San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

FEB 2 2 2019

Trevor Hearty
Kingspan Insulated Panels
2000 Morgan Road
Modesto, CA 95358

Re: Notice of Preliminary Decision - Authority to Construct
Facility Number: N-8131
Project Number: N-1182961

Dear Mr. Hearty:

Enclosed for your review and comment is the District's analysis of Kingspan Insulated Panels's application for an Authority to Construct for polyisocyanurate (PIR) insulated panel manfacturing operation consisting of a pentamat, double belt laminator, panel cutting saws served by a dust collector, pressurized pentane storage tank, and associated pumps and conveyors, at 2000 Morgan Road in Modesto, CA.

The notice of preliminary decision for this project will be published approximately three days from the date of this letter. After addressing all comments made during the 30-day public notice period, the District intends to issue the Authority to Construct. Please submit your written comments on this project within the 30-day public comment period, as specified in the enclosed public notice.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact Mr. Kai Chan of Permit Services at (209) 557-6451.

Sincerely,

for Arnaud Marjollet
Director of Permit Services

AM:kc

Enclosures

cc: Tung Le, CARB (w/ enclosure) via email

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

www.valleyair.org www.healthyairliving.com

San Joaquin Valley Air Pollution Control District

Authority to Construct Application Review

Polyisocyanurate (PIR) Insulated Panel Manufacturing Operation

Facility Name:	Kingspan Insulated Panels	Date:	February 21, 2019
Mailing Address:	2000 Morgan Road Modesto, CA 95358	Engineer:	Kai Chan
		Lead Engineer:	James Harader
Contact Person:	Bryton Dias		
Telephone:	(209) 758-8821		
Cell:	(209) 499-7193		
E-Mail:	bryton.dias@kingspan.com		
Application #(s):	N-8131-3-0		
Project #:	N-1182961		
Deemed Complete:	October 2, 2018		

I. Proposal

Kingspan Insulated Panels has requested an Authority to Construct (ATC) permit for the installation of a Polyisocyanurate (PIR) insulated panel manufacturing operation consisting of a pentamat, double belt laminator, panel cutting saws served by a dust collector, pressurized pentane storage tank, and associated pumps and conveyors. The facility currently utilizes hydrofluorocarbons (HFCs) such as R-134a and R-245fa refrigerants as a blowing agent to manufacture the foam insulation in their panels. However, the USEPA under the "Significant New Alternatives Policy" (SNAP) is phasing out the use of these refrigerants by January 1, 2020 due to its high global warming potential (GWP). The facility is now requesting a District permit for a new PIR insulated foam manufacturing line, which utilizes pentane as a blowing agent in their foam insulation. The draft ATC(s) are included in Appendix A.

II. Applicable Rules

Rule 2020	Exemptions (12/17/92)
Rule 2201	New and Modified Stationary Source Review Rule (2/18/16)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4202	Particulate Matter-Emission Rate (12/17/92)
Rule 4623	Storage of Organic Liquids (5/19/05)
Rule 4682	Polystyrene, Polyethylene, and Polypropylene Products Manufacturing (12/15/11)

CH&SC 41700 Health Risk Assessment
CH&SC 42301.6 School Notice

Public Resources Code 21000-21177: California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387: CEQA Guidelines

III. Project Location

The facility is located at 2000 Morgan Road in Modesto, CA. The equipment is not located within 1,000 feet of the outer boundary of a K-12 school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to this project.

IV. Process Description

Kingspan Insulated Panels is a manufacturer of rigid PIR insulated foam sandwich panels used in the building industry typically for wall and roof insulation purposes.

The PIR foam core material consists of mixing methylene diphenyl diisocyanate (MDI), polyol, catalysts, additives, and pentane (blowing agent) in the proposed pentamat. From the pentamat, the mixture is continuously poured onto the proposed continuous laminator, where it expands and solidifies between two metal sheets to form the PIR panel. The formed panels are cut to length, cooled, stacked, wrapped, and stored until shipping to their customers.

Operating Schedule and Processing Rates:

The operating schedule and processing rates are proposed by the applicant as indicated in the table below:

ATC Permit Number	Operating Schedule	Processing Rate
N-8131-3-0	16 hr/day, 5 days/week, and 260 days/year	Pentane usage rates of 396.83 lb/hour (based on a usage rate of 50 grams/sec.) and 250,000 lb/year.

V. Equipment Listing

N-8131-3-0: POLYISOCYANURATE (PIR) INSULATED PANEL MANUFACTURING OPERATION CONSISTING OF A PENTAMAT, DOUBLE BELT LAMINATOR, PANEL CUTTING SAWS SERVED BY A 3,000 CFM COLZANI IMPIANTI DUST COLLECTOR, PRESSURIZED PENTANE STORAGE TANK, AND ASSOCIATED PUMPS AND CONVEYORS.

Equipment List for ATC Permit N-8131-3-0		
Equipment Description	Quantity	Electric Motor HP Rating
Pressurized Above-Ground Pentane Storage Tank.	0	0
Pentamat with a pump powered by a 14.75 hp electric motor.	1	14.75
Pentamat Laydown Exhaust Fan powered by a 5.9 hp electric motor.	1	5.9
ISO/Poly High Pressure Pump powered by a 15 hp electric motor.	1	15.0
40 Meter Long Double Belt Laminator powered by a 53.6 hp electric motor.	1	53.6
Exist Conveyor powered by a 5.4 hp electric motor.	1	5.4
Metal Sheet Decoilers powered by a 9.4 hp electric motor.	1	9.4
Metal Cut-Off Saw powered by a 46.9 hp electric motor.	1	46.9
Robor S.R.L Band Saw powered by a 40.2 hp electric motor	1	40.2
Robor S.R.L. Circular Rebate Saw powered by a 5.36 hp electric motor.	1	5.36
Dust Collector Fan Motor powered by a 25 hp electric motor.	1	25.0
Total Electric Motors HP Rating:		221.5

Dust Collector serving the Processing Saws	
Manufacturer	Colzani Impianti
Filter Cleaning Method	Mechanical Shaker
Bag Type	Polyester
Total Filter Area	1,248 ft^2
Air Flow Rate	3,000 cfm

VI. Emission Control Technology Evaluation

Enclosed pressurized storage tanks with pressure valves will be used for the storage of pentane, MDI, and polyol to prevent emissions from the storage of these chemicals. Additionally, the use of pentane instead of hydrofluorocarbon (HFC) refrigerants as a blowing agent is to comply with USEPA's future phase out of HFC refrigerants due its high global warming potential (GWP).

PM_{10} emissions from the proposed panel cutting saws will be controlled by the proposed duct collector. The expected control efficiency of the dust collector for removal of PM_{10} is 99%.

Filter Area: 1,248 ft^2
Max Air Flow: 3,000 cfm
Filtering Velocity: 3,000 cfm ÷ 1,248 ft^2 = 2.4 ft/min

The air/cloth ratio is below the typical values found in the Air Pollution Engineering Manual (Reference from Air Pollution Engineering Manual, Air & Waste Management Association –1992 Table 5, page 128). Therefore, the dust collector is operating within the recommended parameters.

VII. General Calculations

A. Assumptions

1. VOC will be emitted from the usage of Pentane from the mixing, pouring, and forming of the PIR panels in the pentamat and laminator.
2. PM_{10} will be emitted from the cutting of the manufactured PIR panels.
3. 100% of the particulate matter emitted from the dust collector will be PM_{10}.
4. The dust collector will control 99% of the PM_{10} emissions.

B. Emission Factors

VOC Emissions from the Usage of Pentane:

The applicant is proposing an emission factor of 4.5% of the pentane used will be emitted based on testing at Kingspan Insulated Panels facility in Deland Florida (2010). An initial source test at this facility is being proposed by the applicant to verify this emission factor.

