (11) ft./min.
  3. Work load in the vapor zone shall be degreased until condensation ceases (thirty (30) seconds or more is usually necessary).
  4. Any pools of solvent shall be tipped out on the cleaned parts before removal.
  5. Parts shall be allowed to dry within the degreaser above the vapor zone until visually dry (fifteen(15) seconds is usually necessary).
- (c) Porous or absorbent materials such as cloth, leather, wood, or rope shall not be degreased.
  - (d) Work loads shall not occupy more than half of the degreaser's open top area.
  - (e) Spray above the vapor level shall not be allowed.
  - (f) Solvent leaks shall be repaired immediately or the degreaser shall be shut down.
  - (g) Waste solvent shall not be disposed of or transferred to another party so that greater than twenty(20) percent by weight of the waste solvent can evaporate into the atmosphere. Waste solvent shall be stored only in closed containers.
  - (h) Exhaust ventilation shall not exceed sixty-five (65) cfm per square foot of degreaser area unless necessary to meet OSHA requirements or control device requirements. Ventilation fans shall not be used near the degreaser opening.
  - (I) Water shall not be visually detectable in the solvent exiting the water separator.

**Section 6. ConveyORIZED Degreasers.**

- (1) Control equipment:
  - (a) A conveyORIZED degreaser shall be enclosed except for work load entrances and exits.
  - (b) The degreaser shall be equipped with a drying tunnel or another means such as rotating baskets sufficient to prevent cleaned parts from carrying out solvent liquid or vapor.
  - (c) Minimized openings: entrances and exits shall silhouette work loads so that the average clearance between the largest parts and the edge of the degreaser opening is either less than four (4) inches or less than ten (10) percent of the width of the opening.
  - (d) Down-time covers: the degreasers shall be equipped with covers for closing off the entrance and exit during shutdown hours.
  - (e) If the degreaser has an air-solvent interface area or an air-vapor interface area equal to or greater than twenty (20) square feet, it shall be equipped with at least one (1) of the following major control devices:

1. Refrigerated chiller.
  2. Carbon adsorption system with ventilation greater than or equal to fifty (50) cfm/square foot of air-vapor interface area (if down-time covers are open) and exhausting less than twenty-five (25) ppm of solvent by volume averaged over a complete adsorption cycle.
  3. A system demonstrated to have a control efficiency equivalent to or better than either of the above.
- (f) If the degreaser is a vapor type, it shall be equipped with the following safety switches:
1. Condenser flow switch and thermostat which will shut off the sump heat if coolant is either not circulating or is too warm.
  2. Spray safety switch and thermostat which will shut off the spray pump or conveyer if the vapor level drops more than four (4) inches below the bottom condenser coil in order to prevent spraying above the vapor level.
  3. Vapor level control thermostat which will shut off sump heat if the vapor level rises above the design level.
  4. Equivalent safety systems as approved on a case-by-case basis by the department.
- (g) A permanent, conspicuous label, summarizing the operating procedures specified in subsection (2) of this section shall be installed on or near the degreaser.
- (2) Operating requirements:
- (a) Exhaust ventilation shall not exceed sixty-five (65) cfm per square foot of degreaser opening unless necessary to meet OSHA requirements or control device requirements. Work place fans shall not be used near the degreaser opening.
  - (b) Solvent carry-out shall be minimized by the following measures:
    1. Parts shall be racked so that entrainment of solvent is avoided and full drainage is accomplished.
    2. Vertical conveyer speed shall be maintained at less than eleven (11) ft/min.
  - (c) Waste solvent shall not be disposed of or transferred to another party so that greater than twenty (20) percent by weight of the waste solvent can evaporate into the atmosphere. Waste solvent shall be stored only in closed containers.
  - (d) Solvent leaks shall be repaired immediately or the degreaser shut down.
  - (e) Water shall not be visually detectable in the solvent exiting the water separator.
  - (f) Down-time covers shall be placed over entrances and exits of the degreaser immediately after the conveyer and exhaust are shut down and removed just before they are started up.

## **Section 7. Compliance Timetable**

- (1) Affected facilities which were subject to this regulation as in effect on June 29, 1979, shall have achieved final compliance upon startup.
- (2) The owner or operator of an affected facility that, on or after the effective date of this regulation, becomes subject to this regulation for any reason other than construction, modification, or reconstruction shall be required to complete the following:
  - (a) A final control plan for achieving compliance with this regulation shall be submitted no later than three (3) months after the date the affected facility becomes subject to this regulation.
  - (b) The control system contract shall be awarded no later than five (5) months after the date the affected facility becomes subject to this regulation.
  - (c) On-site construction or installation of emission control equipment shall be initiated no later than seven (7) months after the date the affected facility becomes subject to this regulation.
  - (d) On-site construction or installation of emission control equipment shall be completed no later than eleven (11) months after the date the affected facility becomes subject to this regulation.
  - (e) Final compliance shall be achieved no later than twelve (12) months after the date affected facility becomes subject to this regulation.
  - (f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

## **Section 8. Exemptions.**

Any cold cleaners shall be exempt from the provisions of Section 4 if the following criteria are met:

- (1) The cold cleaner shall have a remote solvent reservoir;
- (2) The solvent used in the cold cleaner shall not have a vapor pressure that exceeds thirty-three (33) mm Hg measured at 100°F or be heated above 120°F;
- (3) The sink-like work area shall have an open drain area less than 100 sq. cm.; and
- (4) Evidence shall be provided that waste solvent shall be stored or properly disposed of with minimal loss due to evaporation.

Effective Date: June 24, 1992

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092
1st Revision	JAN 19, 1981	AUG 07, 1981	46 FR 40188
2nd Revision	OCT 20, 1992	JUN 23, 1994	59 FR 32343

**401 KAR 59:190. New insulation of magnet wire operations.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 13.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new insulation of magnet wire operations.

**Section 1. Definitions.**

As used in this regulation, all terms not defined in this section shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means a coating line for insulation of magnet wire.
- (2) "Applicator" means the mechanism or device used to apply the coating, including but not limited to a coating bath.
- (3) "Coating die" means the device, located between the applicator and the drying oven, which scrapes off excess coating and leaves a thin film of desired thickness.
- (4) "Magnet wire" means wire used in equipment such as electrical motors, generators, and transformers which carries an electrical current.
- (5) "Coating line" means a series of equipment or operations used to apply, dry, or cure any coatings coating volatile organic compounds (VOCs). This shall include, but is not limited to:
  - (a) Mixing operations;
  - (b) Process storage;
  - (c) Applicators;
  - (d) Drying operations including die area evaporation, oven drying, baking, curing, and polymerization;
  - (e) Clean up operations;
  - (f) Leaks, spills and disposal of VOCs;
  - (g) Processing and handling of recovered VOCs;
  - (h) For the purposes of determining compliance with this regulation, if any equipment or operation is considered to be a part of more than one (1) coating line, its VOC emissions shall be assigned to each coating line of which it is a part proportionally to the throughput of VOC it receives from or distributes to each coating line;
  - (i) If any portion of the series of equipment or operations qualifies for an exemption according to Section 6, then that portion shall be considered to be a separate coating line.

- (6) "Process storage" means mixing tanks, holding tanks, and other tanks, drums, or other containers which contain surface coatings, VOCs, or recovered VOCs; but does not mean storage tanks of petroleum liquids which are subject to 401 KAR 59:050, 401 KAR 59:052, and 401 KAR 61:050.
- (7) "Classification date" means June 29, 1979.
- (8) "VOCs net input" means the total amount of VOCs input to the affected facility minus the amount of VOCs that are not emitted into the atmosphere. VOCs that are prevented from being emitted to the atmosphere by the use of control devices shall not be subtracted from the total for the purposes of determining VOCs net input. If the nature of any operation or design of equipment permits more than one (1) interpretation of this definition, the interpretation that results in the minimum value for allowable emission shall apply.

### **Section 2. Applicability.**

- (1) This regulation shall apply to:
  - (a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as non attainment for ozone in 401 KAR 51:010, for any classification except marginal; and
  - (b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.
- (2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be operated and maintained.

