

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
FIELD OPERATIONS - AIR QUALITY CONTROL

PLAN APPROVAL

Application No.	<u>46-326-001A</u>	Source(s)	<u>Equivalency-Compliance Plan</u>
Owner	<u>The Knoll Group</u>	Air	<u>for Wood Cabinet and Furniture Finishing Operations</u>
Address	<u>P.O. Box 157</u>	Cleaning	<u>described herein</u>
	<u>East Greenville, PA 18041</u>	Device	<u></u>
Attention	<u>Mr. Louis Newett</u>	Location	<u>Water Street</u>
	<u>Plant Engineer</u>		<u>East Greenville Township</u>
			<u>Montgomery County</u>

In accordance with provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and with Chapter 127 of the rules and regulations of the Department of Environmental Resources, the Department on March 24, 1993 approved plans for an Equivalency to conform with 25 PA Code 129.51 & 129.52 the above indicated air contamination source(s).

This PLAN APPROVAL expires 07/04/93 (See Condition 10g).

the plan approved is subject to the following conditions:

1. The wood cabinet and furniture finishing processes are to be operated in accordance with the plans submitted with the application (as approved herein).

(SEE THE ATTACHED ADDITIONAL CONDITIONS)

Notify the person noted below when the installation is completed so that the source(s) can be inspected for issuance of an OPERATING PERMIT.

NOTE:

Field Operations - Air Quality Control
Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428
(215)832-6241

N. Rao Kona
N. RAO KONA
Regional Air Pollution Control Engineer

cc: Division of Permits, MSSOB
Assistant Director
Southeast Regional Office

Plan Approval Conditions
Application No. 46-326-001A
The Knoll Group

Conditions (continued):

2. This Plan Approval is issued to Knoll Group ("Knoll") for their "Equivalency" for compliance with the wood finishing limitations described herein. The Equivalency is defined in 25 PA Code 129.51 as an alternative method of compliance. Knoll's Equivalency meets the requirements of 25 PA Code 129.51. This equivalency applies to all wood finishing operations at the Knoll facility. The finishing operations and coatings used are shown in Appendix II.

3. Definitions

The words and terms found in Appendix I of this Plan Approval when used in this Plan Approval have the following meanings provided in Appendix I unless the context clearly indicates otherwise.

4. The sources, with their equipment numbers and, their associated type of wood cabinet and furniture finishing surface coating process, are indicated in Appendix II of this Plan Approval. The types of surface coating processes indicated above are defined in Appendix I of this Plan Approval.

5. The Department has determined that the weights of volatile organic compound ("VOC") per volume of coating (minus water) for the specific coating processes indicated below are reasonable available control technology for the Knoll facility.

Table I
"Allowable Content of VOC's"

	Pounds of VOC/ gallon of coating	Kg of VOC/ liter of coating
Clear Topcoat	5.9	.71
Wash Coat	6.5	.78
Final Repair Coat	6.0	.72
Semitransparent Wiping & Glazing Stains	6.4	.77
Semitransparent Spray Stains & Toners	6.8	.82
Opaque Ground Coates & Ensmels	5.5	.66
All Other Coatings	7.0	.84
Clear Sealers	6.2	.74

6. Emission Limitation

a. The aggregate of the actual VOC emissions (minus water) from each of the sources listed in condition 3 of this Plan Approval shall not exceed 80% of the aggregate of the allowable VOC emissions (minus water) from each of the sources listed in Appendix II of this Plan Approval. Calculations of actual and allowable VOC emissions (minus water) shall utilize the equations shown in Appendix III.

b. The actual and allowable VOC emissions (minus water) indicated in Condition 6a of this Plan Approval shall be determined on a daily basis.

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The Knoll Group

Conditions (continued):

- c. The allowable VOC emissions (minus water) are to be calculated using the allowable VOC content for the appropriate wood furniture finishing surface coating process as indicated in "Allowable Content of VOC's" Table I, in Condition 5 of this Plan Approval.
- d. Knoll shall use 7.36 pounds per gallon as a standard solvent density and a solid basis to adjust the weights of VOCs per gallon of coating (minus water) specified in Table I in Condition 5 of this Plan Approval when calculating the allowable VOC emissions from each source.
- e. Knoll shall use the equations in Appendix III of this Plan Approval to determine the actual and allowable VOC emissions (minus water) from each source.

