CONSTRUCTION PERMIT
OFFICE OF AIR MANAGEMENT

Crystal Valley Homes
10440 County Road 2
Middlebury, Indiana 46540

is hereby authorized to construct

a facility to engage in the construction of manufactured housing, consisting of the following equipment:

(a) an assembly area with a maximum capacity of 2 floors per hour, including surface coating operations with two air assisted airless spray guns, identified as SG-1 and SG-2, and the application of sealants, caulkings, and solvents;

(b) a woodworking facility with a maximum production capacity of 24,690 pounds of lumber per hour, with a baghouse for particulate matter emissions control.

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP-039-8958-00468	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

Construction Conditions

General Construction Conditions

1. That the data and information supplied with the application shall be considered part of this permit. Prior to any proposed change in construction which may affect allowable emissions, the change must be approved by the Office of Air Management (OAM).

2. That this permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

Effective Date of the Permit

3. That pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

4. That pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. That notwithstanding Construction Condition No. 6, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

First Time Operation Permit

6. That this document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) when, prior to start of operation, the following requirements are met:

   (a) The attached affidavit of construction shall be submitted to the Office of Air Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.

   (b) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

   (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

   (d) The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

(e) Pursuant to 326 IAC 2-1-4, the Permittee shall apply for an operation permit renewal at least ninety (90) days prior to the expiration date established in the validation letter. The operation permit issued shall contain as a minimum the conditions in the Operation Conditions section of this permit.

7. That when the facility is constructed and placed into operation the following operation conditions shall be met:

Operation Conditions

General Operation Conditions

1. That the data and information supplied in the application shall be considered part of this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).

2. That the Permittee shall comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder.

Preventive Maintenance Plan

3. That pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plans), the Permittee shall prepare and maintain a preventive maintenance plan, including the following information:

(a) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices.

(b) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions.

(c) Identification of the replacement parts which will be maintained in inventory for quick replacement.

The preventive maintenance plan shall be submitted to IDEM, OAM upon request and shall be subject to review and approval.

Transfer of Permit

4. That pursuant to 326 IAC 2-1-6 (Transfer of Permits):

(a) In the event that ownership of this facility for constructing manufactured housing is changed, the Permittee shall notify OAM, Permit Branch, within thirty (30) days of the change. Notification shall include the date or proposed date of said change.

(b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.

(c) The OAM shall reserve the right to issue a new permit.

Permit Revocation

5. That pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

(a) Violation of any conditions of this permit.

(b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.

(c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.

(d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.

(e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

Availability of Permit

6. That pursuant to 326 IAC 2-1-3(l), the Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM or other public official having jurisdiction.

Malfunction Condition

7. That pursuant to 326 IAC 1-6-2 (Records; Notice of Malfunction):

(a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.

(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

Annual Emission Reporting

8. That pursuant to 326 IAC 2-6 (Emission Reporting), the Permittee must annually submit an emission statement for the source. This statement must be received by April 15 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

The annual emission statement covers the twelve (12) consecutive month time period starting December 1 and ending November 30.

Opacity Limitations

9. That pursuant to 326 IAC 5-1-2 (Visible Emission Limitations) except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

(a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.

(b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

Particulate Matter Limitations

10. That pursuant to 326 IAC 6-3 (Process Operations), the baghouse shall be in operation at all times when the woodworking process is in operation, and shall not exceed the allowable particulate matter (PM) emission rate of 22.1 pounds per hour.

Baghouse Operating Condition

11. That the baghouse shall be operated at all times when the woodworking equipment is in operation.

(a) An inspection shall be performed each calendar quarter of the all the baghouses. Defective bags shall be replaced. A record shall be kept of the results of the inspection and the number of bags replaced.

(b) In the event that a bag's failure has been observed:

(i) The affected compartments will be shut down immediately until the failed units have been replaced.

(ii) Based upon the findings of the inspection, any additional corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

Visible Emission Notations

12. That visible emission notations of all exhaust to the atmosphere from the baghouse shall be performed once per day when exhausting to the atmosphere. A trained employee will record whether emissions are normal or abnormal.

(a) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, 80% of the time, the process is in operation, not counting start up or shut down time.

(b) In the case of batch or discontinuous operation, readings shall be taken during that part of the operation specified in the facility's specific condition prescribing visible emissions.

(c) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal and abnormal visible emissions for that specific process.

(d) The Preventive Maintenance Plan for this facility shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.

Fugitive Dust Emissions

13. That pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), the Permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

14. That pursuant to 326 IAC 6-3 (Process Operations):

(a) The surface coating process shall comply with 326 IAC 6-3-2(c) using the following equation:

$E = 4.10P^{0.67}$ where: E = rate of emission in pounds per hour,
P = process weight in tons per hour, if
P is equal to or less than 60,000 lbs/hr (30 tons/hr)

(b) Additional inspections and preventive measures shall be performed as prescribed in the Preventive Maintenance Plan.

Compliance with this condition is necessary to render the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable.

BACT Condition

15. That pursuant to 326 IAC 8-1-6, the following conditions shall apply:

    (a) The air assisted airless spray applicators shall be used at all times that the unit is operated.

    (b) Spray applicators shall be cleaned with compliant cleaners.