### **Section 3. Standard for VOCs.**

No person shall cause, allow, or permit an affected facility to discharge into the atmosphere more than fifteen (15) percent by weight of the VOCs net input into the affected facility.

### **Section 4. Compliance.**

- (1) In all cases the design of any control system shall be subject to approval by the department.
- (2) Compliance with the standard in Section 3 shall be demonstrated by a material balance unless the cabinet determines that a material balance is not possible. If a material balance is not possible, compliance shall be determined based upon an engineering analysis by the cabinet of the control system design, control device efficiency, control system capture efficiency and any other factors that may influence the performance of the system. If requested by the department, performance tests specified by the cabinet shall be conducted to determine the efficiency of the control device. Capture efficiency shall be determined by procedures specified in 401 KAR 50:047 in all ozone nonattainment areas except marginal.
- (3) With the prior approval of the department, the owner or operator may elect to effect all changes necessary to qualify for an exemption under

Section 6.

- (4) If deemed necessary by the department, the department shall obtain samples of the coatings used at an affected facility to verify that the coatings meet the requirements in Section 6 of this regulation. Method 24, which has been incorporated by reference in 401 KAR 50:015, shall be used as applicable to determine compliance of the coatings, unless the department determines that other methods would be more appropriate. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.
- (5) Compliance on one (1) coating line with VOC emission limits shall be based on an averaging period not to exceed twenty-four (24) hours. If it is not economically or technically feasible to determine emission on a daily basis, alternatives expressing emission limits for longer averaging times may be accepted if approved by the cabinet. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.
- (6) The amount of exempt solvents shall be subtracted from the amount of coatings, just like water, with the ultimate value of interest being the mass of VOC per unit volume of coating less exempt solvent or water or both.
- (7) Calculations to determine equivalency on one (1) coating line shall be based on mass of VOC per volume of solids.
- (8) Daily records shall be maintained by the source for the most recent two (2) year period. These records shall be made available to the cabinet or the U.S. EPA upon request. The records shall include, but not to be limited to, the following:
  - (a) Applicable regulation number;
  - (b) Application method and substrate type;
  - (c) Amount and type of adhesive, coating (including catalyst and reduced for multi component coatings), or solvent used at each point of application, including exempt compounds;
  - (d) The VOC content as applied in each adhesive, coatings, or solvent;
  - (e) The date for each application for adhesive, coating, or solvent;
  - (f) The amount of surface preparation, clean-up, or wash-up solvent (including exempt compounds) used and the VOC content of each; and
  - (g) Oven temperature, if applicable.

**Section 5. Compliance Timetable.**

- (1) Affected facilities which were subject to this regulation as in effect on June 29, 1979, shall have achieved final compliance upon startup.
- (2) The owner or operator of an affected facility that, on or after the effective date of this regulation, becomes subject to this regulation for any reason other than construction, modification, or reconstruction shall be required to complete the following:
  - (a) A final control plan for achieving compliance with this regulation shall be submitted no later than nine (9) months after the date the affected facility becomes subject to this regulation.
  - (b) The control system contract or the exempt coatings and any accompanying process change contracts shall be awarded no later than eleven (11) months after the date the affected facility becomes subject to this regulation.
  - (c) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be initiated no later than thirteen (13) months after the date the affected facility becomes subject to this regulation.

- (d) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be completed no later than seventeen (17) months after the date the affected facility becomes subject to this regulation.
- (e) Final compliance shall be achieved no later than eighteen (18) months after the date the affected facility becomes subject to this regulation.
- (f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

**Section 6. Exemptions.**

- (1) Any affected facility shall be exempt from Section 3 of this regulation if the VOC content of the coating is less than 0.20 kg/l of coating (1.7 lb/gal), excluding water or exempt solvent or both, delivered to the applicators associated with the coating line.
- (2) An affected facility shall be exempt from this regulation if the total VOC emissions from all affected facilities subject to this regulation are less than or equal to:
  - (a) Three (3) lb/hr actual emissions before add-on control;
  - (b) Fifteen (15) lb/day actual emissions before add-on control; or
  - (c) Ten (10) tons per year theoretical potential emissions based on design capacity (or maximum production) and 8760 hr/yr before add-on control.
- (3) Low-use coatings shall be exempt from Section 3 of this regulation if the plantwide consumption of these coatings in the aggregate is less than or equal to fifty-five (55) gallons during the previous twelve (12) months.

Effective Date: June 24, 1992

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092
		AUG 07, 1981	46 FR 40188
1st Revision	OCT 20, 1992	JUN 23, 1994	59 FR 32343

**401 KAR 59:210. New fabric, vinyl and paper surface coating operations.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KAR Chapter 224.20-100, 224.20-110, 224.20-120

Pursuant to: KAR 13.082,224.20-100

Necessity and Function: KAR 224.20-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new fabric, vinyl or paper surface coating operations.

**Section 1. Definitions.**

As used in this regulation, all terms not defined in this section shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means a coating line for fabric, vinyl or paper.
- (2) "Applicator" means the mechanism or device used to apply the coating including, but not limited to, roll, knife, or rotogravure coater.
- (3) "Flashoff area" means the space between the applicator and the oven.
- (4) "Coating line" means a series of equipment or operations used to apply, dry, or cure any coatings containing volatile organic compounds VOCs. This shall include, but is not limited to:
  - (a) Mixing operations;
  - (b) Process storage;
  - (c) Applicators;
  - (d) Drying operations including, but not limited to, flashoff area evaporation, oven drying, baking, curing, and polymerization;
  - (e) Clean up operations;
  - (f) Leaks, spills, and disposal of VOCs;
  - (g) Processing and handling of recovered VOCs;
  - (h) To determine compliance with this regulation, if any equipment or operation is considered to be a part of more than one (1) coating line, its VOC emissions shall be assigned to each coating line of which it is a part proportionally to the throughput of VOCs it receives from or distributes to each coating line;
  - (i) If any portion of the series of equipment or operations qualifies for an exemption according to Section 6, then that portion shall be considered to be a separate coating line.
- (5) "Process storage" means mixing tanks, holding tanks, and other tanks, drums, or other containers which contain surface coatings, VOCs, or recovered VOCs; but does not mean storage tanks of petroleum liquids which are subject to 401 KAR 59:050, 401 KAR 59:052 or 401 KAR 61:050.
- (6) "Fabric coating" means the coating or saturation of a textile substrate to impart properties that are not initially present, such as strength,

stability, water or acid repellancy, functionality, or appearance.

- (7) "Vinyl coating" means the coating of vinyl coated fabrics or vinyl sheets which includes decorative, functional, or protective topcoats or printing.
- (8) "Paper coating" means saturation or the application of a uniform layer of material across the entire width of a web of paper, pressure sensitive tapes regardless of substrate, related web coating processes on plastic film such as typewriter ribbons, photographic film, magnetic tape, functional films and decorative coatings on metal foil such as gift wrap and packaging, but does not include the printing of paper.
- (9) "Knife coating" means the application of a coating material to a substrate by means of drawing the substrate beneath a knife that spreads the coating evenly over the full width of the substrate.
- (10) "Roll coating" means the application of a coating material to a substrate by means of hard rubber or steel rolls.
- (11) "Rotogravure coating" means the application of a coating material to a substrate by means of a roll coating technique in which the pattern to be applied is etched on the coating roll. The coating material is picked up in these regulations recessed areas and is transferred to the substrate.
- (12) "Classification date" means the effective date of this regulation.
- (13) "VOCs net input" means the total input of VOCs input to the affected facility minus the amount of VOCs that are not emitted into the atmosphere. VOCs that are prevented from being emitted to the atmosphere by the use of control devices shall not be subtracted from the total for the purposes of determining VOCs net input. If the nature of any operation or design of equipment permits more than one (1) interpretation of this definition, the interpretation that results in the minimum value for allowable emission shall apply.
- (14) "Printing" means the formation of words, designs and pictures, usually by a series of application rolls each with only partial coverage. It shall apply to flexographic and rotogravure processes as applied to publication and packaging printing as defined in 401 KAR 59:212.

**Section 2. Applicability.**

- (1) This regulation shall apply to:
  - (a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as non attainment for ozone in 401 KAR 51:010, for any classification except marginal; and
  - (b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.
- (2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except

that control devices and procedures required at the time it commenced shall continue to be operated and maintained.