EF_{VOC} = 0.045 lb-VOC/lb-Pentane Used

PM_{10} Emissions from the Cutting of the PIR Panels:

The applicant is proposing a dust collector exhaust PM_{10} emission concentration of 0.00022 gr/dscf based on the manufacturer's guarantee for their filters. Therefore:

EF_{PM10} = 0.00022 gr/dscf

C. Calculations

1. Pre-Project Potential to Emit (PE1)

Since this is a new emissions unit, PE1 = 0 for all pollutants.

2. Post Project Potential to Emit (PE2)

Daily and Annual VOC Emissions from the Usage of Pentane:

The daily PE2 will be calculated based on the applicants proposed maximum pentane usage rate of 396.83 lb/hour and operating 16 hours/day. The annual PE2 will be calculated based on the applicants proposed annual pentane usage rate of 250,000 lb/year. Therefore:

Daily $PE2_{VOC}$ = 396.83 lb-Pentane Usage/hour × 16 hours/day
× 0.045 lb-VOC/lb-Pentane Usage
= **285.7 lb-VOC/day**

Annual $PE2_{VOC}$ = 250,000 lb-Pentane Usage/year × 0.045 lb-VOC/lb-Pentane Usage
= **11,250 lb-VOC/year**

PM_{10} Emissions from the Panel Cutting Saws served by a Dust Collector:
The daily and annual potential to emit for the panel cutting saws are based on operating at a maximum of 16 hr/day (960 min/day) and 260 days/year (249,600 min/year). Therefore:

Daily $PE2_{PM10}$ = $EF2_{PM10}$ (gr/dscf) × Operating Time (min/day) × Air Flow Rate (dscf/min) × 1 lb/7,000 gr
= 0.00022 gr/dscf × 960 min/day × 3,000 dscf/min × 1 lb/7,000 gr
= **0.1 lb-PM_{10}/day**

Annual $PE2_{PM10/Filter\ Bag}$ = $EF2_{PM10}$ (gr/dscf) × Operating Time (min/year) × Air Flow Rate (dscf/min) × 1 lb/7,000 gr
= 0.00022 gr/dscf × 249,600 min/day × 3,000 dscf/min × 1 lb/7,000 gr
= **24 lb-PM_{10}/year**

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to District Rule 2201, the SSPE1 is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of Emission Reduction Credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions (AER) that have occurred at the source, and which have not been used on-site.

Since this is a new facility, there are no valid ATCs, PTOs, or ERCs at the Stationary Source; therefore, the SSPE1 is equal to zero.

4. Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to District Rule 2201, the SSPE2 is the PE from all units with valid ATCs or PTOs at the Stationary Source and the quantity of ERCs which have been banked since September 19, 1991 for AER that have occurred at the source, and which have not been used on-site.

SSPE2 (lb/year)					
Permit Unit	**NO_X**	**SO_X**	**PM_{10}**	**CO**	**VOC**
N-8131-3-0 (ATC Permit)	***0***	***0***	***24***	***0***	***11,250***
SSPE2	**0**	**0**	**0**	**0**	**11,250**

5. Major Source Determination

Rule 2201 Major Source Determination:

Pursuant to District Rule 2201, a Major Source is a stationary source with a SSPE2 equal to or exceeding one or more of the following threshold values. For the purposes of determining major source status the following shall not be included:

- any ERCs associated with the stationary source
- Emissions from non-road IC engines (i.e. IC engines at a particular site at the facility for less than 12 months)
- Fugitive emissions, except for the specific source categories specified in 40 CFR 51.165

Rule 2201 Major Source Determination (lb/year)						
	NO_X	SO_X	PM_{10}	$PM_{2.5}$	CO	VOC
SSPE1	0	0	0	0	0	0
SSPE2	0	0	24	24	0	11,250
Major Source Threshold	20,000	140,000	140,000	140,000	200,000	20,000
Major Source?	No	No	No	No	No	No

Note: PM2.5 assumed to be equal to PM10.

As seen in the table above, the facility is not an existing Major Source and is not becoming a Major Source as a result of this project.

Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(iii). Therefore the PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

PSD Major Source Determination (tons/year)						
	NO_2	VOC	SO_2	CO	PM	PM_{10}
Estimated Facility PE before Project Increase	0	0	0	0	0	0
PSD Major Source Thresholds	250	250	250	250	250	250
PSD Major Source?	No	No	No	No	No	No

As shown above, the facility is not an existing PSD major source for any regulated NSR pollutant expected to be emitted at this facility.

6. Baseline Emissions (BE)

The BE calculation (in lb/year) is performed pollutant-by-pollutant for each unit within the project to calculate the QNEC, and if applicable, to determine the amount of offsets required.

Pursuant to District Rule 2201, BE = PE1 for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

otherwise,

BE = Historic Actual Emissions (HAE), calculated pursuant to District Rule 2201.

Since this is a new emissions unit, BE = PE1 = 0 for all pollutants.

7. SB 288 Major Modification

SB 288 Major Modification is defined in 40 CFR Part 51.165 as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."

Since this facility is not a major source for any of the pollutants addressed in this project, this project does not constitute an SB 288 major modification.

8. Federal Major Modification

District Rule 2201 states that a Federal Major Modification is the same as a "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

Since this facility is not a Major Source for any pollutants, this project does not constitute a Federal Major Modification.

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to any pollutant regulated under the Clean Air Act, except those for which the District has been classified nonattainment. The pollutants which must be addressed in the PSD applicability determination for sources located in the SJV and which are emitted in this project are VOC emissions (See 52.21 (b) (23) definition of significant).

I. Project Emissions Increase - New Major Source Determination

The post-project potentials to emit from all new and modified units are compared to the PSD major source thresholds to determine if the project constitutes a new major source subject to PSD requirements.

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). The PSD Major Source threshold is 250 tpy for any regulated NSR pollutant.

The estimated project annual PE for VOC and PM_{10} are based on the Annual PE2 totals as determined in Section VII.C.2.

Project Annual PE_{VOC} = 11,250 lb-VOC/year × 1 ton/2,000 lb = 5.625 ton-VOC/year
Project Annual PE_{PM10} = 24 lb-PM_{10}/year × 1 ton/2,000 lb = 0.012 ton-PM_{10}/year

PSD Major Source Determination: Potential to Emit (tons/year)						
	NO_2	VOC	SO_2	CO	PM	PM_{10}
Total PE from New and Modified Units	0	5.625	0	0	0.012	0.012
PSD Major Source threshold	250	250	250	250	250	250
New PSD Major Source?	No	No	No	No	No	No

Note: PM assumed to be equal to PM10.

As shown in the table above, the potential to emit for the project, by itself, does not exceed any PSD major source threshold. Therefore Rule 2410 is not applicable and no further analysis is required.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix F.

VIII. Compliance Determination

Rule 2020 Exemptions

This rule specifies emissions units that are not required to obtain an Authority to Construct (ATC) or Permit to Operate (PTO). This rule also specifies the recordkeeping requirements to verify the exemption and outlines the compliance schedule for emissions units that lose the exemption after installation.

Per Section 6.6.9, the storage of liquefied gases in unvented (except for emergency pressure relief valves) pressure vessels are not required to obtain an Authority to Construct (ATC) or Permit to Operate (PTO). The proposed storage tanks for pentane, MDI, and polyol are enclosed pressurized storage tanks with emergency pressure relief valves. Therefore, these storage tanks are exempt from District permits per Rule 2020, Section 6.6.9.