    (c) All operators shall be trained on proper application, cleanup, and equipment use.

    (d) All storage containers used for HAP containing materials shall be kept covered when not in use.

Volatile Organic Compound

16. That pursuant to 326 IAC 2-1-3(i)(8), records of surface coating quantities and organic solvent contents shall be maintained for a minimum period of 36 months and made available upon request of the Office of Air Management (OAM).

Open Burning

17. That the Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

MALFUNCTION REPORT

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR MANAGEMENT
FAX NUMBER - 317 233-5967

This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

THIS FACILITY MEETS THE APPLICABILITY REQUIREMENTS BECAUSE: IT HAS POTENTIAL TO EMIT 25 LBS/HR PARTICULATES ?_____, 100 LBS/HR VOC ?_____, 100 LBS/HR SULFUR DIOXIDE ?_____ OR 2000 LBS/HR OF ANY OTHER POLLUTANT ?_____ EMISSIONS FROM MALFUNCTIONING CONTROL EQUIPMENT OR PROCESS EQUIPMENT CAUSED EMISSIONS IN EXCESS OF APPLICABLE LIMITATION _____.

THIS MALFUNCTION RESULTED IN A VIOLATION OF: 326 IAC _____ OR, PERMIT CONDITION # _____ AND/OR PERMIT LIMIT OF _____

THIS INCIDENT MEETS THE DEFINITION OF 'MALFUNCTION' AS LISTED ON REVERSE SIDE ? Y N

THIS MALFUNCTION IS OR WILL BE LONGER THAN THE ONE (1) HOUR REPORTING REQUIREMENT ? Y N

COMPANY:_____PHONE NO. ( )_____
LOCATION: (CITY AND COUNTY)_____
PERMIT NO. _____ AFS PLANT ID: _____ AFS POINT ID: _____ INSP: _____
CONTROL/PROCESS DEVICE WHICH MALFUNCTIONED AND REASON: _____
_____

DATE/TIME MALFUNCTION STARTED: _____/_____/ 19____ _____ AM / PM

ESTIMATED HOURS OF OPERATION WITH MALFUNCTION CONDITION:_____

DATE/TIME CONTROL EQUIPMENT BACK-IN SERVICE_____/_____/ 19____ _____ AM/PM

TYPE OF POLLUTANTS EMITTED: TSP, PM-10, SO2, VOC, OTHER: _____

ESTIMATED AMOUNT OF POLLUTANT EMITTED DURING MALFUNCTION: _____
_____
__

MEASURES TAKEN TO MINIMIZE EMISSIONS: _____
_____
__

REASONS WHY FACILITY CANNOT BE SHUTDOWN DURING REPAIRS:

CONTINUED OPERATION REQUIRED TO PROVIDE ESSENTIAL* SERVICES: _____
CONTINUED OPERATION NECESSARY TO PREVENT INJURY TO PERSONS:_____
CONTINUED OPERATION NECESSARY TO PREVENT SEVERE DAMAGE TO EQUIPMENT:_____
INTERIM CONTROL MEASURES: (IF APPLICABLE) _____
_____
_____
MALFUNCTION REPORTED BY:
_____TITLE:_____
(SIGNATURE IF FAXED)

MALFUNCTION RECORDED BY: _____DATE:_____TIME:_____

Please note - This form should only be used to report malfunctions applicable to Rule 326 IAC 1-6 and to qualify for the exemption under 326 IAC 1-6-4.

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO2, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

_____

_____

_____

_____

Indiana Department of Environmental Management
Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name:	Crystal Valley Homes
Source Location:	10440 County Road 2, Middlebury, Indiana 46540
County:	Elkhart
Construction Permit No.:	CP-039-8958-00468
SIC Codes:	2451 and 3499
Permit Reviewer:	Nisha Sizemore

The Office of Air Management (OAM) has reviewed an application from Crystal Valley Homes relating to the construction and operation of a facility to engage in the construction of manufactured housing, consisting of the following equipment:

(a) an assembly area with a maximum capacity of 2 floors per hour, including surface coating operations to coat dry wall inside the housing units, with two air assisted airless spray guns, identified as SG-1 and SG-2, utilizing plastic sheets to cover openings and a paper floor covering for overspray control;

(b) a woodworking facility with a maximum production capacity of 24,690 pounds of lumber per hour, with a baghouse for particulate matter emissions control.

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on September 10, 1997.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations (5 pages).

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	537	442
Particulate Matter (PM10)	537	442
Sulfur Dioxide (SO_2)	0.00	0.00
Volatile Organic Compounds (VOC)	76.5	76.5
Carbon Monoxide (CO)	0.50	0.50
Nitrogen Oxides (NO_x)	1.20	1.20
Single Hazardous Air Pollutant (HAP)	4.72	4.72
Combination of HAPs	11.0	11.0

(a) Allowable emissions are determined from the applicability of rule 326 IAC 6-3. See attached spreadsheets for detailed calculations.

(b) The potential emissions before control are less than the allowable emissions, therefore, the potential emissions before control are used for the permitting determination.