**Section 3. Standard for VOCs.**

No person shall cause, allow, or permit an affected facility to discharge into the atmosphere more than fifteen (15) percent by weight of the VOCs net input into the affected facility.

**Section 4. Compliance.**

- (1) In all cases the design of any control system shall be subject to approval by the department.
- (2) Compliance with the standard in Section 3 shall be demonstrated by a material balance unless the department determines that a material balance is not possible. If a material balance is not possible, compliance shall be determined based upon an engineering analysis by the department of the control system design, control device efficiency, control system capture efficiency, and any other factor that may influence the performance of the system. If requested by the department, performance tests specified by the department shall be conducted to determine the efficiency of the control device. Capture efficiency shall be determined by procedures specified in 401 KAR 50:047 in all ozone nonattainment areas except marginal.
- (3) With the prior approval of the department, the owner or operator may elect to effect all changes necessary to qualify for an exemption under Section 6.
- (4) If deemed necessary by the department, the department shall obtain samples of the coatings used at an affected facility to verify that the coatings meet the requirements in Section 6. Method 24, which has been incorporated by reference in 401 KAR 50:015, shall be used as applicable to determine compliance of the coatings unless the department determines that other methods would be more appropriate. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA shall be submitted to the U.S. EPA as a SIP revision.
- (5) Compliance on one (1) coating line with VOC emission limits shall be based on an averaging period not to exceed twenty-four (24) hours. If it is not economically or technically feasible to determine emissions on a daily basis, alternatives expressing emission limits for longer averaging times may be accepted if approved by the cabinet. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.
- (6) The amount of exempt solvents shall be subtracted from the amount of coatings, just like water, with the ultimate value of interest being the mass of VOC per unit volume of coating less exempt solvent or water or both.
- (7) Calculations to determine equivalency on one (1) coating line shall be based on mass of VOC per volume of solids. Vinyl plastisols and organosols shall not be included in VOC equivalency calculations that are required to be included in applications for VOC bubbles.
- (8) Daily records shall be maintained by the source for the most recent two (2) year period. The record shall be made available to the cabinet or the U.S. EPA upon request. The records shall include, but not limited to, the following:

- (a) Applicable regulation number;
- (b) Application method and substrate type;
- (c) Amount and type of adhesive, coating (including catalyst and reducer for multicomponent coatings), or solvent used at each point of application, including exempt compounds;
- (d) The VOC content as applied in each adhesive, coating, or solvent;
- (e) The date for each application for adhesive, coating, or solvent;
- (f) The amount of surface preparation, clean-up, or wash-up solvent (including exempt compounds) used and the VOC content of each; and
- (g) Oven temperature, if applicable.

**Section 5. Compliance Timetable.**

- (1) Affected facilities which were subject to this regulation as in effect on June 29, 1979, shall have achieved final compliance upon startup.
- (2) The owner or operator of an affected facility that, on or after the effective date of this regulation, becomes subject to this regulation for any reason other than construction, modification, or reconstruction shall be required to complete the following:
  - (a) A final control plan for achieving compliance with this regulation shall be submitted no later than nine (9) months after the date the affected facility becomes subject to this regulation.
  - (b) The control system contract or the exempt coatings and any accompanying process change contracts shall be awarded no later than eleven (11) months after the date the affected facility becomes subject to this regulation.
  - (c) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be initiated no later than thirteen (13) months after the date the affected facility becomes subject to this regulation.
  - (d) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be completed no later than seventeen (17) months after the date the affected facility becomes subject to this regulation.
  - (e) Final compliance shall be achieved no later than eighteen (18) months after the date the affected facility becomes subject to this regulation.
  - (f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

**Section 6. Exemptions.**

- (1) Any affected facility coating fabric or paper shall be exempt from the provisions of Section 3 if the volatile organic compounds content of the coating is less than 0.35 kg/l of coating (2.9 lb/gal), excluding water or exempt solvent or both, delivered to the applicators associated with the coating line.
- (2) Any affected facility coating vinyl shall be exempt from Section 3 if the VOC content of the coating is less than 0.45 kg/l of coating (3.8 lb/gal), excluding water or exempt solvent or both, delivered to the applicators associated with the coating line.
- (3) An owner or operator electing to qualify for an exemption under this section shall have achieved final compliance for that affected facility

by December 1, 1981.

- (4) An affected facility shall be exempt from this regulation if the total VOC emissions from all affected facilities subject to this regulation are less than or equal to:
  - (a) Three (3) lb/hr actual emissions before add-on control;
  - (b) Fifteen (15) lb/day actual emissions before add-on control; or
  - (c) Ten (10) tons per year theoretical potential emissions based on design capacity (maximum production) and 8760hr/year before add-on control.
  
- (5) Low-use coatings shall be exempt from Section 3 of this regulation if the plantwide consumption of these coatings in the aggregate is less than or equal to fifty-five (55) gallons during the previous twelve (12) months.

Effective Date: June 24, 1992

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	JUN 29, 1979	JAN 25, 1980	45 FR 6092
	NOV 17, 1982	AUG 07, 1981	46 fr 40188
1st revision	OCT 20, 1992	JUN 23, 1994	59 FR 32343

**401 KAR 59:212. New graphic arts facilities using rotogravure and flexography.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

RELATES TO: KRS 224.20-100, 224.20-110, 224.20-120; Appendix A to 40 CFR 60 (Method 24); 42 USC 7401 et. seq.; 42 USC 7407; 7408; 7410

STATUTORY AUTHORITY: KRS 224.10-100, 42 USC 7410

NECESSITY AND FUNCTION: KRS 224.10-100 requires the Natural Resources and Environmental Protection Cabinet to prescribe regulations for the prevention, abatement and control of air pollution. 42 USC 7410 likewise requires the state to implement standards for national primary and secondary ambient air quality. This regulation provides for the control of volatile organic compound emissions from new graphic arts facilities which use rotogravure and flexography.

**Section 1. Definitions.** As used in this regulation, all terms not defined in this section shall have the meaning given to them in 401 KAR 59:001.

- (1) "Affected facility" means a printing line for packaging rotogravure, specialty rotogravure, and flexographic printing.
- (2) "Applicator" means the mechanism or device used to apply the ink.
- (3) "Flashoff area" means the space between the applicator and the oven.
- (4) "Printing line" means a series of equipment or operations used to apply, dry, or cure any inks containing volatile organic compounds (VOCs). This shall include, but is not limited to:
  - (a) Mixing operations;
  - (b) Process storage;
  - (c) Applicators;
  - (d) Drying operations including, but not limited to, flashoff area evaporation, oven drying, baking, curing, and polymerization;
  - (e) Clean up operations;
  - (f) Leaks, spills and disposal of VOCs;
  - (g) Processing and handling of recovered VOCs;
  - (h) For the purposes of determining compliance with this regulation, if any equipment or operation is considered to be a part of more than one (1) printing line, its VOC emissions shall be assigned to each printing line of which it is a part proportionally to the throughput of VOCs it receives from or distributes to each printing line;
  - (i) If any portion of the series of equipment or operations qualify for an exemption according to Section 6 of this regulation, then that portion shall be considered to be a separate printing line;
  - (j) All units in a machine which has both coating and printing units shall be considered as performing a printing operation.
- (5) "Process storage" means mixing tanks, holding tanks, and other tanks, drums, or other containers which contain inks, VOCs, or recovered VOCs; but does not mean storage tanks of petroleum liquids which are subject to 401 KAR 59:050, 401 KAR 59:052, or 401 KAR 61:050.
- (6) "Printing" means the formation of words, designs and pictures, usually by a series of application rolls each with only partial coverage. It applies to flexographic and rotogravure processes as applied to specialty, and packaging printing.
- (7) "Coating" means the application of a uniform layer of material across the entire width of a web.
- (8) "Classification date" means February 4, 1981.
- (9) "VOCs net input" means the total amount of VOCs input to the

affected facility minus the amount of VOCs that are not emitted into the atmosphere. VOCs that are prevented from being emitted to the atmosphere by the use of control devices shall not be subtracted from the total for the purpose of determining VOCs net input. When the nature of any operation or design of equipment permits more than one (1) interpretation of this definition, the interpretation that results in the minimum value for allowable emissions shall apply.