7. Operating Requirements

- a. Except as modified by this Plan Approval Knoll shall operate the sources subject to this Plan Approval consistent with the compliance plan and supplemental data submitted to the Department on March 12, 1990.
- b. Knoll shall not cause or permit the emission into the outdoor atmosphere of VOCs from the application of wood cabinet and furniture coatings unless the coatings are applied using electrostatic, airless, curtain coating, roll coating, hand roller, hand brush, flow coating, dip coating or high volume-low pressure application equipment. Air atomized sprays may be used to apply other coatings if the volume of the other coatings is less than 5% by volume of the total coating used at the facility or to apply final repair coatings.
- c. Knoll shall comply with the emission limits stipulated in Condition 7 of this Operating Permit on a daily basis.

8. Testing Requirements

- a. Knoll shall use EPA Method 24 as described in 25 PA Code 139 to determine the properties of all coatings used in this Equivalency permit.
- b. For verification of surface coating properties in this Plan Approval Knoll shall test at least 10% of each the coatings used each year. Coatings shall be tested randomly using EPA Method 24 and the new values shall be reflected in emission calculations. Knoll shall report the above test results to the Department on a quarterly basis.

9. Reporting and Recordkeeping

- a. Knoll shall record the following information for the sources covered under this Plan Approval:
 1. Daily coating quantity in gallons and pounds of coating as applied and,

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Conditions (continued):

2. the coating composition:
 - a. percent solids by volume
 - b. percent solvent by volume
 - c. percent water by volume
 - d. pounds of VOC per gallon minus water
 - e. solvent density
 - b. An updated listing of the types and compositions of the coatings and diluents used in the aforementioned sources shall be submitted to the Department upon request.
 - c. Knoll shall record on a daily basis the following:
 1. coating density before and after additional diluents
 2. gallons of diluents used
 3. density of the diluents used
 4. weight percent of the organic volatiles in each coating
 - d. Knoll shall submit a report to the Department on a quarterly basis summarizing the actual and allowable daily VOC emissions (minus water) from each source indicated in Condition 4 of this Plan Approval and using methods described herein. The report shall list days of non compliance and shall be in a format approved by the Department.
 - e. Knoll shall keep all records and tests generated under this Equivalency permit for a period of two (2) years and make them available to the Department at its request in either hard copy or magnetic media format.
10. General Requirements
- a. Knoll shall not impose conditions upon or otherwise restrict the Department's access to the aforementioned source(s) and/or any associated air cleaning device(s) and shall allow the Department to have access at any time to said source(s) and associated air cleaning device(s) with such measuring and recording equipment, including equipment recording visual observations, as the Department deems necessary and proper for performing its duties and for the effective enforcement of the Air Pollution Control Act.

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The Knoll Group

Conditions (continued):

- b. If at any time it is determined that the operation of the aforementioned source(s) is causing the emission of VOC in excess of that permitted by Chapter 129 of Article III of the Rules and Regulations of the Department of Environmental Resources, or is causing the emission of these contaminants or any other type of air contaminant in excess of the limitations specified in, or established pursuant to, any other applicable rule or regulation contained in Article III, Knoll shall take immediate steps, including the installation of additional air cleaning device(s), if necessary, to reduce the air contaminant emissions to within the applicable limitations.
- c. The company shall immediately notify the Department of any malfunction of the source(s) or associated air cleaning device(s) which results in, or may possibly be resulting in, the emission of air contaminants in excess of the limitations specified in, or established pursuant to, any applicable rule or regulation contained in Article III of the Rules and Regulations of the Department of Environmental Resources.
- d. If at any time Knoll causes, permits or allows any modification (as that term is defined in Chapter 121 of Title 25, the Rules and Regulations of the Department of Environmental Resources) of the aforementioned air contamination sources, the operation and use of which is authorized by this permit, the permit shall be suspended, and the permittee shall not thereafter continue to operate or use said air contamination sources.
- e. If at any time it is determined that the operation of the aforementioned sources is causing the emission of particulate matter in excess of the limitations specified in Section 123.13(c)(1)(i) visible air contaminants in excess of the limitations specified in Section 123.41 or malodorous air contaminants in excess of the limitations specified in Section 123.31, all Sections of Chapter 123 of Article III of the Rules and Regulations of the Department of Environmental Resources, or is causing the emission of any of these or any other type of air contaminant in excess of the limitations specified in, or established pursuant to, any other applicable rule or regulation contained in Article III, immediate steps, including the taken installation of air pollution control equipment if necessary, shall be taken to reduce the emissions to within the applicable limitations.
- f. The Plan Approval and Operating Permit 46-326-001A shall become enforceable by the Environmental Protection Agency upon its approval of the above as a revision to the PA State Implementation Plan.
- g. The expiration date shown on the Plan Approval is for state purposes. For Federal enforcement purposes the Plan Approval shall remain in effect as part of the State Implementation Plan until repealed pursuant to 40 CFR 51.4 and approved by the U.S. Environmental Protection Agency.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
FIELD OPERATIONS - AIR QUALITY CONTROL