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

Pursuant to District Rule 2201, Section 4.1, BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis. Unless specifically exempted by Rule 2201, BACT shall be required for the following actions*:

a. Any new emissions unit with a potential to emit exceeding two pounds per day,
b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an Adjusted Increase in Permitted Emissions (AIPE) exceeding two pounds per day, and/or
d. Any new or modified emissions unit, in a stationary source project, which results in an SB 288 Major Modification or a Federal Major Modification, as defined by the rule.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units – PE > 2 lb/day

As seen in Section VII.C.2 above, the applicant is proposing to install a new PIR insulated panel manufacturing operation with a PE greater than 2 lb/day only for VOC. BACT is triggered only for VOC since the PE is greater than 2 lb/day.

b. Relocation of emissions units – PE > 2 lb/day

As discussed in Section I above, there are no emissions units being relocated from one stationary source to another; therefore, BACT is not triggered.

c. Modification of emissions units – AIPE > 2 lb/day

As discussed in Section I above, there are no modified emissions units associated with this project. Therefore, BACT is not triggered.

d. SB 288/Federal Major Modification

As discussed in Sections VII.C.7 and VII.C.8 above, this project does not constitute an SB 288 and/or Federal Major Modification for any pollutant. Therefore BACT is not triggered for any pollutant.

2. BACT Guideline

The District's current BACT Clearinghouse Guideline 4.8.22 applies to PIR free rise and restrained rise insulated board manufacturing lines (Refer to Appendix B). However, the facility this BACT guideline was based upon ceased operations in December of 2007 and the USEPA is phasing out the use of current utilized HFC refrigerants due to its high global warming potential. Therefore, a project specific BACT analysis will be performed for this PIR insulated board manufacturing operation.

3. Top-Down BACT Analysis

Per Permit Services Policies and Procedures for BACT, a Top-Down BACT analysis shall be performed as a part of the application review for each application subject to the BACT requirements pursuant to the District's NSR Rule.

Pursuant to the attached Top-Down BACT Analysis (refer to **Appendix C**), BACT has been satisfied with the following:

VOC: Use of Pentane or equivalent blowing agent with a low global warming potential and a maximum VOC emission rate of 0.045 lb-VOC/lb-blowing agent used.

B. Offsets

1. Offset Applicability

Pursuant to District Rule 2201, Section 4.5, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the SSPE2 equals or exceeds the offset threshold levels in Table 4-1 of Rule 2201.

The SSPE2 is compared to the offset thresholds in the following table.

Offset Determination (lb/year)					
	NO_X	SO_X	PM_{10}	CO	VOC
SSPE2	0	0	24	0	11,250
Offset Thresholds	20,000	54,750	29,200	200,000	20,000
Offsets triggered?	No	No	No	No	No

2. Quantity of Offsets Required

As seen above, the SSPE2 is not greater than the offset thresholds for all the pollutants; therefore offset calculations are not necessary and offsets will not be required for this project.

C. Public Notification

1. Applicability

Pursuant to District Rule 2201, Section 5.4, public noticing is required for:

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications,
b. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
c. Any project which results in the offset thresholds being surpassed,
d. Any project with an SSIPE of greater than 20,000 lb/year for any pollutant, and/or
e. Any project which results in a Title V significant permit modification

a. New Major Sources, Federal Major Modifications, and SB 288 Major Modifications

New Major Sources are new facilities, which are also Major Sources. As shown in Section VII.C.5 above, the SSPE2 is not greater than the Major Source threshold for any pollutant. Therefore, public noticing is not required for this project for new Major Source purposes.

As demonstrated in Sections VII.C.7 and VII.C.8, this project does not constitute an SB 288 or Federal Major Modification; therefore, public noticing for SB 288 or Federal Major Modification purposes is not required.

b. PE > 100 lb/day

The PE2 for this new unit is compared to the daily PE Public Notice thresholds in the following table:

PE > 100 lb/day Public Notice Thresholds			
Pollutant	**PE2 (lb/day)**	**Public Notice Threshold**	**Public Notice Triggered?**
NO_X	0.0	100 lb/day	No
SO_X	0.0	100 lb/day	No
PM_{10}	0.1	100 lb/day	No
CO	0.0	100 lb/day	No
VOC	285.7	100 lb/day	Yes

Therefore, public noticing for PE > 100 lb/day purposes is required.

c. Offset Threshold

Pursuant to District Rule 2201, Section 4.5.3, offset requirements shall be triggered on a pollutant-by-pollutant basis, unless exempted pursuant to Section 4.6, offsets shall be required if the post-project Stationary Source Potential to Emit (SSPE2) equals or exceeds specific threshold levels.

The SSPE1 and SSPE2 are compared to the offset thresholds in the following table.

Offset Thresholds				
Pollutant	**SSPE1 (lb/year)**	**SSPE2 (lb/year)**	**Offset Threshold**	**Public Notice Required?**
NO_X	0	0	20,000 lb/year	No
SO_X	0	0	54,750 lb/year	No
PM_{10}	0	24	29,200 lb/year	No
CO	0	0	200,000 lb/year	No
VOC	0	11,250	20,000 lb/year	No

As detailed above, there were no thresholds surpassed with this project; therefore public noticing is not required for offset purposes.

d. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a SSIPE of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE = SSPE2 – SSPE1. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table.

SSIPE Public Notice Thresholds					
Pollutant	**SSPE2 (lb/year)**	**SSPE1 (lb/year)**	**SSIPE (lb/year)**	**SSIPE Public Notice Threshold**	**Public Notice Required?**
NO_X	0	0	0	20,000 lb/year	No
SO_X	0	0	0	20,000 lb/year	No
PM_{10}	24	0	24	20,000 lb/year	No
CO	0	0	0	20,000 lb/year	No
VOC	11,250	0	11,250	20,000 lb/year	No

As demonstrated above, the SSIPEs for all pollutants were less than 20,000 lb/year; therefore public noticing for SSIPE purposes is not required.

e. Title V Significant Permit Modification

Since this facility does not have a Title V operating permit, this change is not a Title V significant Modification, and therefore public noticing is not required.

2. Public Notice Action

As discussed above, public noticing is required for this project for VOC emissions in excess of 100 lb/day. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

DELs and other enforceable conditions are required by Rule 2201 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. The DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

Proposed Rule 2201 (DEL) Conditions:

- *The total quantity of Pentane used shall not exceed 6,349 pounds in any one day[1] and 250,000 pounds in any one calendar year. [District Rule 2201]*
- *VOC emissions from the manufacturing of Polyisocyanurate (PIR) insulated panels shall not exceed 0.045 lb/lb-pentane used. [District Rule 2201]*
- *PM_{10} emissions from the dust collector shall not exceed 0.00022 gr/dscf. [District Rule 2201]*

E. Compliance Assurance

1. Source Testing

District Policy 1705 (10/9/97) section II step 4 requires initial source testing for non-combustion equipment served by a cyclone or baghouse with expected PM_{10} emissions of 30 pounds per day or greater. Pursuant to section VII.C.2 of this document, the PM_{10} emissions from this permit unit from the proposed duct collector will not exceed 30 pounds per day; therefore, initial source testing will not be required.

District Policy APR 1705 (Source Testing Frequency - 10/9/97) Section I.D. (Reliability of Emission Factors) requires initial source testing to verify emission factors for propose emission factors that are new or are different from those typically used for similar sources. The applicant is proposing a new emission factor, based on the quantity of pentane used

[1] Daily emission limit is based on the following: 396.83 lb/hr × 16 hr/day = 6,349 lb/day

during the manufacturing process and the resulting pentane contained in the finished product. Therefore, a one-time initial source test is required to verify the proposed VOC emission factor.