(10) "Packaging rotogravure printing" means rotogravure printing upon paper, paper board, metal foil, plastic film, and other substrates, which are, in subsequent operations, formed into packaging products and labels for articles to be sold.

(11) "Publication rotogravure printing" means rotogravure printing upon paper which is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements, and other types of printed materials.

(12) "Flexographic printing" means the application of words, designs and pictures to a substrate by means of a roll printing technique in which the pattern to be applied is raised above the printing roll and the image carrier is made of rubber or other elastomeric materials.

(13) "Rotogravure printing" means the application of words, designs, and pictures to a substrate by means of a roll printing technique which involves intaglio or recessed image areas in the form of cells.

(14) "Roll printing" means the application of words, designs and pictures to a substrate usually by means of a series of hard rubber or steel rolls each with only partial coverage.

(15) "Specialty rotogravure printing" means all rotogravure printing except packaging rotogravure and publication rotogravure printing. It includes, but is not limited to, rotogravure printing on paper cups and plates, patterned gift wrap [giftwrap], wallpaper and floor coverings.

**Section 2. Applicability.** (1) This regulation shall apply to:

(a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as nonattainment for ozone in 401 KAR 51:010, for any classification except marginal; and

(b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.

(2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be operated and maintained.

**Section 3. Standard for VOCs.** (1) No person shall cause, allow, or permit an affected facility for packaging rotogravure printing or specialty rotogravure printing to discharge into the atmosphere more than thirty-five (35) percent by weight of the VOCs net input into the affected facility.

(2) No person shall cause, allow, or permit an affected facility for flexographic printing to discharge into the atmosphere more than forty (40) percent by weight of the VOCs net input into the affected facility.

**Section 4. Compliance.** (1) In all cases the design of any control system shall be subject to approval by the cabinet.

(2) Compliance with the standard in Section 3 of this regulation shall be demonstrated by a material balance unless the cabinet determines that a

material balance is not possible. If a material balance is not possible, compliance shall be determined based upon an engineering analysis by the cabinet of the control system design, control device efficiency, control system capture efficiency, and any other factors that may influence the performance of the system. If requested by the cabinet, performance tests specified by the cabinet shall be conducted to determine the efficiency of the control device. Capture efficiency shall be determined by procedures specified in 401 KAR 50:047 in all ozone nonattainment areas except marginal.

(3) With the prior approval of the cabinet, the owner or operator may elect to effect all changes necessary to qualify for an exemption under Section 6 of this regulation.

(4) If deemed necessary by the cabinet, the cabinet shall obtain samples of the inks used at an affected facility to verify that the inks meet the requirements in Section 6 of this regulation. Appendix A to 40 CFR 60, Method 24A, which has been incorporated by reference in 401 KAR 50:015, shall be used as applicable to determine compliance of the inks unless the cabinet determines that other methods would be more appropriate. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.

(5) The amount of exempt solvents shall be subtracted from the amount of inks, just like water, with the ultimate value of interest being the mass of VOC per unit volume of ink less exempt solvent or water or both.

(6) Daily records shall be maintained by the source for the most recent two (2) year period. These records shall be made available to the cabinet or the U.S. EPA upon request. These records shall include, not be limited to, the following:

- (a) Applicable regulation number;
- (b) Application method and substrate type;
- (c) Amount and type of graphic arts material or solvent used at each point of application, including exempt compounds;
- (d) The VOC content as applied in each graphic arts material or solvent;
- (e) The date for each application for graphic arts material or solvent;
- (f) The amount of surface preparation, clean-up, or wash-up solvent (including exempt compounds) used and the VOC content of each; and
- (g) Oven temperature, if applicable.

**Section 5. Compliance Timetable.** (1) Affected facilities which were subject to this regulation as in effect on February 4, 1981, shall have achieved final compliance upon startup.

(2) The owner or operator of an affected facility that, on or after the effective date of this regulation, becomes subject to this regulation for any reason other than construction, modification, or reconstruction shall be required to complete the following:

(a) A final control plan for achieving compliance with this regulation shall be submitted no later than nine (9) months after the date the affected facility becomes subject to this regulation.

(b) The control system contract or the exempt coatings and any accompanying process change contracts shall be awarded no later than eleven (11) months after the date the affected facility becomes subject to this regulation.

(c) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be initiated no later than thirteen (13) months after the date the affected facility becomes subject to this regulation.

(d) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be completed no later than seventeen (17) months after the date the affected facility becomes subject to

this regulation.

(e) Final compliance shall be achieved no later than eighteen (18) months after the date the affected facility becomes subject to this regulation.

(f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

**Section 6. Exemptions.** Any affected facility shall be exempt from Section 3 of this regulation if the printing systems:

(1) Utilize a water-borne ink whose volatile portion consists of seventy-five (75) volume percent water and twenty-five (25) volume percent organic solvent (or a lower VOC content) in all printing units;

(2) Achieve a seventy (70) volume percent overall reduction of solvent usage (compared to all solvent-borne ink usage);

(3) Utilize inks which, excluding water, contain sixty (60) percent or more by volume non-volatile material as applied to the substrate; or

(4) Utilize inks with an emission limit of 0.5 lb VOC/lb solids as delivered to the applicator.

Effective Date: June 24, 1992

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	FEB 05, 1981	NOV 24, 1981	46 FR 57486
		MAR 30, 1983	48 FR 13168
1st Revision	OCT 20, 1992	JUN 23, 1994	59 FR 32343

**401 KAR 59:214. New factory surface coating operations of flat wood paneling.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS 224.320, 224.330, 224.340

Pursuant to: KRS 13.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new factory surface coating operations of flat wood paneling.

**Section 1. Definitions.**

As used in this regulation, all terms not defined in this section shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means a coating line for the factory surface coating of interior flat wood paneling.
- (2) "Applicator" means the mechanism or device used to apply the coating including but not limited to: roll coaters, curtain coaters, sprays and brushes.
- (3) "Flashoff area" means the space between the applicator and the oven.
- (4) "Coating line" means a series of equipment or operations used to apply, dry, or cure coatings containing volatile organic compounds (VOCs). This shall include, but is not limited to:
  - (a) Mixing operations;
  - (b) Process storage;
  - (c) Applicators;
  - (d) Drying operations including, but not limited to, flashoff area evaporation, oven drying, baking, curing, and polymerization;
  - (e) Clean up operations;
  - (f) Leaks, spills and disposal of VOCs;
  - (g) Processing and handling of recovered VOCs;
  - (h) For the purposes of determining compliance with this regulation, if equipment or an operation is considered to be a part of more than one (1) coating line, its VOC emissions shall be assigned to each coating line of which it is a part proportionally to the throughput of VOC it receives from or distributes to each coating line;
  - (i) If a portion of the series of equipment or operations qualifies for an exemption according to Section 6, then that portion shall be considered to be a separate coating line.
- (5) "Process storage" means mixing tanks, holding tanks, and other tanks, drums, or other tanks, drums, or containers which contain surface coatings, VOCs, or recovered VOCs; but does not mean storage tanks of

petroleum liquids which are subject to 401 KAR 59:050, 401 KAR 59:052 or 401 KAR 61:050.

- (6) "Interior flat wood paneling" means printed interior wall panels made of hardwood plywood and thin particle board, natural finish hardwood plywood panels, or hardwood paneling with Class II finishes.
- (7) "Printed panels" means panels whose grain or natural surface is obscured by fillers and basecoats upon which a simulated grain or decorative pattern is printed.
- (8) "Hardwood plywood" means plywood whose surface layer is a veneer of hardwood.
- (9) "Particleboard" means a manufactured board made of individual wood particles which have been coated with a binder and formed into flat sheets by pressure. Thin particleboard has a thickness of one-fourth (1/4) inch or less.
- (10) "Natural finish hardwood plywood panels" means panels whose original grain pattern is enhanced by essentially transparent finishes frequently supplemented by fillers and toners.
- (11) "Hardboard" means a panel manufactured primarily from inter-felted lignocellulosic fibers which are consolidated under heat and pressure in a hot-press.
- (12) "Class II hardboard paneling finishes" means finishes which meet the specifications of Voluntary Product Standard PS-59-73, filed by reference in 401 KAR 50:015, as approved by the American National Standards Institute.
- (13) "Classification date" means February 4, 1981.
- (14) "VOCs net input" means the total amount of VOCs input to the affected facility minus the amount of VOCs that are not emitted into the atmosphere. VOCs that are prevented from being emitted to the atmosphere by the use of control devices shall not be subtracted from the total for the purposes of determining VOCs net input. If the nature of an operation or a design of equipment permits more than one (1) interpretation of this definition, the interpretation that results in the minimum value for allowable emission shall apply.