(c) Allowable emissions (as defined in the Indiana Rule) of PM, PM10, and VOC are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

(a) Volatile organic compounds (VOC) and oxides of nitrogen are precursors for the formation of ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to the ozone standards. Elkhart County has been designated as maintenance attainment for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Elkhart County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	249
PM10	249
SO_2	0.00
VOC	76.5
CO	0.50
NO_x	1.20
Single HAP	4.72
Combination HAPs	11.0

This new source is **not** a major stationary source because no attainment pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) each criteria pollutant is greater than or equal to 100 tons per year,
(b) a single hazardous air pollutant (HAP) is greater than or equal to 10 tons per year, or
(c) any combination of HAPs is greater than or equal to 25 tons/year.

This new source shall apply for a Part 70 (Title V) operating permit within twelve (12) months after this source becomes subject to Title V.

Federal Rule Applicability

There are no New Source Performance Standards (326 IAC 12) and 40 CFR Part 63 applicable to this facility.

40 CFR Part 63, Subpart JJ, National Emission Standards for Wood Furniture Manufacturing Operations

The emission limits listed in 40 CFR Part 63, Subpart JJ (National Emission Standards for Wood Furniture Manufacturing Operations) are not applicable, because this source is not a major source as defined in 40 CFR Part 63.2. This source is not required to keep records to show that they are a minor source of HAPs, because this source is not applying any coatings to the wood cabinets manufactured at this facility.

State Rule Applicability

326 IAC 2-6 (Emission Reporting)

This facility is subject to 326 IAC 2-6 (Emission Reporting), because the source is located in Elkhart County and emits more than 10 tons per year of VOC. Pursuant to this rule, the owner/operator of this facility must annually submit an emission statement of the facility. The annual statement must be received by April 15 of each year and must contain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 1-6-2 (Records; Notice of Malfunction)

Pursuant to this rule, the following conditions shall apply:

(a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.

(b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.

(c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).

(d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

326 IAC 5-1-2 (Visible Emission Limitations)

Pursuant to this rule, except as provided in 326 IAC 5-1-3 (Temporary Exemptions), the visible emissions shall meet the following:

(a) visible emissions shall not exceed an average of 40% opacity in 24 consecutive readings.

(b) visible emissions shall not exceed 60% opacity for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period.

326 IAC 6-3 (Process Operations)

Pursuant to this rule, the baghouse shall be in operation at all times when the woodworking process is in operation, and shall not exceed the allowable particulate matter (PM) emission rate of 22.1 pounds per hour.

326 IAC 6-4 (Fugitive Dust Emissions)

Pursuant to this rule, the permittee shall be in violation of 326 IAC 6-4 (Fugitive Dust Emissions) if any of the criteria specified in 326 IAC 6-4-2(1) through (4) are violated. Observations of visible emissions crossing the property line of the source at or near ground level must be made by a qualified representative of IDEM. [326 IAC 6-4-5(c)].

326 IAC 6-3 (Process Operations)

Pursuant to this rule, the following conditions shall apply to the surface coating operation:

(a) The plastic sheets to cover all openings and the paper floor covering for particulate matter overspray control shall be in place at all times when the surface coating process is in operation.

(b) The surface coating process shall comply with 326 IAC 6-3-2(c) using the following equation:

$E = 4.10P^{0.67}$ where: E = rate of emission in pounds per hour,
P = process weight in tons per hour, if
P is equal to or less than 60,000 lbs/hr (30 tons/hr)

(c) Daily inspections shall be performed to verify the placement, integrity and particulate loading of the plastic sheets to cover all openings and the paper floor covering.

(d) Additional inspections and preventive measures shall be performed as prescribed in the Preventive Maintenance Plan.

Compliance with this condition is necessary to render the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable.

326 IAC 8-1-6 (BACT)

The surface coating operation is subject to 326 IAC 8-1-6 (BACT) because it has the potential to emit more than 25 tons per year of VOC. Crystal Valley Homes manufactures pre-built homes. The homes are manufactured in a warehouse type building which has two doors that open to allow the frames to be moved in and out of the building. Each door is 20' x 20' (400 ft^2 * 2 = 800 ft^2). There are also two other doors (100 ft^2 * 2 = 200 ft^2), for a total of 1000 ft^2. The BACT is based upon a need of 200 cfm per ft^2, and a control device capable of 200,000 cfm with total enclosure to adequately capture VOC emissions. The BACT reviews the feasibility of utilizing a regenerative thermal oxidizer (RTO), a catalytic incinerator, and a thermal incinerator. The following tables summarize the costs and control efficiencies of each option.

Option	Base Price	Direct Cost	Indirect Cost	Total
RTO	$4,086,000	$1,225,800	$755,910	$6,067,710
Catalytic Incineration	$5,170,500	$1,532,250	$944,888	$7,584,638
Thermal Incineration	$3,570,450	$1,071,135	$660,533	$5,302,118

Option	Direct Cost	Indirect Cost (incl. Cap. Rec.)	Capital Recovery Cost	Total
RTO	$13,100	$1,224,172	$987,492	$1,237,272
Catalytic Incineration	$13,100	$1,544,822	$1,234,365	$1,557,922
Thermal Incineration	$13,100	$1,068,952	$862,895	$1,082,052

Option	Potential Emissions (tons/yr)	Emissions Removed (tons/yr)	Control Efficiency	$/ton removed
RTO	76.3	74.8	98%	$16,722
Catalytic Incineration	76.3	72.5	95%	$21,493
Thermal Incineration	76.3	74.8	98%	$14,646

All of the control devices reviewed were determined to be infeasible because of cost. Pursuant to this rule, the following conditions shall apply as BACT:

(a) The air assisted airless spray applicators shall be used at all times that the unit is operated.