OPERATING PERMIT

In accordance with provisions of the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, as amended, and after due consideration of an application received under Chapter 127 of the rules and regulations of the Department of Environmental Resources, the Department hereby issues this permit for the operation of the air contamination source(s) described below.

Permit No.	<u>46-326-001A</u>	Source(s)	<u>Equivalency Compliance Plan</u>
Owner	<u>The Knoll Group</u>	Air	<u>for Wood Cabinet and Furniture</u>
Address	<u>P.O. Box 157</u>		<u>Cleaning Finishing Operations</u>
	<u>East Greenville, PA 18041</u>	Device	<u>described herein</u>
Attention	<u>Mr. Louis Nawatt</u>	Location	<u>Water Street</u>
	<u>Plant Engineer</u>		<u>East Greenville Township</u>
			<u>Montgomery County</u>

This permit is subject to the following conditions:

1. That the source(s) and any associated air cleaning devices are to be:
 - a. operated in such a manner as not to cause air pollution;
 - b. in compliance with the specifications and conditions of the plan approval issued under the same number;
 - c. operated and maintained in a manner consistent with good operating and maintenance practices.
2. This permit is valid only for the specific equipment, location and owner named above.

(SEE THE ATTACHED ADDITIONAL CONDITIONS)

Failure to comply with the conditions placed on this permit is a violation of section 127.25. Violation of this or any other provision of Article III of the rules and regulations of the Department of Environmental Resources will result in suspension or revocation of this permit and/or prosecution under Section 9 of the Air Pollution Control Act.

Issued 03/24/93

N. Rao Kona

Expires 07/04/93 (See condition 11g)

N. RAO KONA

Regional Air Pollution Control Engineer

cc: Central Office
Southeast Regional Office

Operating Permit Conditions
Application No. 46-326-001A
The Knoll Group

Conditions (continued):

3. This Operating Permit is issued to Knoll Group ("Knoll") for their "Equivalency" for compliance with the wood finishing limitations described herein. The Equivalency is defined in 25 PA Code 129.51 as an alternative method of compliance. Knoll's Equivalency meets the requirements of 25 PA Code 129.51. This equivalency applies to all wood finishing operations at the Knoll facility. The finishing operations and coatings used are shown in Appendix II.
4. Definitions

The words and terms found in Appendix I of this Operating Permit, when used in this Operating Permit have the following meanings provided in Appendix I unless the context clearly indicates otherwise.
5. The sources, with their equipment numbers and, their associated type of wood cabinet and furniture finishing surface coating process, are indicated in Appendix II of this Operating Permit. The types of surface coating processes indicated above are defined in Appendix I of this Operating Permit.
6. The Department has determined that the weights of volatile organic compound ("VOC") per volume of coating (minus water) for the specific coating processes indicated below are reasonable available control technology for the Knoll facility.

Table I
"Allowable Content of VOC's"

	<u>Pounds of VOC/ gallon of coating</u>	<u>Kg of VOC/ liter of coating</u>
Clear Topcoat	5.9	.71
Wash Coat	6.5	.78
Final Repair Coat	6.0	.72
Semitransparent Wiping & Glazing Stains	6.4	.77
Semitransparent Spray Stains & Toners	6.8	.82
Opaque Ground Coates & Enamels	3.5	.66
All Other Coatings	7.0	.84
Clear Sealers	6.2	.74

7. Emission Limitation
 - a. The aggregate of the actual VOC emissions (minus water) from each of the sources listed in condition 4 of this Operating Permit shall not exceed 80% of the aggregate of the allowable VOC emissions (minus water) from each of the sources listed in Appendix II of this Operating Permit. Calculations of actual and allowable VOC emissions (minus water) shall utilize the equations shown in Appendix III.
 - b. The actual and allowable VOC emissions (minus water) indicated in Condition 7a of this Operating Permit shall be determined on a daily basis.