## **Section 2. Applicability.**

- (1) This regulation shall apply to:
  - (a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as non attainment for ozone in 401 KAR 51:010, for any classification except marginal; and
  - (b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.
- (2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment

for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be operated and maintained.

**Section 3. Standard for VOCs.**

No person shall cause, allow, or permit an affected facility to discharge into the atmosphere more than fifteen (15) percent by weight of the VOCs net input into the affected facility.

**Section 4. Compliance.**

- (1) In all cases the design of a control system is subject to approval by the department.
- (2) Compliance with the standard in Section 3 shall be demonstrated by a material balance unless the department determines that a material balance is not possible. If a material balance is not possible, compliance shall be determined based on an engineering analysis by the department of: the control system design, control device efficiency, control system capture efficiency, and other factors that could influence the performance of the system. If requested by the department, performance tests specified by the department shall be conducted to determine the efficiency of the control device. Capture efficiency shall be determined by procedures specified in 401 KAR 50:047 in all ozone nonattainment areas except marginal.
- (3) With the prior approval of the department, the owner or operator may elect to effect all changes necessary to qualify for an exemption under Section 6 of this regulation.
- (4) If deemed necessary by the department, the department shall obtain samples of the coatings used at an affected facility to verify that the coatings meet the requirements in Section 6. Method 24, which has been incorporated by reference in 401 KAR 50:015, shall be used as applicable to determine compliance of the coatings unless the department determines that other methods would be more appropriate. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.
- (5) Compliance on one (1) coating line with VOC emission limits shall be based on an averaging period not to exceed twenty-four (24) hours. If it is not economically or technically feasible to determine emissions on a daily basis, alternatives expressing emission limits for longer averaging times may be accepted if approved by the cabinet. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.
- (6) The amount of exempt solvents shall be subtracted from the amount of coatings, just like water, with the ultimate value of interest being the mass of VOC per unit volume of coating less exempt solvent or water or both.
- (7) Calculations to determine equivalency on one (1) coating line shall be based on mass of VOC per volume of solids. Vinyl plastisols and organosols shall not be included in VOC equivalency calculations that are required to be included in applications for VOC bubbles.
- (8) Daily records shall be maintained by the source for the most recent two (2) year period. The record shall be made available to the cabinet or the U.S. EPA upon request. The records shall include, but not limited

to, the following:

- (a) Applicable regulation number;
- (b) Application method and substrate type;
- (c) Amount and type of adhesive, coating (including catalyst and reducer for multicomponent coatings), or solvent used at each point of application, including exempt compounds;
- (d) The VOC content as applied in each adhesive, coating, or solvent;
- (e) The date for each application for adhesive, coating, or solvent;
- (f) The amount of surface preparation, clean-up, or wash-up solvent (including exempt compounds) used and the VOC content of each; and
- (g) Oven temperature, if applicable.

**Section 5. Compliance Timetable.**

- (1) Affected facilities which were subject to this regulation as in effect on June 29, 1979, shall have achieved final compliance upon startup.
- (2) The owner or operator of an affected facility that, on or after the effective date of this regulation, becomes subject to this regulation for any reason other than construction, modification, or reconstruction shall be required to complete the following:
  - (a) A final control plan for achieving compliance with this regulation shall be submitted no later than nine (9) months after the date the affected facility becomes subject to this regulation.
  - (b) The control system contract or the exempt coatings and any accompanying process change contracts shall be awarded no later than eleven (11) months after the date the affected facility becomes subject to this regulation.
  - (c) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be initiated no later than thirteen (13) months after the date the affected facility becomes subject to this regulation.
  - (d) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be completed no later than seventeen (17) months after the date the affected facility becomes subject to this regulation.
  - (e) Final compliance shall be achieved no later than eighteen (18) months after the date the affected facility becomes subject to this regulation.
  - (f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

**Section 6. Exemptions.**

- (1) Any affected facility shall be exempt from Section 3 of this regulation if the VOC content of all the coatings applied to a specific area of finished paneling product is:
  - (a) less than 2.9 kg of VOCs per 100 sq. M. Of coated surface (6.0 lb/1,000 sq.ft.) For printed interior wall panels made of hardwood plywood and thin particleboard;
  - (b) Less than 5.8 kg of VOCs per 100 sq. M. Of coated surface (12.0 lb/1,000 sq.ft) for natural finish hardwood plywood panels; or
  - (c) Less than 4.8 kg of VOCs per 100 sq. M. Of coated surface (10.0 lb/1,000 sq.ft) for Class II finishes for hardboard paneling.
- (2) Low-use coatings shall be exempt from Section 3 of this regulation if the plantwide consumption of these coatings in the aggregate is less

than or equal to fifty-five (55) gallons during the previous twelve (12) months.

- (3) An affected facility shall be exempt from this regulation if the total VOC emissions from all affected facilities subject to this regulation are less than or equal to:
  - (a) Three (3) lb/hr actual emissions before add-on control;
  - (b) Fifteen (15) lb/day actual emissions before add-on control; or
  - (c) Ten (10) tons per year theoretical potential emissions based on design capacity (or maximum production) and 8760 hr/yr before add-on control.

Effective Date: June 24, 1992

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	FEB 5, 1981	NOV 24, 1981	46 FR 57486
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**401 KAR 59:225. New miscellaneous metal parts and products surface coating operations.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224.20-100, 224.20-110, 224.20-120

Pursuant to: KRS 13.082, 224.10-110

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new miscellaneous metal part and products surface coating operations.

**Section 1. Definitions.**

As used in this regulation, all terms not defined in this section shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means a coating line located at job shops and original equipment manufacturing industries which apply coatings on metal substrates not elsewhere subject to regulation in this chapter.
- (2) "Applicator" means the mechanism or device used to apply the coating, including but not limited to: dipping, spraying, or flow-coating.
- (3) "Flashoff area" means only one (1) film of coating is applied to the metal substrate.
- (4) "Single coat" means only one (1) film of coating is applied to the metal substrate.
- (5) "Prime coat" means the first of two (2) or more films of coating applied in an operation.
- (6) "Topcoat" means the final film or series of films of coating applied in a two (2) coat (or more) operation.
- (7) "Coating line" means a series of equipment or operations used to apply, dry, or cure any prime, topcoat or single coatings containing volatile organic compounds (VOCs). This shall include, but is not limited to:
  - (a) Mixing operations;
  - (b) Process storage;
  - (c) Applicators;
  - (d) Drying operations including, but not limited to, flashoff area evaporation, oven drying, baking, curing, and polymerization;
  - (e) Clean up operation;
  - (f) Leaks, spills and disposal of VOCs;
  - (g) Processing and handling of recovered VOCs;
  - (h) For the purposes of determining compliance with this regulation, if equipment or an operation is considered to be a part of more than one (1) coating line, its VOC emissions shall be assigned to

each coating line of which it is a part proportionally to the throughput of VOC it receives from or distributes to each coating line;