(b) Spray applicators shall be cleaned with compliant cleaners.

(c) All operators shall be trained on proper application, cleanup, and equipment use.

(d) All storage containers used for HAP containing materials shall be kept covered when not in use.

326 IAC 2-1-3(i)(8)

Pursuant to this rule, records of surface coating quantities and organic solvent contents shall be maintained for a minimum period of 36 months and made available upon request of the Office of Air Management (OAM).

326 IAC 4-1 (Open Burning)

Pursuant to this rule the permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6.

326 IAC 1-5-2 (Emergency Reduction Plans; Submission)

The source is subject to this rule because it has the potential to emit PM and PM10 in excess of 100 tons per year. Pursuant to this rule, the following conditions shall apply:

(a) The Permittee shall prepare written emergency reduction plans (ERPs) consistent with safe operating procedures.

(b) These ERPs shall be submitted for approval to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Management
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

within 180 calendar days from the date on which this source commences operation.

(c) If the ERP is disapproved by IDEM, OAM, the Permittee shall have an additional thirty (30) days to resolve the differences and submit an approvable ERP. If after this time, the Permittee does not submit an approvable ERP, IDEM, OAM shall supply such a plan.

(d) These ERPs shall state those actions that will be taken, when each episode level is declared, to reduce or eliminate emissions of the appropriate air pollutants.

(e) Said ERPs shall also identify the sources of air pollutants, the approximate amount of reduction of the pollutants, and a brief description of the manner in which the reduction

will be achieved.

(f) Upon direct notification by IDEM, OAM that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate level. [326 IAC 1-5-3]

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

(a) This new source will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Amendments to Clean Air Act.

(b) See attached spreadsheets for detailed air toxic calculations.

Conclusion

The construction of this facility to engage in the construction of manufactured housing will be subject to the conditions of the attached proposed Construction Permit No. CP-039-8958-00468.

Indiana Department of Environmental Management
Office of Air Management

Addendum to the
Technical Support Document for New Construction and Operation

Source Name:	Crystal Valley Homes
Source Location:	10440 County Road 2, Middlebury, Indiana 46540
County:	Elkhart
Construction Permit No.:	CP-039-8958-00468
SIC Codes:	2451 and 3499
Permit Reviewer:	Nisha Sizemore

On November 10, 1997, the Office of Air Management (OAM) had a notice published in The Elkhart Truth, Elkhart, Indiana, stating that Crystal Valley Homes had applied for a construction permit to construct and operate a facility to engage in the construction of manufactured housing. The notice also stated that OAM proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Upon further review, the OAM has made the following changes to the permit:

1. Pursuant to a decision made by an Indiana Administrative Law Judge, the potential particulate matter emissions from woodworking processes shall be determined after the effect of the baghouse for the purposes of this construction permit. However, the decision made by the Indiana Administrative Law Judge does not have jurisdiction over federal rules. Therefore, when determining whether the source is subject to the requirements of Title V, the potential particulate matter emissions from the woodworking process should be determined before the effect of the baghouse. The potential PM emissions from the woodworking process before the effect of the baghouse are 176 tons per year. Based on the results of a sieve analysis performed by Crystal Valley Homes on a similar process, the potential PM10 emissions from the woodworking process before the effect of the baghouse are 4.71 tons per year.

On December 5, 1997, DECA, Inc., on behalf of Crystal Valley Homes, submitted comments on the proposed construction permit. The summary of the comments and corresponding responses is as follows:

Comment #1

An error was made in the application stating that there are two spray guns. Instead of two spray guns, there will be three spray guns. The two guns identified as SG-1 and SG-2 are used to spray the Glidden coating only. The third gun identified as SG-3 will spray the Vapor Barrier only. These are the only coatings that are applied via a spray application. All other coatings are applied with a putty knife and therefore, should be given a 100% transfer efficiency. Additionally, the application incorrectly stated that the weight percent volatiles (water and organics) for the Glidden coating and the Vapor Barrier were 0.4 and 1.0 respectively. The actual weight percent volatiles (water and organics) are 57.61% and 60.00% respectively. The weight percent water for these coatings are 57.21% and 59.0% respectively. Please amend the calculations and the source description on page 1 of the permit to reflect these changes.

Response #1

The OAM has recalculated the emissions from the surface coating facilities based on these changes. The total potential and allowable emissions from the source are now as follows:

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	191	95.7*
Particulate Matter (PM10)	191	95.7*
Sulfur Dioxide (SO_2)	0.00	0.00
Volatile Organic Compounds (VOC)	78.0	78.0
Carbon Monoxide (CO)	0.50	0.50
Nitrogen Oxides (NO_x)	1.20	1.20
Single Hazardous Air Pollutant (HAP)	4.72	4.72
Combination of HAPs	11.0	11.0

*For the purposes of determining Title V applicability, the source potential PM and PM10 emissions are 270 tons per year. (See explanation on page 1 of this addendum).