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Conditions (continued):

- c. The allowable VOC emissions (minus water) are to be calculated using the allowable VOC content for the appropriate wood furniture finishing surface coating process as indicated in "Allowable Content of VOC's" Table I, in Condition 6 of this Operating Permit.
- d. Knoll shall use 7.36 pounds per gallon as a standard solvent density and a solid basis to adjust the weights of VOCs per gallon of coating (minus water) specified in Table I in Condition 6 of this Operating Permit when calculating the allowable VOC emissions from each source.
- e. Knoll shall use the equations in Appendix III of this Operating Permit to determine the actual and allowable VOC emissions (minus water) from each source.

8. Operating Requirements

- a. Except as modified by this Operating Permit Knoll shall operate the sources subject to this Operating Permit consistent with the compliance plan and supplemental data submitted to the Department on March 12, 1990.
- b. Knoll shall not cause or permit the emission into the outdoor atmosphere of VOCs from the application of wood cabinet and furniture coatings unless the coatings are applied using electrostatic, airless, curtain coating, roll coating, hand roller, hand brush, flow coating, dip coating or high volume-low pressure application equipment. Air atomized sprays may be used to apply other coatings if the volume of the other coatings is less than 5% by volume of the total coating used at the facility or to apply final repair coatings.
- c. Knoll shall comply with the emission limits stipulated in Condition 7 of this Operating Permit on a daily basis.

9. Testing Requirements

- a. Knoll shall use EPA Method 24 as described in 25 PA Code 139 to determine the properties of all coatings used in this Equivalency Permit.
- b. For verification of surface coating properties in this Operating Permit, Knoll shall test at least 10% of each the coatings used each year. Coatings shall be tested randomly using EPA Method 24 and the new values shall be reflected in emission calculations. Knoll shall report the above test results to the Department on a quarterly basis.

10. Reporting and Recordkeeping

- a. Knoll shall record the following information for the sources covered under this Operating Permit:
 - 1. Daily coating quantity in gallons and pounds of coating as applied and,

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Conditions (continued):

2. the coating composition:
 - a. percent solids by volume
 - b. percent solvent by volume
 - c. percent water by volume
 - d. pounds of VOC per gallon minus water
 - e. solvent density
- b. An updated listing of the types and compositions of the coatings and diluents used in the aforementioned sources shall be submitted to the Department upon request.
- c. Knoll shall record on a daily basis the following:
 1. coating density before and after additional diluents
 2. gallons of diluents used
 3. density of the diluents used
 4. weight percent of the organic volatiles in each coating
- d. Knoll shall submit a report to the Department on a quarterly basis summarizing the actual and allowable daily VOC emissions (minus water) from each source indicated in Condition 5 of this Operating Permit and using methods described herein. The report shall list days of non compliance and shall be in a format approved by the Department.
- e. Knoll shall keep all records and tests generated under this Equivalency permit for a period of two (2) years and make them available to the Department at its request in either hard copy or magnetic media format.

11. General Requirements

- a. Knoll shall not impose conditions upon or otherwise restrict the Department's access to the aforementioned source(s) and/or any associated air cleaning device(s) and shall allow the Department to have access at any time to said source(s) and associated air cleaning device(s) with such measuring and recording equipment, including equipment recording visual observations, as the Department deems necessary and proper for performing its duties and for the effective enforcement of the Air Pollution Control Act.