The following permit conditions will be placed on the Authority to Construct (ATC) permit to enforce the source testing requirements of this section:

- *Source testing to measure the VOC (as pentane) concentration contained within a representative sample of the manufactured PIR insulated panel product to verify the proposed VOC emissions rate of 0.045 lb-VOC/lb-pentane used, shall be conducted within 120 days after initial startup. [District Rule 2201]*

- *Source testing to measure the VOC (as pentane) concentration of a representative sample of the manufactured PIR insulated panel product shall be conducted using EPA Method 25D or other source test method(s) pre-approved by the District in writing. [District Rule 2201]*

2. Monitoring

No monitoring is required to demonstrate compliance with Rule 2201.

3. Recordkeeping

Recordkeeping is required to demonstrate compliance with the offset, public notification and daily emission limit requirements of Rule 2201. The following condition(s) are listed on the ATC permit and Permit to Operate (PTO):

- *The permittee shall maintain a daily record of the total quantity of pentane used by this equipment (in pounds). [District Rules 1070 and 2201]*

- *The permittee shall maintain a record of the cumulative annual quantity of pentane used by this equipment (in pounds). The cumulative totals shall be updated at least monthly. [District Rules 1070 and 2201]*

- *{4636} Records of all maintenance of the dust collector, including all change outs of filter media, shall be maintained. [District Rule 2201]*

- *All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 1070 and 2201]*

4. Reporting

No reporting is required to demonstrate compliance with Rule 2201.

F. Ambient Air Quality Analysis (AAQA)

Section 4.14 of District Rule 2201 requires that an AAQA be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to **Appendix E** of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_x, CO, and SO_x. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, or SO_x.

The proposed location is in a non-attainment area for the state's PM_{10} as well as federal and state $PM_{2.5}$ thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM_{10} and $PM_{2.5}$.

Rule 2410 Prevention of Significant Deterioration

As shown in Section VII.C.9 above, this project does not result in a new PSD major source or PSD major modification. No further discussion is required.

Rule 2520 Federally Mandated Operating Permits

Since this facility's potential emissions do not exceed any major source thresholds of Rule 2201, this facility is not a major source, and Rule 2520 does not apply.

Rule 4001 New Source Performance Standards (NSPS)

This rule incorporates NSPS from Part 60, Chapter 1, Title 40, Code of Federal Regulations (CFR); and applies to all new sources of air pollution and modifications of existing sources of air pollution listed in 40 CFR Part 60. However, no subparts of 40 CFR Part 60 apply to PIR insulated panel manufacturing operations.

Rule 4002 National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This rule incorporates NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, CFR and the NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, CFR; and applies to all sources of hazardous air pollution listed in 40 CFR Part 61 or 40 CFR Part 63. However, no subparts of 40 CFR Part 61 or 40 CFR Part 63 apply to PIR insulated panel manufacturing operations.

Rule 4101 Visible Emissions

Rule 4101 states that no person shall discharge into the atmosphere emissions of any air contaminant aggregating more than 3 minutes in any hour which is as dark as or darker than Ringelmann 1 (or 20% opacity). Opacity is expected to be less than 20% provided that the equipment is maintained and operated properly. The following condition will be listed on the ATC permit and PTO to ensure compliance with the visible emission requirement:

- *{15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]*

Per District Policy SSP 1005, the visible emissions from processes served by a baghouse or dust collector shall not equal or exceed 5% opacity for a period or periods aggregating more than three (3) minutes in any one (1) hour. If the equipment is properly maintained this condition should not be exceeded. The following condition will be listed on the ATC permit and PTO to ensure compliance with this visible emissions requirement:

- *Visible emissions from the exhaust of the dust collector shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]*

Rule 4102 Nuisance

Rule 4102 prohibits discharge of air contaminants which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations, provided the equipment is well maintained. Therefore, compliance with this rule is expected. The following condition will be listed on the ATC permit and PTO to ensure compliance:

- *{98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]*

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – *Risk Management Policy for Permitting New and Modified Sources* specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

An HRA is not required for a project with a total facility prioritization score of less than one. According to the Technical Services Memo for this project (Appendix E), the total facility prioritization score including this project was greater than one. Therefore, an HRA was required to determine the short-term acute and long-term chronic exposure from this project.

The cancer risk for this project is shown below in the following table:

RMR Summary						
Units	**Prioritization Score**	**Acute Hazard Index**	**Chronic Hazard Index**	**Maximum Individual Cancer Risk**	**T-BACT Required?**	**Special Permit Requirements?**
Unit 3-0 (PIR Insulated Panel Manufacturing)	51.8	0.08	0.04	3.02×10^{-6}	Yes	No
Project Totals	51.8	0.08	0.04	3.02×10^{-6}		
Facility Totals	>1	0.08	0.04	3.02×10^{-6}		

Discussion of T-BACT

BACT for toxic emission control (T-BACT) is required if the cancer risk exceeds one in one million. As demonstrated above, T-BACT is required for this project because the HRA indicates that the risk is not above the District's thresholds for triggering T-BACT requirements.

For this project T-BACT is triggered for PM_{10} from the sawing of the carbon alloy and stainless metal sheets used in the manufacturing of the PIR insulated foam panels. T-BACT is satisfied with BACT for PM_{10} (Refer to Appendix D), which is the use of a fabric filter dust collector with a capture and control efficiency of 99%. The applicant is proposing to use a fabric filter dust collector with a control efficiency of 99%; therefore, compliance with the District's Risk Management Policy is expected.

District policy APR 1905 also specifies that the increase in emissions associated with a proposed new source or modification not have acute or chronic indices, or a cancer risk greater than the District's significance levels (i.e. acute and/or chronic indices greater than 1 and a cancer risk greater than 20 in a million). As outlined by the HRA Summary in Appendix F of this report, the emissions increases for this project was determined to be less than significant.

Rule 4201 Particulate Matter Concentration

Rule 4201 requires that particulate matter emissions shall not exceed 0.1 grain per cubic foot of gas at dry standard condition.

The PM_{10} concentration from the proposed dust collector is limited to 0.00022 grains/dscf. Therefore, the particulate matter concentration from the proposed dust collector should be less than the maximum allowable 0.1 grains/dscf.

Rule 4202 Particulate Matter – Emission Rate

The purpose of this rule is to limit particulate matter emissions by establishing allowable emission rates. Per section 4.1, particulate matter emissions from any source operation shall not exceed the allowable hourly emission rate as calculated using the following applicable formulas:

$E_{Max.} = 3.59 \times P^{0.62}$ - if $P \leq 30$ tons/hr
$E_{Max.} = 17.31 \times P^{0.16}$ - if $P > 30$ tons/hr

Where, $E_{Max.}$ = Emissions in lb/hr
P = Process weight rate in tons/hr

According to the applicant, the panel processing rate through the saws is 92 tons/day when operating 16 hr/day; therefore, the process rate is:

$P = 92$ tons/day $\div$ 16 hr/day = 5.75 ton/hr

Since the process rate for this unit is less than 30 tons/hr, the applicable formula for the maximum allowable hourly emission rate is:

$E_{Max.} = 3.59\ P^{0.62}$

It is assumed that there is 1.0 lb-PM_{10} per lb of PM emitted.

Permit Number	$E_{Proposed}$ (lb-PM/hr)	P (ton/hr)	$E_{Max.}$ (lb-PM/hr)
N-8131-3-0	0.0063[1]	5.75	10.6

Since the proposed PM Emission rate is less than the allowable maximum emission rate, the proposed operation is expected to operate in compliance with this rule.

Rule 4623 Storage of Organic Liquids

The purpose of this rule is to limit VOC emissions from the storage of organic liquids. This rule applies to any tank with a capacity of 1,100 gallons or greater in which any organic liquid is placed, held, or store.

According to Section 4.1.1. of this rule, the provisions of this rule shall not apply to pressure vessels. The proposed 12,000 gallon pentane storage tank is a pressure vessel that is capable of maintaining working pressures sufficient to prevent organic liquid loss or VOC loss to the atmosphere at all times. Therefore, the proposed pentane storage tank is exempt from the requirements of this rule.