(a) Allowable emissions are determined from the applicability of rule 326 IAC 6-3. See attached spreadsheets for detailed calculations.

(b) The potential emissions before control are less than the allowable emissions, therefore, the potential emissions before control are used for the permitting determination.

(c) Allowable emissions (as defined in the Indiana Rule) of PM, PM10, and VOC are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

The source description on page 1 of the permit has also been amended to reflect these changes.

Comment #2

Once the potential emissions have been recalculated based on the changes described in comment #1, the source should not be subject to Title V because the potential emissions of all criteria pollutants are less than 100 tons per year. Please change construction condition 6 (e) to reflect that a Title V operating permit will not need to be submitted by this source. Also, since the potential emissions of all criteria pollutants are less than 100 tons per year, operation condition number 18, requiring an emergency reduction plan should be deleted from the permit.

Response #2

The OAM has recalculated the potential PM and PM10 emissions based on the changes submitted. The changes submitted decrease the potential PM and PM10 emissions from the surface coating operation to 93.8 tons per year. Based on this change, the PM10 emissions from the source are less than 100 tons per year; therefore, the source is not subject to the requirements of Title V. The requirement to submit an emergency reduction plan has been deleted from the permit.

Comment #3

The source has decided that there will be no utilization of plastic sheets or a paper floor covering for overspray control. The surface coating operation complies with all applicable rules and no add-on controls for overspray are necessary for compliance. The following calculation shows that the surface coating operation will comply with 326 IAC 6-3-2 (Process Operations) without the use of controls.

The capacity of the surface coating facility is two floors per hour. Each floor weighs 12,345 pounds. Therefore, the process weight rate is 12.345 tons per hour.

P = 24,690/2000
P = 12.345 tons/hr

$E = (4.10)(12.345)^{0.67}$
E = 22.1 lbs/hr = 96.8 tons/yr

The potential PM emissions from the surface coating operation are 93.83 tons per year, which is less than the allowable PM emissions. Therefore, the surface coating operation complies with this rule without the use of overspray controls.

Please amend the source description on page 1 of the permit to reflect that no overspray controls will be utilized. Also, please delete all of operation condition number 14 except for part (b). Since no overspray controls will be used, a preventive maintenance plan is unnecessary.

Response #3

Since there is no direct exhaust of emissions to the atmosphere, the OAM will not require the use of overspray controls.

Comment #4

Operation condition number 12 requires daily visible emission notations of the exhaust to the atmosphere from the baghouse controlling the woodworking operation. This condition is redundant. Together conditions 9 (Opacity Limitations) and 11 (requiring use of the baghouse and quarterly baghouse inspections) assure compliance with 326 IAC 6-3-2 (Process Operations). Therefore, this condition simply imposes burdensome requirements that are satisfied by previous conditions. Please delete operation condition number 12.

Response #4

The OAM does not believe that these conditions are redundant. Operation condition number 11 requires that the baghouse operate at all times that the woodworking process is in operation and also requires quarterly inspections of the baghouse. Quarterly inspections are not sufficient to assure that the baghouse will operate properly at all times. Compliance with 326 IAC 5-1 (Opacity Limitations) does not assure that the baghouse is in proper working condition, since in most cases visible emissions from a properly working baghouse should be far less than 40% opacity. Visible emission observations are useful for determining if there are any “abnormal” emissions from the baghouse. Such “abnormal” visible emissions may comply with 326 IAC 5-1 (Opacity Limitations) and still indicate a problem with the operation of the baghouse, requiring corrective action to be taken in accordance with the preventive maintenance plan. The use of visible emission notations is useful for indicating potential baghouse problems which can be fixed, therefore preventing a possible violation of either 326 IAC 5-1 (Opacity Limitations) or 326 IAC 6-3-2 (Process Operations).

Mail to: Permit Administration & Development Section
Office Of Air Management
100 North Senate Avenue
P. O. Box 6015
Indianapolis, Indiana 46206-6015

Crystal Valley Homes
10440 County Road 2
Middlebury, Indiana 46540

Affidavit of Construction

I, _____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in _____ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.

2. I hold the position of _____ for _____.
(Title) (Company Name)

3. By virtue of my position with _____,I have personal
(Company Name)
knowledge of the representations contained in this affidavit and am authorized to make these representations on behalf of _____.
(Company Name)

4. I hereby certify that Crystal Valley Homes, 10440 County Road 2, Middlebury, Indiana, 46540, has constructed the woodworking operations and the assembly operations in conformity with the requirements and intent of the construction permit application received by the Office of Air Management on September 10, 1997 and as permitted pursuant to **Construction Permit No. CP-039-8958, Plant ID No. 039-00468** issued on _____

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

_____
Signature

_____
Date

STATE OF INDIANA)
)SS
COUNTY OF _____)

Subscribed and sworn to me, a notary public in and for _____ County and State of Indiana on this _____ day of _____, 19 _____.