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The Knoll Group

Conditions (continued):

- b. If at any time it is determined that the operation of the aforementioned source(s) is causing the emission of VOC in excess of that permitted by Chapter 129 of Article III of the Rules and Regulations of the Department of Environmental Resources, or is causing the emission of these contaminants or any other type of air contaminant in excess of the limitations specified in, or established pursuant to, any other applicable rule or regulation contained in Article III, Knoll shall take immediate steps, including the installation of additional air cleaning device(s), if necessary, to reduce the air contaminant emissions to within the applicable limitations.
- c. The company shall immediately notify the Department of any malfunction of the source(s) or associated air cleaning device(s) which results in, or may possibly be resulting in, the emission of air contaminants in excess of the limitations specified in, or established pursuant to, any applicable rule or regulation contained in Article III of the Rules and Regulations of the Department of Environmental Resources.
- d. If at any time Knoll causes, permits or allows any modification (as that term is defined in Chapter 121 of Title 25, the Rules and Regulations of the Department of Environmental Resources) of the aforementioned air contamination sources, the operation and use of which is authorized by this permit, the permit shall be suspended, and the permittee shall not thereafter continue to operate or use said air contamination sources.
- e. If at any time it is determined that the operation of the aforementioned sources is causing the emission of particulate matter in excess of the limitations specified in Section 123.13(c)(1)(i) visible air contaminants in excess of the limitations specified in Section 123.41 or malodorous air contaminants in excess of the limitations specified in Section 123.31, all Sections of Chapter 123 of Article III of the Rules and Regulations of the Department of Environmental Resources, or is causing the emission of any of these or any other type of air contaminant in excess of the limitations specified in, or established pursuant to, any other applicable rule or regulation contained in Article III, immediate steps, including the taken installation of air pollution control equipment if necessary, shall be taken to reduce the emissions to within the applicable limitations.
- f. The Plan Approval and Operating Permit 46-326-001A shall become enforceable by the Environmental Protection Agency upon its approval of the above as a revision to the PA State Implementation Plan.
- g. The expiration date shown on the Plan Approval was for state purposes. For Federal enforcement purposes the Operating Permit shall remain in effect as part of the State Implementation Plan until repealed pursuant to 40 CFR 51.4 and approved by the U.S. Environmental Protection Agency.

APPENDIX I

DEFINITIONS

Clear sealers - Liquids applied over stains, toners, and other coatings to protect these coatings from marring during handling and to limit the absorption of succeeding coatings.

Curtain coating - the application of a coating to an object by moving the object through a falling curtain of coating.

Daily - The discrete 24-hour period from 12 p.m. to the next 12 p.m.

Dip coating - the application of a coating by dipping an object into a tank and draining off any excess coating.

Final repair coat - Liquids applied to correct imperfections or damage to the topcoat.

Flow coating - the application of a coating by flowing the coating over an object and completely covering the surface.

High volume-low pressure spray - the application of a coating by means of a gun which operates between 0.1 and 10.0 psig air pressure.

Opaque ground coats and enamels - Colored, opaque, liquid materials applied to wood or wood composition substrates which completely hide the color of the substrate in a single coat.

Other coatings - Cosmetic specialty finishes including padding stains, shading, sap stains, spatter stains, fillers, waxes and inks applied to enhance wood finishes.

Roller coating - the application of a coating to a sheet or strip in which the coating is transferred by a roller or series of rollers.

Semitransparent spray stains - Colored liquids and toners applied to wood to change or to enhance the surface without concealing the surface including, but not limited to, toners and nongrain-raising stains.

Semitransparent wiping and glazing stains - Colored liquids applied to wood to enhance the grain character and to partially fill the porous surface of the wood.

Solvent - Organic compounds which are liquid at standard conditions and which are used as dissolvers, viscosity reducers or cleaning agents.

Surface coating process - The application and solidification of a coating.

Topcoat - A clear liquid which provides the final protective and aesthetic properties to wood finishes.

Transfer efficiency - The ratio of the amount of coating solids deposited onto the surface of a coated part to the amount of coating solids used expressed as a percentage.

Wash coat - Low solids, clear liquids applied over semitransparent stains and toners to protect the color coats and to set the fibers for subsequent sanding or to separate spray stains from wiping stains to enhance color depth.

Wood cabinet and furniture finishing - The application of liquids to products manufactured under the following *Standard Industrial Classification Codes*: 2434 (Wood kitchen cabinets), 2511 (Wood household furniture, except upholstered), 2512 (Wood household furniture, upholstered), 2517 (Wood television, radio, phonograph, and sewing machine cabinets), 2521 (Wood office furniture), 2531 (Public building and related furniture) and 2599 (furniture and fixtures, not elsewhere classified).