Rule 4682 Polystyrene, Polyethylene, and Polypropylene Products Manufacturing

According to Section 2.0 of this rule, the provisions of this rule shall apply to any manufacturing, processing, and storage of products composed of polystyrene, polyethylene, or polypropylene. This proposed operation is for the manufacturing, processing, and storage of products composed of polyisocryanurate. Therefore, this rule is not applicable and no further discussion is required.

California Health & Safety Code 42301.6 (School Notice)

The District has verified that this site is not located within 1,000 feet of a school. Therefore, pursuant to California Health and Safety Code 42301.6, a school notice is not required.

[1] Based on the assumption that the material PM10 fraction is 1.0 lb-PM10/lb-PM, therefore:
$E_{Proposed}$ = 0.1 lb-PM10/day ÷ (16 hr/day × 1.0 lb-PM10/lb-PM) = 0.0063 lb-PM/hr

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

District is a Responsible Agency

It is determined that another agency has prepared an environmental review document for the project. The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CEQA Guidelines §15381). As a Responsible Agency, the District is limited to mitigating or avoiding impacts for which it has statutory authority. The District does not have statutory authority for regulating greenhouse gas emissions. The District has determined that the applicant is responsible for implementing greenhouse gas mitigation measures, if any, imposed by the Lead Agency.

District CEQA Findings

The City of Ceres (City) is the public agency having principal responsibility for approving the project. As such, the City served as the Lead Agency (CCR §15367). In approving the project, the Lead Agency prepared and adopted a Mitigated Negative Declaration. The Lead agency filed a Notice of Determination, stating that the environmental document was adopted pursuant to the provisions of CEQA and concluding that the project would not have a significant effect on the environment.

The District is a Responsible Agency for the project because of its discretionary approval power over the project via its Permits Rule (Rule 2010) and New Source Review Rule (Rule 2201), (CCR §15381). As a Responsible Agency the District complies with CEQA by considering the environmental document prepared by the Lead Agency, and by reaching its own conclusion on whether and how to approve the project (CCR §15096).

The District has considered the Lead Agency's environmental document. Furthermore, the District has conducted an engineering evaluation of the project, this document, which demonstrates that Stationary Source emissions from the project would be below the District's thresholds of significance for criteria pollutants. Thus, the District finds that through a combination of project design elements, compliance with applicable District rules and regulations, and compliance with District air permit conditions, project specific stationary source emissions will have a less than significant impact on air quality. The District does not have authority over any of the other project impacts and has, therefore, determined that no additional findings are required (CEQA Guidelines §15096(h)).

Indemnification Agreement/Letter of Credit Determination

According to District Policy APR 2010 (CEQA Implementation Policy), when the District is the Lead or Responsible Agency for CEQA purposes, an indemnification agreement and/or a letter of credit may be required. The decision to require an indemnity agreement and/or a letter of credit is based on a case-by-case analysis of a particular project's potential for litigation risk, which in turn may be based on a project's potential to generate public concern, its potential for significant impacts, and the project proponent's ability to pay for the costs of litigation without a letter of credit, among other factors.
The criteria pollutant emissions and toxic air contaminant emissions associated with the proposed project are not significant, and there is minimal potential for public concern for this particular type of facility/operation. Therefore, an Indemnification Agreement and/or a Letter of Credit will not be required for this project in the absence of expressed public concern.

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Pending a successful NSR Public Noticing period, issue ATC N-8131-3-0 subject to the permit conditions on the attached draft ATC in **Appendix A**.

X. Billing Information

Annual Permit Fees			
Permit Number	**Fee Schedule**	**Fee Description**	**Annual Fee**
N-8131-3-0	3020-01-E	Total Electric Motors: 221.5 hp	$473.00

Appendixes

A: Draft ATC Permit N-8131-3-0
B: District BACT Clearinghouse Guideline 4.8.22
C: Top–Down BACT Analysis for VOC Emissions
D: Top-Down BACT Analysis for PM_{10} Emissions
E: RMR and AAQA Summary
F: Quarterly Net Emissions Change

APPENDIX A
Draft Authority to Construct (ATC) Permit N-8131-3-0

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

PERMIT NO: N-8131-3-0

ISSUANCE DATE: DRAFT

LEGAL OWNER OR OPERATOR: KINGSPAN INSULATED PANELS
MAILING ADDRESS: 2000 MORGAN RD
MODESTO, CA 95358

LOCATION: 2000 MORGAN ROAD
MODESTO, CA 95358

EQUIPMENT DESCRIPTION:
POLYISOCYANURATE (PIR) INSULATED PANEL MANUFACTURING OPERATION CONSISTING OF A PENTAMAT, DOUBLE BELT LAMINATOR, PANEL CUTTING SAWS SERVED BY A 3,000 CFM COLZANI IMPIANTI DUST COLLECTOR, PRESSURIZED PENTANE STORAGE TANK, AND ASSOCIATED PUMPS AND CONVEYORS.

CONDITIONS

1. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. {15} No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
3. Visible emissions from the exhaust of the duct collector shall not equal or exceed 5% opacity for a period or periods aggregating more than three minutes in any one hour. [District Rule 2201]
4. All equipment shall be maintained in good operating condition and shall be operated in a manner to minimize emissions of air contaminants into the atmosphere. [District Rule 2201]
5. The dust collector exhaust fan shall be switched on prior to the start-up of any panel cutting equipment. [District Rule 2201]
6. Replacement filters numbering at least 10% of the total number of filters in the dust collector using each type of filter shall be maintained on the premises. [District Rule 2201]
7. Material removed from the dust collector shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201]
8. The dust collector cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201]

CONDITIONS CONTINUE ON NEXT PAGE

YOU MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Arnaud Marjollet, Director of Permit Services

N-8131-3-0 Feb 21 2019 11:04AM – CHANK Joint Inspection NOT Required

9. The total quantity of Pentane used shall not exceed 6,349 pounds in any one day and 250,000 pounds in any one calender year. [District Rule 2201]
10. VOC emissions from the manufacturing of Polyisocyanurate (PIR) insulated panels shall not exceed 0.045 lb/lb-pentane used. [District Rule 2201]
11. PM10 emissions from the dust collector shall not exceed 0.00022 gr/dscf. [District Rule 2201]
12. Source testing to measure the VOC (as Pentane) concentration contained within a representative sample of the manufactured PIR insulated panel product to verify the proposed VOC emissions rate of 0.045 lb-VOC/lb-pentane used, shall be conducted within 120 days after initial startup. [District Rule 2201]
13. Source testing to measure the VOC (as Pentane) concentration of a representative sample of the manufactured PIR insulated panel product shall be conducted using EPA Method 25D or other source test method(s) pre-approved by the District in writing. [District Rule 2201]
14. {109} Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]
15. {110} The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
16. The permittee shall maintain a daily record of the total quantity of Pentane used by this equipment (in pounds). [District Rules 1070 and 2201]
17. The permittee shall maintain a record of the cumulative annual quantity of Pentane used by this equipment (in pounds). The cumulative totals shall be updated at least monthly. [District Rules 1070 and 2201]
18. {4636} Records of all maintenance of the dust collector, including all change outs of filter media, shall be maintained. [District Rule 2201]
19. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 1070 and 2201]

APPENDIX B
District BACT Clearinghouse Guideline 4.8.22

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 4.8.22*

Last Update: 09/10/2003

Polyisocyanurate Free Rise and Restrained Rise Lines

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
VOC	1. Capture and carbon adsorption with 90% capture and 95% control of the manufacturing emissions	1. Non-VOC blowing agents 2. Capture and carbon adsorption with 100% capture and 95% control of the pour heads, the oven/laminator and the trimming and sawing equipment 3. Capture and carbon adsorption with 100% capture and 95% control of the pour heads and the trimming and sawing equipment 4. Capture and carbon adsorption with 95% capture and 95% control of the pour heads, the oven/laminator and the trimming and sawing equipment	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a State Implementation Plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source**