- (i) If a portion of the series of equipment or operations qualify for an exemption according to Section 6, then that portion shall be considered to be a separate coating line.
- (8) "Process storage" means mixing tanks, holding tanks, and other tanks, drums, or other containers which contain surface coatings, VOCs, or recovered VOCs; but does not mean storage tanks of petroleum liquids which are subject to 401 KAR 59:050, 401 KAR 59:052, or 401 KAR 61:050.
- (9) "Miscellaneous metal parts and products" means items including but not limited to:
- (a) Large farm machinery (harvesting, fertilizing and planting machines, tractors, combines, etc.);
  - (b) Small farm machinery (lawn and garden tractors, lawn mowers, rototillers, etc.);
  - (c) Small appliances (fans, mixers, blenders, crock pots, dehumidifiers, vacuum cleaners, etc.);
  - (d) Commercial machinery (computers and auxiliary equipment, typewriters, calculators, vending machines, etc.);
  - (e) Industrial machinery (pumps, compressors, conveyer components, fans, blowers, transformers, etc.);
  - (f) Fabricated metal products (metal covered doors, frames, etc.); and
  - (g) Any other industrial category not otherwise subject to regulation in this chapter which coats metal parts or products.
- (10) "Heat sensitive material" means materials which cannot be exposed to temperatures greater than eighty-two (82) to ninety-three (93) °C (180° - 200°F).
- (11) "Air or forced air-dried items" means parts that are too large or too heavy for practical size ovens; parts that are sensitive to heat; parts to which heat sensitive materials are attached; or equipment assembled prior to top coating for specific performance or quality standards.
- (12) "Outdoor or harsh exposure or extreme environmental conditions" means exposure to any of the following: year round weather conditions, temperatures consistently above ninety-five (95) °Celsius, detergents, scouring, solvents, corrosive atmospheres; and similar environmental conditions.
- (13) "Classification date" means February 4, 1981.
- (14) "VOCs net input" means the total amount of VOCs input to the affected facility minus the amount of VOCs that are not emitted into the atmosphere. VOCs that are prevented from being emitted to the atmosphere by the use of control devices shall not be subtracted from the total for the purposes of determining VOCs net input. If the nature of an operation or a design of equipment permits more than one (1) interpretation of this

definition, the interpretation that results in the minimum value for allowable emissions shall apply.

- (15) "Glass Primer" means a primer applied to the body of a vehicle to etch the topcoat for the purpose of ensuring a positive bond with the adhesive used to secure the windshield and back glass to the vehicle in a manner consistent with federal safety regulations.

**Section 2. Applicability.**

- (1) This regulation shall apply to:
- (a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as non attainment for ozone in 401 KAR 51:010, for any classification except marginal; and
  - (b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.
- (2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be operated and maintained.
- (3) The provisions of this regulation shall not apply to affected facilities which are subject to local air pollution district regulations which have been approved by the cabinet and the U.S. EPA.

**Section 3. Standard for VOCs.**

No person shall cause, allow, or permit an affected facility to discharge into the atmosphere more than fifteen(15) percent by weight of the VOCs net input into the affected facility.

**Section 4. Compliance.**

- (1) In all cases the design of a control system is subject to approval by the department.
- (2) Compliance with the standard in Section 3 shall be demonstrated by a material balance unless the department determines that a material balance is not possible. If a material balance is not possible, compliance shall be determined based upon an engineering analysis by the department of: the control system design, control device efficiency, control system capture efficiency, and other factors that could influence the performance of the system. If requested by the department, performance tests specified by the department shall be conducted to determine the efficiency of the control device. Capture efficiency shall be determined by the procedures specified in 401 KAR 50:047 in all ozone nonattainment areas except marginal.
- (3) With the prior approval of the department, the owner or operator may elect to effect all changes necessary to qualify for an exemption under Section 6.

- (4) If deemed necessary by the department, the department shall obtain samples of the coatings used at an affected facility to verify that the coatings meet the requirements in Section 6. Method 24, which has been incorporated by reference in 401 KAR 50:015, shall be used as applicable to determine compliance of the coatings unless the department determines that other methods would be more appropriate. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.
- (5) Compliance on one (1) coating line with VOC emission limits shall be based on an averaging period not to exceed twenty-four (24) hours. If it is not economically or technically feasible to determine emissions on a daily basis, alternatives expressing emission limits for longer averaging times may be accepted if approved by the cabinet. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S. EPA, shall be submitted to the U.S. EPA as a SIP revision.
- (6) The amount of exempt solvents shall be subtracted from the amount of coatings, just like water, with the ultimate value of interest being the mass of VOC per unit volume of coating less exempt solvent or water or both.
- (7) Calculations to determine equivalency on one (1) coating line shall be based on mass of VOC per volume of solids. Vinyl plastisols and organosols shall not be included in VOC equivalency calculations that are required to be included in applications for VOC bubbles.
- (8) Daily records shall be maintained by the source for the most recent two (2) year period. The record shall be made available to the cabinet or the U.S. EPA upon request. The records shall include, but not limited to, the following:
  - (a) Applicable regulation number;
  - (b) Application method and substrate type;
  - (c) Amount and type of adhesive, coating (including catalyst and reducer for multicomponent coatings), or solvent used at each point of application, including exempt compounds;
  - (d) The VOC content as applied in each adhesive, coating, or solvent;
  - (e) The date for each application for adhesive, coating, or solvent;
  - (f) The amount of surface preparation, clean-up, or wash-up solvent (including exempt compounds) used and the VOC content of each; and
  - (g) Oven temperature, if applicable.

**Section 5. Compliance Timetable.**

- (1) Affected facilities which were subject to this regulation as in effect on June 29, 1979, shall have achieved final compliance upon startup.
- (2) The owner or operator of an affected facility that, on or after the effective date of this regulation, becomes subject to this regulation for any reason other than construction, modification, or reconstruction shall be required to complete the following:
  - (a) A final control plan for achieving compliance with this regulation shall be submitted no later than nine (9) months after the date the affected facility becomes subject to this regulation.
  - (b) The control system contract or the exempt coatings and any accompanying process change contracts shall be awarded no later than eleven (11) months after the date the affected facility becomes subject to this regulation.
  - (c) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be initiated no later

- than thirteen (13) months after the date the affected facility becomes subject to this regulation.
- (d) On-site construction or installation of emission control equipment or process changes for exempt coatings shall be completed no later than seventeen (17) months after the date the affected facility becomes subject to this regulation.
  - (e) Final compliance shall be achieved no later than eighteen (18) months after the date the affected facility becomes subject to this regulation.
  - (f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

**Section 6. Exemptions.**

- (1) An affected facility shall be exempt from the provisions of Section 3 if the VOC content of coating is:
  - (a) Less than 0.52 kg/l of coating (4.3 lb/gal), excluding water, delivered to applicators associated with clear coat;
  - (b) Less than 0.42 kg/l of coating (3.5 lb/gal), excluding water, delivered to applicators associated with air or forced air-dried items or items subject to outdoor or harsh exposure or extreme environmental conditions;
  - (c) Less than 0.36 kg/l of coating (3.5 lb/gal), excluding water, delivered to applicators associated with color coat or first coat or untreated ferrous substrate; or
  - (d) Less than 0.05 kg/l of powder coating (0.4 lb/gal) delivered to applicators associated with no or infrequent color change, or a small number of colors applied.
- (2) The surface coating of the following metal parts and products are exempt from this regulation:
  - (a) The exterior of airplanes and marine vessels, but not parts for the exterior of airplanes and marine vessels that are coated as a separate manufacturing or coating operation;
  - (b) Automobile refinishing; and
  - (c) Customized top coating of automobiles and trucks, if production is less than thirty-five (35) vehicles per day.
- (3) An affected facility shall be exempt from the provisions of Section 3 if the total VOC emissions from all affected facilities subject to this regulation are less than or equal to twenty (20) tons per year.
- (4) Low-use coatings shall be exempt from Section 3 of this regulation if the plantwide consumption of these coatings in the aggregate is less than or equal to fifty-five (55) gallons during the previous twelve (12) months.
- (5) Glass primer with VOC content equal to or less than 6.9 lb/gal of glass primer, excluding water or exempt solvent or both, shall be exempt from this regulation.

Effective Date: June 24, 1992

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Original Reg	FEB 5, 1981	NOV 24, 1981	46 FR 57486
		MAR 30, 1983	48 FR 13168
1st Revision	OCT 20, 1992	JUN 23, 1994	59 FR 32343

**401 KAR 59:230. New synthesized pharmaceutical product manufacturing operations.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS 224.20-100, 224.20-110, 224.20-120

Pursuant to: KRS 13.082, 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new synthesized pharmaceutical product manufacturing operations.