My Commission expires: _____

_____
Signature

_____
Name (typed or printed)

two air recirculation heaters
air make-up unit
three office furnaces

Appendix A: Emission Calculations
Natural Gas Combustion Only
MM Btu/hr 0.3 - < 10
Commercial Boiler

Company Name: **Crystal Valley Homes**
Address City IN Zip: **10440 C.R. 2, Middlebury, Indiana 46540**
CP: **039-8958**
Plt ID: **039-00468**
Reviewer: Nisha Sizemore

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
2.9	25.2

	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	11.2	11.2	0.6	94.0	7.3	40.0
Potential Emission in tons/yr	0.1	0.1	0.0	1.2	0.1	0.5

Methodology

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36

Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 27, Flue gas recirculation = ND

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2 as amended 10/96, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

two air recirculation heaters
air make-up unit
three office furnaces

Appendix A: Emission Calculations
Natural Gas Combustion Only
MM Btu/hr 0.3 - < 10
Commercial Boiler

Company Name: **Crystal Valley Homes**
Address City IN Zip: **10440 C.R. 2, Middlebury, Indiana 46540**
CP: **039-8958**
Plt ID: **039-000**
Reviewer: Nisha Sizemore

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
2.9	25.2

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Potential Emission in tons/yr	0.1	0.1	0.0	1.2	0.1	0.5

Methodology

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Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

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two air recirculation heaters
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Natural Gas Combustion Only
MM Btu/hr 0.3 - < 10
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Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2 as amended 10/96, and 1.4-3, SCC #1-03-006-03

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Appendix A: Emissions Calculations
VOC and Particulate
From Surface Coating Operations

Company Name: Crystal Valley Homes
Address City IN Zip: 10440 County Road 2, Middlebury, Indiana 46540
CP: 039-8958
Plt ID: 039-00468
Reviewer: Nisha Sizemore

Material	Density (Lb/Gal)	Weight % Volatile (H20& Organics)	Weight % Water	Weight % Organics	Volume % Water	Volume % Non-Vol (solids)	Gal of Mat (gal/unit)	Maximum (unit/hour)	Pounds VOC per gallon of coating less water	Pounds VOC per gallon of coating	Potential VOC pounds per hour	Potential VOC pounds per day	Potential VOC tons per year	Particulate Potential ton/yr	lb VOC /gal solids	Transfer Efficiency
3M Citrus Base Cleaner	6.54	89.90%	0.0%	89.9%	0.0%	6.50%	0.030000	2.000	5.88	5.88	0.35	8.47	1.55	0.00	90.45	100%
3M Silicone Lubricant	5.34	94.80%	0.0%	94.8%	0.0%	3.15%	0.010000	2.000	5.06	5.06	0.10	2.43	0.44	0.00	160.71	100%
3M 90 High Strength Adhesive	5.84	89.00%	0.0%	89.0%	0.0%	8.30%	0.008000	2.000	5.20	5.20	0.08	2.00	0.36	0.00	62.62	100%
Grundy Cold Cement	8.80	23.30%	0.0%	23.3%	0.0%	68.46%	2.250000	2.000	2.05	2.05	9.23	221.44	40.41	0.00	3.00	100%
Grundy Plastic Cement	9.60	19.70%	0.0%	19.7%	0.0%	70.90%	0.360000	2.000	1.89	1.89	1.36	32.68	5.96	0.00	2.67	100%
Carlon PVC Solvent Cement	7.63	83.10%	0.0%	83.1%	0.0%	16.90%	0.002000	2.000	6.34	6.34	0.03	0.61	0.11	0.00	37.52	100%