APPENDIX C
Top-Down BACT Analysis for VOC Emissions

Top-Down BACT Analysis for the Proposed PIR Insulated Panel Manufacturing Operation

1. BACT analysis for VOC Emissions:

a. Step 1 - Identify all control technologies

I. Survey of BACT Guidelines:

The following published BACT Guidelines were consulted to determine potential control technologies for this class and category of operation:

- The U.S. Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse,
- California Air Resources Board (CARB) BACT Clearinghouse,
- California Air Pollution Control Officers Association (CAPCOA) BACT Clearinghouse,
- South Coast Air Quality Management District (SCAQMD),
- Sacramento Metropolitan Air Quality Management District (SMAQMD),
- Bay Area Air Quality Management District (BAAQMD),
- San Diego Air Quality Management District (SDAQMD),
- Santa Barbara County Air Pollution Control District (SBCAPCD), and
- San Joaquin Valley Air Pollution Control District (SJVAPCD)

The U. S. Environmental Protection Agency's (USEPA) RACT/BACT/LAER Clearinghouse (RBLC) database was searched using SIC Code 3086 for plastic foam products. A total of seven facilities were found during this search. However, none of these facilities are for the manufacturing of rigid polyisocyanurate (PIR) insulated foam panels.

The California Air Resources Board's (CARB) BACT Clearinghouse database was also searched using SIC Code 3086 for plastic foam products. A total of two facilities were found during this search. However, none of these facilities are for the manufacturing of rigid polyisocyanurate (PIR) insulated foam panels.

The SCAQMD, SMAQMD, BAAQMD, SDAQMD, and SBCAPCD BACT clearinghouses were searched for rigid polyisocyanurate (PIR) insulated foam panels, and no applicable BACT guidelines were found.

The SJVAPCD BACT Clearinghouse guideline 4.8.22 lists the following VOC control technologies:

Achieved-in-Practice:
Capture and carbon adsorption with 90% capture and 95% control of the manufacturing emissions.

Technologically Feasible:

1. Non-VOC blowing agents.
2. Capture and carbon adsorption with 100% capture and 95% control of the pour heads, the oven/laminator and the trimming and sawing equipment.
3. Capture and carbon adsorption with 100% capture and 95% control of the pour heads and trimming and sawing equipment.
4. Capture and carbon adsorption with 95% capture and 95% control of the pour heads, oven/laminator and the trimming and sawing equipment.

Alternate Basic Equipment:
None

II. Survey of Applicable Rules and Regulations:

SCAQMD Rule 1175 (Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products), was reviewed for possible VOC emission control requirements. Section (c)(1)(A) requires that polyurethane operations use non-VOC blowing agents. Section (c)(4) requires operations not compliant with this section to install an approved emission control system. An approved emission control system is defined as a system that provides 90% capture of the manufacturing emissions and 95% reduction of the captured emissions. Per discussions with SCAQMD chemical facilities permitting staff, they currently do not have permitted facilities for rigid polyisocyanurate (PIR) insulated foam panel manufacturing that are currently utilizing non-VOC blowing agents or utilizing an approved emission control system for compliance with this rule.

There are currently no applicable SJVAPCD rules that apply to the manufacturing of rigid polyisocyanurate (PIR) insulated foam panel.

III. Survey of Permitted Operations:

SJVAPCD Permits:

The Dow Chemical Company (PTO N-190-1-1 and '-2-2) was issued permits in 2003 for two rigid polyisocyanurate (PIR) insulated foam panel manufacturing lines. These operations were served by a shared carbon adsorption system. However, the permits were cancelled in 2007 and this facility is no longer operating.

No permits were found from any of the other above referenced agencies for rigid polyisocyanurate (PIR) insulated foam panel manufacturing operations.

IV. List of Control Options:

Based on the survey of the above BACT determinations, rules/regulations, and permitted operations, the following control options will be considered for this proposed operation:

- Use of non-VOC containing blowing agents.
- VOC capture and carbon adsorption with 100% capture and 95% control of the manufacturing emissions.
- VOC capture and carbon adsorption with 90% capture and 95% control of the manufacturing emissions.

- Use of Pentane or equivalent blowing agent with a low global warming potential and a maximum VOC emission rate of 0.045 lb-VOC/lb-blowing agent used.

b. Step 2 – Eliminate technologically infeasible options

Non-VOC blowing agents:
The facility currently utilizes hydrofluorocarbons (HFCs) such as R-134a and R-245fa refrigerants as a blowing agent to manufacture the foam insulation in their panels, which are non-VOC blowing agents. However, the USEPA under the "Significant New Alternatives Policy" (SNAP) is phasing out the use of these refrigerants by January 1, 2020 due to its high global warming potential (GWP). According to the facility there are currently no non-VOC blowing agent substitutes that will provide the required insulating properties for their manufactured PIR insulated board products. Pentane is currently the only blowing agent substitute, which will provide the required insulating properties of their manufactured PIR insulated board products. Therefore, the use of non-VOC blowing agents is currently technologically infeasible for this operation and will be eliminated as a technologically feasible option for this project.

c. Step 3 – Rank remaining options by control effectiveness

Ranking of VOC Control Technologies		
Control Method	Control Efficiency (%)	Achieved in Practice
1. VOC capture and carbon adsorption with 100% capture and 95% control of the manufacturing emissions or other equivalent control achieving device or technology.	95.0[3]	No
2. VOC capture and carbon adsorption with 90% capture and 95% control of the manufacturing emissions or other equivalent control achieving device or technology.	85.5[4]	No
3. Use of Pentane or equivalent blowing agent with a low global warming potential and a maximum VOC emission rate of 0.045 lb-VOC/lb-blowing agent used[5].	0	No

[3] Carbon adsorption for VOC control is a common control technique. It is District practice to assume that a VOC control efficiency of 95% is readily achievable. Therefore, with 100% capture efficiency: Overall Control Efficiency = (1.0 × 0.95) × 100 = 95.0%
[4] Carbon adsorption for VOC control is a common control technique. It is District practice to assume that a VOC control efficiency of 95% is readily achievable. Therefore, with 90% capture efficiency: Overall Control Efficiency = (0.9 × 0.95) 100 = 85.5%
[5] Proposed by the applicant using no control equipment and based on the quantity of pentane retained in the final product.

d. Step 4 - Cost Effectiveness Analysis

A cost-effective analysis will now be performed for the control technologies specified above, since none of these control technologies have been eliminated.

Cost Effective Threshold:

The District's BACT Policy establishes annual cost thresholds for imposed control based upon the amount of pollutants abated by the controls. If the cost of control is at or below the threshold, the control is considered cost effective. If the cost exceeds the threshold, it is not cost effective and the control is not required. The cost effective threshold for VOC is $17,500/ton.

Industry Standard Emissions:

The uncontrolled VOC emissions will be calculated utilizing the industry standard VOC content blowing agents and the applicant's proposed maximum annual usage rate of 250,000 lb-blowing agents/year. With the elimination of non-VOC blowing agents such as R-134a and R-245fa refrigerants, these type of facilities will be switching to pentane as a blowing agent. Therefore, pentane will be assumed to be the industry standard blowing agent used for this type of operation. Based on the information provided by the applicant, only 4.5% of pentane used as the blower agent will be emitted from the production of the PIR insulated panels. The pentane is contained within the manufactured insulated panels to provide the required insulating properties.