**Section 1. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means operations involved in the manufacture of pharmaceutical products by chemical synthesis, but does not include fermentation, extraction, or formulation and packaging.
- (2) "Extraction" means the manufacture of botanical and biological products by the extraction of organic compounds from vegetative materials or animal tissues.
- (3) "Fermentation" means the production and separation of medicinal chemicals such as antibiotics and vitamins from microorganisms.
- (4) "Formulation and packaging" means the formulation of bulk pharmaceuticals into various dosage forms such as tablets, capsules, injectable solutions, ointments, etc. that can be taken by the patient immediately and in accurate amount.
- (5) "Classification date" means February 4, 1981.
- (6) "kPa" means kilopascals.
- (7) "psi" means pounds per square inch.

**Section 2. Applicability.**

- (1) This regulation shall apply to:
  - (a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as non attainment for ozone in 401 KAR 51:010, for any classification except marginal; and
  - (b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.
- (2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be operated and maintained.

### Section 3. Standard for VOCs.

The owner or operator of an affected facility to which this regulation applies shall install, maintain and operate the control equipment and observe at all times the following operating requirements:

- (1) (a) Each vent from reactors, distillation operations, crystallizers, centrifuges, and vacuum dryers that emit 6.8 kg/day (fifteen (15) lb/day) or more of VOCs shall be equipped with surface condensers or other methods of control which provide emission reductions equivalent to the use of surface condensers which meet the requirements in paragraph (b) of this subsection.
  - (b) If surface condensers are used, the condenser outlet gas temperature shall not exceed the following temperatures (degrees Celsius) when condensing VOCs with the respective minimum vapor pressure (kilopascals). All vapor pressures are measured to twenty (20) degrees Celsius.
    1. Negative twenty-five (25)°C; forty (40)kPa (5.8 psi);
    2. Negative fifteen (15)°C; twenty (20) kPa (2.9 psi);
    3. Zero (0)°C; ten (10)kPa (1.5 psi);
    4. Ten (10)°C: Seven (7) kPa (1.0 psi); and
    5. Twenty-five (25)°C, 3.5 kPa (0.5 psi).
- (2) (a) For air dryers and production equipment exhaust systems that emit 150kg/day (330 lbs/day) or more of VOCs, emission shall be reduced ninety (90) percent.
  - (b) For air dryers and production equipment exhaust systems that emit less than 150 kg/day (330 lbs/day), emissions shall be reduced to fifteen (15) kg/day (thirty-three(33) lbs/day).
- (3) (a) For storage tanks storing VOCs with a vapor pressure greater than twenty-eight (28)kPa(4.1 psi) at twenty (20) °C, one(1) liter of displaced vapor shall be allowed to be released to the atmosphere for every ten (10) liters transferred (i.e., a ninety (90) percent effective vapor balance or equivalent) on truck/rail car delivery to all tanks greater than 7,500 L(2,000 gal) capacity unless the tanks are equipped with floating roofs, vapor recovery systems, or their equivalent. This requirement does not apply to transfer of VOCs from one (1) in-plant location to another.
  - (b) For tanks storing VOCs with a vapor pressure greater than ten (10) kPa (1.5 psi) at twenty (20)°C, the pressure or vacuum conservation vents shall be set at plus or minus 0.2 kPa, unless more effective air pollution control is used.
- (4) All centrifuges containing VOCs, rotary vacuum filters processing liquid containing VOCs and other filters having an exposed liquid surface if the liquid contains VOCs shall be enclosed. This applies to liquids exerting a total VOCs vapor pressure of 3.5 kPa (0.5 psi) or more than twenty (20) °C.
- (5) All in-process tanks containing VOC at any time shall have covers which shall be closed except for short periods when production, sampling, maintenance, or inspection procedures require operator access.

- (6) For liquids containing VOCs, all leaks in which liquid is observed to be running or dripping vessels and equipment (for example: pumps, valves, flanges) shall be repaired within fifteen (15) days. A visual recheck shall be made after repair. If the leak is still present or a new leak is created by the repair, further maintenance shall be performed until the VOC emission drops below the screening value (observed to be running or dripping). Leaks that cannot be repaired within fifteen (15) days shall be repaired during the next scheduled turnaround. If the cabinet requests it, the owner or operator shall demonstrate to the cabinet's satisfaction why the repairs could not be completed within the initial fifteen (15) day period. If the leak is unable to be brought into compliance, a variance shall be requested and obtained on an individual basis. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S.EPA, shall be submitted to the U.S.EPA as a SIP revision. Leak detection or maintenance and repair procedures shall include maintaining a survey log identifying when the leak occurred and reporting every ninety(90) days those leaks not repaired after fifteen (15) days. The operators shall retain the survey log for two (2) years after the inspection is completed.

#### **Section 4. Compliance Timetable.**

- (1) Affected facilities which were subject to this regulation as in effect on February 4, 1981, shall have achieved final compliance upon startup.
- (2) The owner or operator of an affected facility that, on or after the effective date of the regulation, becomes subject to this regulation for a reason other than construction, modification, or reconstruction shall be required to complete the following:
- (a) Submit a final control plan for achieving compliance with this regulation no later than three (3) months after the date the affected facility becomes subject to this regulation.
  - (b) Award the control system contract no later than five (5) months after the date the affected facility becomes subject to this regulation.
  - (c) Initiate on-site construction or installation of emissions control equipment no later than seven (7) months after the date the affected facility becomes subject to this regulation.
  - (d) On-site construction or installation of emission control equipment shall be completed no later than eleven (11) months after the date the affected affected facility becomes subject to this regulation.
  - (e) Final compliance shall be achieved no later than twelve (12) months after the date the affected facility becomes subject to this regulation.
  - (f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

#### **Section 5. Compliance Procedures.**

Compliance shall be determined based upon an engineering analysis by the department of control system design, control device efficiency, control system capture efficiency, and other factors that could influence the performance of the system. If requested by the department, performance tests specified by the department shall be conducted to determine the efficiency of the control device.

**Section 6. Monitoring Requirements.**

If adsorbers, condensers, incinerators or scrubbers are used to achieve compliance with Section 3, the following monitoring devices shall be an integral part of the control device:

- (1) For carbon adsorbers, a monitoring device connected to an alarm device, which indicates carbon bed breakthrough;
- (2) For condensers, a temperature securing device located in the exit gas stream;
- (3) For incinerators, temperature securing devices located in the combustion chamber for thermal incinerators and in the catalyst pre- heat chamber for catalytic incinerators; and
- (4) For scrubbers, flow meters for measuring flow rate of scrubbing medium or pressure drop measuring devices indicating back pressure and pressure drop across the scrubber.

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	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	FEB 04, 1981	NOV 24, 1981	46 FR 57486
		MAR 30, 1983	48 FR 13168
1st Revision	OCT 20, 1992	JUN 23, 1994	59 FR 32343

**401 KAR 59:235. New pneumatic rubber tire manufacturing plants.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224

Pursuant to: KRS 13.082, 224.033

Necessity and Function: KRS 224.033 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new pneumatic rubber tire manufacturing plants.

**Section 1. Applicability.**

The provisions of the regulation shall apply to each affected facility commenced on or after the classification date defined below which is located:

- (1) In an urban county designated non-attainment for ozone under 401 KAR 51:010; or
- (2) In any other county and is a part of a major source of volatile organic compounds.
- (3) The provisions of this regulation shall not apply to affected facilities in the following counties: Garrard, Graves, Hopkins, Laurel, Montgomery, Nelson, Pulaski, Scott, Taylor, Trigg, and Union prior to designation of such counties non-attainment for ozone under 401 KAR 51:010.

**Section 2. Definitions.**

As used in this regulation, all terms not defined herein shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means undertread cementers, tread end cementers, bead dip tanks, and green tire spray booths associated with the manufacture of pneumatic rubber tires.
- (2) "Manufacture of pneumatic rubber tires" means the mass production of pneumatic rubber tires.
- (3) "Pneumatic rubber tires" means agricultural, airplane, industrial, mobile home, light and medium duty truck, and passenger vehicle tires of bead diameter up to .51 m (twenty (20) in) and cross-sectional dimension up to .33 m (12.8 in).
- (4) "Volatile organic compounds" means chemical compounds of carbon (excluding methane, ethane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, and ammonium carbonate) which have a vapor pressure greater than one-tenth (0.1) mm Hg at conditions of twenty (20) degrees Celsius and 760 mm Hg.
- (5) "Classification date" means the effective date of this regulation.
- (6) "Water based sprays" means release compounds, sprayed on the inside and outside of green tires, in which solids, water, and emulsifiers have been substituted for organic solvents.