Chem Calk 900	10.14	6.10%	0.0%	6.1%	0.0%	91.40%	0.003000	2.000	0.62	0.62	0.00	0.09	0.02	0.00	0.68	100%
Con-Bond 773	6.70	58.40%	0.0%	58.4%	0.0%	13.60%	0.070000	2.000	3.91	3.91	0.55	13.15	2.40	0.00	28.77	100%
Crazy Clean	8.36	7.90%	0.0%	7.9%	0.0%	89.50%	0.001000	2.000	0.66	0.66	0.00	0.03	0.01	0.00	0.74	100%
Cyclo Brake & Parts Cleaner	6.21	74.10%	0.0%	74.1%	0.0%	0.00%	0.001000	2.000	4.60	4.60	0.01	0.22	0.04	0.00		100%
Cyclo Breakaway	6.93	21.80%	0.0%	21.8%	0.0%	78.20%	0.001000	2.000	1.51	1.51	0.00	0.07	0.01	0.00	1.93	100%
DAP Acrylic Latex Caulk	14.04	1.10%	0.0%	1.1%	0.0%	76.10%	0.090000	2.000	0.15	0.15	0.03	0.67	0.12	0.00	0.20	100%
Duraseal Adhesive Sealant	13.60	2.00%	0.0%	2.0%	0.0%	24.80%	0.010000	2.000	0.27	0.27	0.01	0.13	0.02	0.00	1.10	100%
F2100	8.67	0.00%	0.0%	0.0%	0.0%	96.90%	0.000000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
F2100A	10.24	0.00%	0.0%	0.0%	0.0%	50.00%	0.000000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
Floetrol	8.37	0.00%	0.0%	0.0%	0.0%	10.00%	0.001000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
GC-33	8.19	0.00%	0.0%	0.0%	0.0%	58.00%	0.001000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
Glass Cleaner	7.98	23.00%	0.0%	23.0%	0.0%	0.00%	0.060000	2.000	1.84	1.84	0.22	5.29	0.96	0.00		100%
Glidden Paint	10.90	57.61%	57.2%	0.4%	0.0%	24.60%	4.000000	4.000	0.04	0.04	0.69	16.66	3.04	80.96	0.18	75%
Wood Glue GP17	9.40	0.00%	0.0%	0.0%	0.0%	28.00%	3.250000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
Lemon Shine Up	7.30	24.80%	0.0%	24.8%	0.0%	2.90%	0.010000	2.000	1.81	1.81	0.04	0.87	0.16	0.00	62.43	100%
Magic Seal	7.60	37.20%	0.0%	37.2%	0.0%	60.00%	0.283000	2.000	2.83	2.83	1.60	38.40	7.01	0.00	4.71	100%
Mineral Spirits	6.40	100.00%	0.0%	100.0%	0.0%	0.00%	0.110000	2.000	6.40	6.40	1.41	33.79	6.17	0.00		100%
Oatey Flowguard Gold	7.96	49.40%	0.0%	49.4%	0.0%	50.00%	0.063000	2.000	3.93	3.93	0.50	11.89	2.17	0.00	7.86	100%
Panel Hold Adhesive	9.18	20.00%	0.0%	20.0%	0.0%	80.00%	0.067000	2.000	1.84	1.84	0.25	5.90	1.08	0.00	2.30	100%
Panel Hold Cleaner	6.28	15.00%	0.0%	15.0%	0.0%	0.00%	0.001000	2.000	0.94	0.94	0.00	0.05	0.01	0.00		100%
Pemco 5100	9.45	0.00%	0.0%	0.0%	0.0%	100.00%	0.000000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
Rectorseal 5	10.80	23.00%	0.0%	23.0%	0.0%	76.00%	0.010000	2.000	2.48	2.48	0.05	1.19	0.22	0.00	3.27	100%
S-235 Multipurpose Adhesive	10.00	0.00%	0.0%	0.0%	0.0%	62.00%	0.000000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
Sheetrock Joint Topping Compound	14.22	0.10%	0.0%	0.1%	0.0%	43.40%	6.350000	2.000	0.01	0.01	0.18	4.33	0.79	0.00	0.03	100%
Speed Enamel	7.80	86.00%	0.0%	86.0%	0.0%	9.00%	0.008000	2.000	6.71	6.71	0.11	2.58	0.47	0.00	74.53	100%
Spred-Mor 606	8.30	0.00%	0.0%	0.0%	0.0%	100.00%	0.000000	2.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100%
Stain	10.70	8.00%	0.0%	8.0%	0.0%	30.30%	0.011000	2.000	0.86	0.86	0.02	0.45	0.08	0.00	2.83	100%
Vapor Barrier	9.80	60.00%	59.0%	1.0%	0.0%	30.60%	1.500000	2.000	0.10	0.10	0.29	7.06	1.29	12.88	0.32	75%
Weld On 773	7.22	80.00%	0.0%	80.0%	0.0%	20.00%	0.060000	2.000	5.78	5.78	0.69	16.63	3.04	0.00	28.88	100%
State Potential Emissions			**Add worst case coating to all solvents**								**17.79**	**427.08**	**77.94**	**93.83**		
Emissions after controls														**18.77**		