Industry Standard VOC Emissions = 250,000 lb-blowing agent/year
× 0.045 lb-VOC/lb-blowing agent
= **11,250 lb-VOC/year**

1st Most Effective Control Option – VOC Capture and Carbon Adsorption with 100% Capture and 95% Control:

Annualized Capital Investment:

Carbon adsorption occurs when the air containing VOC mixture is blown through a carbon canister and the VOC mixture is adsorbed onto the surface of the cracks in the activated carbon particles.

Kyle Jansen (Monroe Environmental) on Sept. 12, 2018 provided a budgetary cost for a fixed-bed carbon adsorption system consisting of a 14,000 lb capacity system operating with a flow rate of 5,500 scfm with a maximum pentane loading of 8.03%. The quoted system cost is approximately $155,000. The quoted price does not include sales tax, freight expenses, installation, operational, and maintenance costs.

The following capital cost for a VOC capture and carbon adsorption system is based on an EPA document titled "Chapter 1 - Carbon Absorbers" by John L. Sorrels, Air Economics Group, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Table 1.3, May 2017.

Capital Cost for VOC Capture and Carbon Adsorption	
Direct Equipment Costs	
Fixed-Bed Carbon Adsorption System Cost, A	$155,000
Sales tax, Modesto, 0.07875 x (A)	$12,206
Freight, 0.05 x (A)	$7,750
Total Purchased Equipment Cost, B	$174,956
Direct Installation Costs	
Foundations & supports, 0.08 x (B)	$13,996
Handling & erection, 0.14 x (B)	$24,494
Electrical, 0.04 x (B)	$6,998
Piping, 0.02 x (B)	$3,499
Insulation for duct work, 0.01 x (B)	$1,750
Painting, 0.01 x (B)	$1,750
Total Direct installation costs	$52,487
Total Direct Costs	**$227,443**
Indirect Installation Costs	
Engineering, 0.1 x (B)	17,496
Construction & field expenses, 0.05 x (B)	8,748
Contractor fees, 0.1 x (B)	17,496
Start-up, 0.02 x (B)	3,499
Contingencies, 0.03 x (B)	5,249
Total Indirect Installation Costs	**$52,488**
Total Capital Costs	**$279,931**

Annualized Capital Investment = Total Capital Cost × Amortization Factor

Amortization Factor = $\left[\frac{0.1(1.1)^{10}}{(1.1)^{10}-1}\right]$ = 0.163 per District policy, amortizing over 10 years at 10%

Therefore,

Annualized Capital Investment = $279,931 × 0.163 = **$45,629/year**

Annual Operating and Maintenance Costs for a Carbon Adsorption System:

The total annual operating and maintenance costs are estimated based on an EPA document titled "Chapter 1 - Carbon Absorbers" by John L. Sorrels, Air Economics Group, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Table 1.6, May 2017, and information provided by the applicant. Please note the annual operating costs did not include the replacement costs of the activated carbon, which is typically replaced once every 5 years.

Annual Operating Costs for VOC Capture and Carbon Adsorption			
Direct Annual Labor Costs			
Item	Cost Factor		Actual Cost
Operating Labor	$18/hour, 1.5 hour per shift, 2 shifts per day, 260 days per year		$14,040/yr
Supervision	15% of operating labor		$2,106/yr
Maintenance Labor	$20/hour, 1.5 hour per shift, 2 shifts per day, 260 days per year		$15,600/yr
Total Labor Costs			$31,746/yr
Direct Annual Utility Costs			
Item	Quantity Required	Cost Factor	Actual Cost
Electric	131,000 kW-hr	$0.067/kW-hr	$8,777/yr
Steam	262,080 lb-Steam/yr	$6/1,000 lb-Steam	$1,572/yr
Cooling Water	3,995,000 Gallons/yr	$0.2/1,000-Gallons	$799/yr
Total Utility Costs			$11,148/yr
Indirect Annual Costs			
Item	Cost Factor		Actual Cost
Overhead	0.6 of Operating Labor, Supervision, and Maintenance Labor Costs		$6,689/yr[5]
Administrative Charges	0.02 of Total Capital Costs		$5,599/yr
Property Taxes	0.01 of Total Capital Costs		$2,799/yr
Insurance	0.01 of Total Capital Costs		$2,799/yr
Total Indirect Annual Costs			$17,886/yr
Total Annual Operating Costs			**$60,780/year[6]**

Emission Reductions:

Assuming that the carbon adsorption system captures 100% of the VOC emissions from the PIR manufacturing operation and the carbon adsorption system controls those VOC emissions with an efficiency of 95%, the amount of VOC emissions reduced is equal to the following:

VOC Reductions = Industry Standard VOC Emissions (lb/year) × Control Efficiency (%) × 1 ton/2,000 lb
= 11,250 lb/year × 0.95 × 1 ton/2,000 lb
= **5.344 ton-VOC/year**

Cost of VOC Capture and Carbon Adsorption:

Cost of VOC reduction is calculated as follow:

[5] Overhead = 0.6 × ($8,777/yr + $1,572/yr + $799/yr) = $6,689/yr
[6] Total Annual Operating Costs = Total Labor Cost + Total Utility Cost + Total Indirect Annual Costs = $31,746/yr + $11,148 + $17,886 = $60,780/yr

Cost of VOC reduction = (Total Annualized Capital Investment ($/year)
+ Total Annual Operating Costs ($/year))
÷ Annual Emission Reduction (ton/year)
= ($45,629/year + $60,780/year) ÷ 5.344 ton-VOC/year
= **$19,912/ton-VOC**

The cost of VOC reductions considering the control equipment installation, operating, and maintenance costs is more than the threshold limit of $17,500/ton. Therefore, the VOC capture and carbon adsorption with 100% capture and 95% control is not cost-effective and is being removed from consideration at this time.

2nd Most Effective Control Option – VOC Capture and Carbon Adsorption with 90% Capture and 95% Control:

Annualized Capital Investment:

The annualized capital investment for a VOC capture and carbon adsorption with 90% capture and 95% control will be the same as for above calculated 100% capture and carbon adsorption with 95% control. The same sized carbon absorption system would also be used. Therefore:

Annualized Capital Investment = **$45,629/year**

Annual Operating and Maintenance Costs for a Carbon Adsorption System:

The annual operating and maintenance costs for a VOC capture and carbon adsorption with 90% capture and 95% control will be the same as for above calculated 100% capture and carbon adsorption with 95% control. The same sized carbon absorption system would also be used. Therefore:

Total Annual Operating and Maintenance Costs = **$60,780/year**

Emission Reductions:

Assuming that the carbon adsorption system captures 90% of the VOC emissions from the PIR manufacturing operation and the carbon adsorption system controls those VOC emissions with an efficiency of 95%, the amount of VOC emissions reduced is equal to the following:

VOC Reductions = Industry Standard VOC Emissions (lb/year) × Control Efficiency (%)
× 1 ton/2,000 lb
= 11,250 lb/year × 0.855 × 1 ton/2,000 lb
= **4.809 ton-VOC/year**

Cost of VOC Capture and Carbon Adsorption:

Cost of VOC reduction is calculated as follow:

Cost of VOC reduction = (Total Annualized Capital Investment ($/year)
+ Total Annual Operating Costs ($/year))
÷ Annual Emission Reduction (ton/year)
= ($45,629/year + $60,780/year) ÷ 4.809 ton-VOC/year
= **$22,127/ton-VOC**

The cost of VOC reductions considering the control equipment installation, operating, and maintenance costs is more than the threshold limit of $17,500/ton. Therefore, the VOC capture and carbon adsorption with 90% capture and 95% control is not cost-effective and is being removed from consideration at this time.