**Section 3. Standard for Volatile Organic Compounds.**

The owner or operator of an affected facility shall install, maintain and operate capture and control equipment to achieve the following:

- (1) Emissions from undertread cementers, tread and cementers and bead dip

tanks shall be reduced by at least seventy-six (76) percent; and

- (2) Emissions from green tire spray booths shall be reduced by at least eighty-one (81) percent. This requirement is not applicable to green tire spray booths using water based sprays.

**Section 4. Compliance.**

Compliance will be determined based upon an engineering analysis by the department of: the control system design, control device efficiency, control system capture efficiency and any other factors that could influence the performance of the system. If so requested by the department, performance tests as specified by the department shall be conducted in order to determine the efficiency of the control device.

**Section 5. Variances.**

Variation with the standards and limitations contained in this regulation, when supported by adequate technical information, will be considered by the department on a case-by-case basis to allow for technological or economic circumstances which are unique to a source.

Effective Date: February 4, 1981

	Date Submitted to EPA	Date Approved by EPA	Federal Register
Original Reg	FEB 4, 1981	NOV 24, 1981 MAR 30, 1983	46 fr 57486 48 FR 13168

**401 KAR 59:240. New perchloroethylene dry cleaning systems.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

Relates to: KRS Chapter 224.20-100, 224.20-110, 224.20-120

Pursuant to: KRS 13.082, 224.10-100

Necessity and Function: KRS 224.10-100 requires the Department for Natural Resources and Environmental Protection to prescribe regulations for the prevention, abatement and control of air pollution. This regulation provides for the control of volatile organic compound emissions from new perchloroethylene dry cleaning systems.

**Section 1. Definitions.**

As used in this regulation, all terms not defined in this section shall have the meaning given to them in 401 KAR 50:010.

- (1) "Affected facility" means a dry cleaning system which uses perchloroethylene.
- (2) "Dry cleaning system" means a series of equipment or operations which includes, but is not limited to washer, dryer, filter and purification systems, waste disposal systems, holding tanks, pumps, and attendant piping valves used for the purpose of commercial cleaning of fabrics.
- (3) "Classification date" means February 4, 1981.

**Section 2. Applicability.**

- (1) This regulation shall apply to:
  - (a) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation and located in a county or portion of a county designated as non attainment for ozone in 401 KAR 51:010, for any classification except marginal; and
  - (b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.
- (2) Each affected facility commenced on or after the classification date defined in Section 1 of this regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be operated and maintained.

**Section 3. Standard for VOCs.**

The owner or operator of an affected facility shall install, maintain and operate the control equipment such that the following requirements are met:

- (1) There shall be no liquid leakage of organic solvents from the system.
- (2) The entire dryer exhaust shall be vented through a properly functioning carbon adsorber or equally effective control device.
- (3) The maximum organic solvent concentration in the vent from the dryer control device shall not exceed 100 ppm before dilution.
- (4) Filter and distillation wastes.

- (a) The residue from a diatomaceous earth filter shall be cooked or treated so that wastes shall not contain more than twenty-five (25) kg of solvent per 100 kg of wet waste material.
- (b) The residue from a solvent still shall not contain more than sixty (60) kg of solvent per 100 kg of wet waste material.
- (c) Filtration cartridges shall be drained in the filter housing for at least twenty-four (24) hours before being discarded. The drained cartridges shall be dried in the dryer tumbler after draining.
- (d) Any other filtration or distillation system may be used if equivalency to these requirements is demonstrated. A system reducing waste losses below one (1) kg solvent per 100 kg clothes cleaned shall be considered equivalent.

#### **Section 4. Compliance.**

- (1) Liquid leakage shall be determined by visual inspection of the following sources:
  - (a) Hose connections, unions, couplings and valves;
  - (b) Machine door gasket and seating;
  - (c) Filter head gasket and seating;
  - (d) Pumps;
  - (e) Base tanks and storage containers;
  - (f) Water separators;
  - (g) Filter sludge recovery operations;
  - (h) Distillation units;
  - (i) Diverter valves;
  - (j) Saturated line from line basket; and
  - (k) Cartridge filters.
- (2) Dryer exhaust concentration shall be determined by the proper installation, operation, and maintenance of approved equipment as determined by the department or by performance tests specified by the department.
- (3) The amount of solvent in filter and distillation wastes shall be determined by ASTM D 322-67 (77), and substituting collector C from ASTM E 123-78. ASTM methods have been incorporated by reference in 401 KAR 50:015.

#### **Section 5. Compliance Timetable.**

- (1) Affected facilities which were subject to this regulation as in effect on February 4, 1981, shall have achieved final compliance upon startup.
- (2) The owner or operator of an affected facility that, on or after the effective date of the regulation, becomes subject to this regulation for

a reason other than construction, modification, or reconstruction shall be required to complete the following:

- (a) Submit a final control plan for achieving compliance with this regulation no later than three (3) months after the date the affected facility becomes subject to this regulation.
- (b) Award the control system contract no later than five (5) months after the date the affected facility becomes subject to this regulation.
- (c) Initiate on-site construction or installation of emissions control equipment no later than seven (7) months after the date the affected facility becomes subject to this regulation.
- (d) On-site construction or installation of emission control equipment shall be completed no later than eleven (11) months after the date the affected facility becomes subject to this regulation.
- (e) Final compliance shall be achieved no later than twelve (12) months after the date the affected facility becomes subject to this regulation.
- (f) If an affected facility becomes subject to this regulation because it is located in a county previously designated nonurban nonattainment or redesignated in 401 KAR 51:010 after November 15, 1990, final compliance may be extended to May 31, 1995, and the schedule in paragraphs (a) through (d) of this subsection adjusted by the cabinet.

**Section 6. Exemptions.**

Perchloroethylene dry cleaning facilities which are cooperated shall be exempt from this regulation.

**Section 7. Variances.**

Variation with the standards and limitations contained in this regulation, if supported by adequate technical information, may be considered by the department on a case-by-case basis to allow for technological or economic circumstances which are unique to a source. Case-by-case alternatives approved by the cabinet, but not previously authorized by the U.S.EPA

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**401 KAR 59:315. Specific new sources.**

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET  
Department for Environmental Protection  
Division for Air Quality

RELATES TO: KRS 224.20-100, 224.20-110, 224.20-120, 42 USC 7401 et. seq., 42 USC 7407, 42 USC 7408, 42 USC 7410

STATUTORY AUTHORITY: KRS 224. 10-100

NECESSITY AND FUNCTION: KRS 224. 10-100 requires the Natural Resources and Environmental Protection Cabinet to prescribe regulations for the prevention, abatement, and control of air pollution. This regulation provides for the control of volatile organic compound emissions for specific new sources.

**Section 1. Definitions.** Terms used in this regulation shall have the meaning given them in 401 KAR 59:001.

**Section 2. Applicability.**

(1) 401 KAR 61:055, 401 KAR 61:090, 401 KAR 61:105, 401 KAR 61:110, 401 KAR 61:125, 401 KAR 61:130, 401 KAR 61:137, 401 KAR 61:155, and 401 KAR 61:175 shall apply to:

(a) Each affected facility commenced on or after the classification date defined in Section I of the corresponding regulation and located in a county or portion of a county designated as nonattainment for ozone in 401 KAR 51:010, for any classification except marginal; and

(b) Each affected facility commenced on or after the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.

(2) Each affected facility commenced on or after the classification date defined in Section I of the corresponding regulation but prior to the effective date of this regulation which is part of a major source located in a county or portion of a county designated attainment or marginally nonattainment for ozone in 401 KAR 51:010 shall be exempt from this regulation except that control devices and procedures required at the time it commenced shall continue to be maintained.

(3) If a requirement of any other regulation of the Division for Air Quality is more stringent, then the more stringent requirement shall apply.

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