METHODOLOGY

Pounds of VOC per Gallon Coating less Water = (Density (lb/gal) * Weight % Organics) / (1-Volume % water)
Pounds of VOC per Gallon Coating = (Density (lb/gal) * Weight % Organics)
Potential VOC Pounds per Hour = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr)
Potential VOC Pounds per Day = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (24 hr/day)
Potential VOC Tons per Year = Pounds of VOC per Gallon coating (lb/gal) * Gal of Material (gal/unit) * Maximum (units/hr) * (8760 hr/yr) * (1 ton/2000 lbs)
Particulate Potential Tons per Year = (units/hour) * (gal/unit) * (lbs/gal) * (1- Weight % Volatiles) * (1-Transfer efficiency) *(8760 hrs/yr) *(1 ton/2000 lbs)
Pounds VOC per Gallon of Solids = (Density (lbs/gal) * Weight % organics) / (Volume % solids)
Total = Worst Coating + Sum of all solvents used

Appendix A: Emissions Calculations
HAPs
From Surface Coating Operations

Company Name: Crystal Valley Homes
Address City IN Zip: 10440 County Road 2, Middlebury, Indiana 46540
CP: 039-8958
Plt ID: 039-00468
Reviewer: Nisha Sizemore

Material	Density (Lb/Gal)	Gal of Mat (gal/unit)	Maximum (unit/hour)	Weight % Methanol	Weight % MEK	Weight % Ethyl Benzene	Weight % Glycol Ethers	Weight % MDI	Weight % Toluene	Weight % Hexane	Weight % Xylene	Weight % Methylene Chloride	Weight % Toluene Diisocyanate	Methanol Emissions (ton/yr)	MEK Emissions (ton/yr)	Ethyl Benzene Emissions (ton/yr)	Glycol Emissions (ton/yr)	MDI Emissions (ton/yr)	Toluene Emissions (ton/yr)	Hexane Emissions (ton/yr)	Xylene Emissions (ton/yr)	Methylene Chloride Emissions (ton/yr)	Toluene Diisocyanate Emissions (ton/yr)
3M Citrus Base Cleaner	6.54	0.030000	2.000	0.00%	0.00%	0.00%	14.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00	0.00
3M Silicone Lubricant	5.34	0.010000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3M 90 High Strength Adhesive	5.84	0.008000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grundy Cold Cement	8.80	2.250000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grundy Plastic Cement	9.60	0.360000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carlon PVC Solvent Cement	7.63	0.002000	2.000	0.00%	48.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chem Calk 900	10.14	0.003000	2.000	0.00%	0.00%	0.90%	0.00%	0.00%	0.00%	0.00%	4.40%	0.00%	0.50%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Con-Bond 773	6.70	0.070000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	18.60%	8.80%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.76	0.36	0.00	0.00	0.76
Crazy Clean	8.36	0.001000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyclo Brake & Parts Cleaner	6.21	0.001000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	30.00%	0.00%	0.00%	25.90%	0.00%	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.02
Cyclo Breakaway	6.93	0.001000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DAP Acrylic Latex Caulk	14.04	0.090000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Duraseal Adhesive Sealant	13.60	0.010000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F2100	8.67	0.000000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
F2100A	10.24	0.000000	2.000	0.00%	0.00%	0.00%	0.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Floetrol	8.37	0.001000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GC-33	8.19	0.001000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Glass Cleaner	7.98	0.060000	2.000	0.80%	0.00%	0.00%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.03	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00
Glidden Paint	10.90	4.000000	4.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wood Glue GP17	9.40	3.250000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lemon Shine Up	7.30	0.010000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Magic Seal	7.60	0.283000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	25.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.71	0.00	0.00
Mineral Spirits	6.40	0.110000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oatey Flowguard Gold	7.96	0.063000	2.000	0.00%	5.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Panel Hold Adhesive	9.18	0.067000	2.000	0.00%	0.00%	0.00%	0.00%	15.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.00	0.00
Panel Hold Cleaner	6.28	0.001000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pemco 5100	9.45	0.000000	2.000	0.00%	0.00%	0.00%	0.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rectorseal 5	10.80	0.010000	2.000	0.00%	0.00%	0.00%	23.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
S-235 Multipurpose Adhesive	10.00	0.000000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sheetrock Joint Topping Compound	14.22	6.350000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed Enamel	7.80	0.008000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	13.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.07
Spred-Mor 606	8.30	0.000000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stain	10.70	0.011000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vapor Barrier	9.80	1.500000	2.000	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Weld On 773	7.22	0.060000	2.000	0.00%	65.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00	2.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total State Potential Emissions														0.03	2.75	0.00	0.63	0.81	0.85	0.36	4.72	0.01	0.85
Totals HAPs	11.02																						

Appendix A: Emissions Summary

Company Name: Crystal Valley Homes
Address City IN Zip: 10440 C.R. 2, Middlebury, Indiana 46540
CP: 039-8958
Plt ID: 039-00468
Reviewer: Nisha Sizemore

Potential Emissions

	PM	PM10	SO2	NOx	VOC	CO	HAPs
surface coating	93.83	93.83	0.00	0.00	77.94	0.00	11.02
woodworking	4.71	4.71	0.00	0.00	0.00	0.00	0.00
natural gas combustion	0.10	0.10	0.00	1.20	0.10	0.50	0.00
totals (tons/yr)	98.64	98.64	0.00	1.20	78.04	0.50	11.02

Allowable Emissions

	PM	PM10	SO2	NOx	VOC	CO	HAPs
surface coating	93.83	93.83	0.00	0.00	77.94	0.00	11.02
woodworking	96.73	96.73	0.00	0.00	0.00	0.00	0.00
natural gas combustion	0.10	0.10	0.00	1.20	0.10	0.50	0.00
totals (tons/yr)	190.66	190.66	0.00	1.20	78.04	0.50	11.02

Company Name:	**Crystal Valley Homes**
Address City IN Zip:	**10440 C.R. 2, Middlebury, Indiana 46540**
CP:	**039-8958**
Plt ID:	**039-00468**
Reviewer:	Nisha Sizemore

PM/PM10 emissions from woodworking

Note: only 0.163% of the total weight of raw lumber is collected as sawdust

Capacity: 24690 lbs lumber/hr

Baghouse efficiency: 99%

Emissions Before Controls

sawdust = lumber capacity x 0.163% =	40.24	lbs/hr =	176.27	tons/yr
PM = sawdust x 12.68% =	5.10	lbs/hr =	22.35	tons/yr
PM10 = sawdust x 2.67% =	1.07	lbs/hr =	4.71	tons/yr

Emissions After Controls

PM = lumber capacity x 0.163% x (1-99%) =	0.40	lbs/hr =	1.76	tons/yr
PM = sawdust x 12.68% x (1-99%) =	0.05	lbs/hr =	0.22	tons/yr
PM10 = sawdust x 2.67% x (1-99%) =	0.01	lbs/hr =	0.05	tons/yr

Calculation of Allowable Particulate Emissions (326 IAC 6-3-2)

E = 4.1 P ^0.67, where P is the process weight rate in tons per hour.

P =	12.345	tons/hr		
E =	22.08	lbs/hr =	96.73	tons/yr