3rd Most Effective Control Option – Use of Pentane or Equivalent Blowing Agent with a Low Global Warming Potential and a Maximum VOC Emission Rate of 0.045 lb-VOC/lb-Blowing Agent Used:

The applicant has proposed the only control option remaining under consideration. Therefore, a cost effectiveness analysis is not required.

e. Step 5 - Select BACT

The most effective VOC control technology not eliminated in Steps 2 and 4 above is the use of pentane or equivalent blowing agent with a low global warming potential and a maximum VOC emission rate of 0.045 lb-VOC/lb-blowing agent used. The applicant is proposing this VOC control option. Therefore, BACT for VOC is being proposed.

APPENDIX D
Top-Down BACT Analysis for PM_{10} Emissions

Top-Down BACT Analysis for the Proposed PIR Insulated Panel Sawing Operation

1. BACT analysis for PM_{10} Emissions:

a. Step 1 - Identify all control technologies

I. Survey of BACT Guidelines:

The following published BACT Guidelines were consulted to determine potential control technologies for this class and category of operation:

- The U.S. Environmental Protection Agency (USEPA) RACT/BACT/LAER Clearinghouse,
- California Air Resources Board (CARB) BACT Clearinghouse,
- California Air Pollution Control Officers Association (CAPCOA) BACT Clearinghouse,
- South Coast Air Quality Management District (SCAQMD),
- Sacramento Metropolitan Air Quality Management District (SMAQMD),
- Bay Area Air Quality Management District (BAAQMD),
- San Diego Air Quality Management District (SDAQMD),
- Santa Barbara County Air Pollution Control District (SBCAPCD), and
- San Joaquin Valley Air Pollution Control District (SJVAPCD)

The U. S. Environmental Protection Agency's (USEPA) RACT/BACT/LAER Clearinghouse (RBLC) database was searched using SIC Code 3086 for plastic foam products and SIC Code 3444 for sheet metalwork. A total of seven facilities were found during this search. However, none of these facilities are for the manufacturing of rigid polyisocyanurate (PIR) insulated foam panels or for the sawing of metal parts/products.

The California Air Resources Board's (CARB) BACT Clearinghouse database was also searched using SIC Code 3086 for plastic foam products and SIC Code 3444 for sheet metalwork. A total of two facilities were found during this search. However, none of these facilities are for the manufacturing of rigid polyisocyanurate (PIR) insulated foam panels or for the sawing of metal parts/products.

The SCAQMD, SMAQMD, BAAQMD, SDAQMD, and SBCAPCD BACT clearinghouses were searched for rigid polyisocyanurate (PIR) insulated foam panels and for metal sawing operations. However, no applicable BACT guidelines were found.

The SJVAPCD BACT Clearinghouse guideline 8.3.19 lists the following PM_{10} control technology for metal grinding operations:

Achieved-in-Practice:
99% capture and control (fabric filter dust collector or equivalent).

Technologically Feasible:
No listed options.

Alternate Basic Equipment:
No listed options.

II. Survey of Applicable Rules and Regulations:

SCAQMD Rule 1175 (Control of Emissions from the Manufacture of Polymeric Cellular (Foam) Products), was reviewed for possible PM_{10} emission control requirements. Currently this rules does not contain any PM_{10} emission control requirements. Additionally, there are no applicable SCAQMD rules that apply to the sawing of metal parts and products.

There are currently no applicable SJVAPCD rules that apply to the manufacturing of rigid polyisocyanurate (PIR) insulated foam panel or the sawing of metal parts and products.

III. Survey of Permitted Operations:

SJVAPCD Permits:

The Dow Chemical Company (PTO N-190-1-1 and '-2-2) was issued permits in 2003 for two rigid polyisocyanurate (PIR) insulated foam panel manufacturing lines, which were later cancelled in December of 2007. The PIR insulated foam panel sawing equipment associated with these operations were served by a fabric filter baghouse for PM_{10} emissions control at that time.

For metal sawing operations, which are not associated with PIR insulated foam panel manufacturing operations, the following District permits were found:

- Tusco Casting Corp. (PTO N-888-8-0) was issued a permit in 2004 for a metal cut-off saw served by a Torit dust collector.

- Copper & Brass Sales Inc. (PTO C-3022-1-1) was issued a permit in 2000 for an aluminum sawing operation including six saws all served by a 75 hp (13,000 cfm) Aget Model FH50-2D-SP cyclone and fabric filter dust collector.

No permits were found from any of the other above referenced agencies for rigid polyisocyanurate (PIR) insulated foam panel sawing operations.

IV. List of Control Options:

Based on the survey of the above BACT determinations, rules/regulations, and permitted operations, the following control option will be considered for this proposed operation. Additionally, this control option is achieved in practice because it is commonly used for metal sawing equipment:

- Metal sawing equipment served by a fabric filter dust collector or equivalent with 99% capture and control. [Achieved-In-Practice]

b. Step 2 – Eliminate technologically infeasible options

None of the options are technologically infeasible.

c. Step 3 – Rank remaining options by control effectiveness

The only control that is listed is the use of a fabric filter dust collector; therefore, ranking is not required.

d. Step 4 - Cost Effectiveness Analysis

Pursuant to District BACT Policy APR 1305 IX.D. (11/99), a cost effectiveness analysis is not required for control alternatives, which are deemed achieved-in-practice.

e. Step 5 - Select BACT

The most effective PM_{10} control technology not eliminated in Steps 2 and 4 above is the use of a fabric filter dust collector or equivalent with 99% capture and control. The applicant is proposing this PM_{10} control option. Therefore, BACT for PM_{10} is being proposed.

APPENDIX E
RMR and AAQA Summary

San Joaquin Valley Air Pollution Control District
Risk Management Review

To:	Kai Chan – Permit Services
From:	Seth Lane – Technical Services
Date:	February 5, 2019
Facility Name:	Kingspan Insulated Panels
Location:	2000 Morgan Road in Modesto
Application #(s):	N-8131-3-0
Project #:	N-1182961

A. RMR SUMMARY

RMR Summary						
Units	**Prioritization Score**	**Acute Hazard Index**	**Chronic Hazard Index**	**Maximum Individual Cancer Risk**	**T-BACT Required?**	**Special Permit Requirements?**
Unit 3-0 (PIR Manufacturing)	51.8	0.08	0.04	3.02E-06	Yes	No
Project Totals	51.8	0.08	0.04	3.02E-06		
Facility Totals	>1	0.08	0.04	3.02E-06		

Proposed Permit Requirements

To ensure that human health risks will not exceed District allowable levels; the following shall be included as requirements for:

Unit # 3-0:

T-BACT is required for this unit because of emissions of Hexavalent Chromium Cr(VI) which is a PM-10.

I. Project Description

Technical Services received a revised request on February 4, 2019, to perform a revised Risk Management Review and Ambient Air Quality Analysis for the manufacturing operation of Polyisocyanurate (PIR) insulated panels, consisting of a Pentamat, double belt laminator, panel cutting saws served by a 3,000 cfm Clozani Impianti dust collector, 12,000 gallon pressurized pentane storgae tank, and associated pumps and conveyors.

II. Analysis

Technical Services reviewed the submitted SDS sheets for Cyclopentane for toxic air contaminants (TACs). After reviewing the SDS sheets, it was determined that there are no TACs related with the use of Cyclopentane. Therefore, the VOC emissions were not associated with any health risk.

The Safety Data Sheets (SDS) for the PIR form panels were reviewed and it was determined that 11% of the material is made of a combination of Carbon Alloy and Stainless Steel. The SDS for Carbon Alloy and Stainless Steel were reviewed by CAS# for Toxic Air Contaminants (TACs). The TAC emissions from the panel sawing operation were then input into the San Joaquin Valley APCD's Hazard Assessment and Reporting Program (SHARP). In accordance with the District's Risk Management Policy for Permitting New and Modified Sources (APR 1905, May 28, 2015), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 2016 CAPCOA Facility Prioritization Guidelines. The prioritization score for this proposed facility was greater than 1.0 (see RMR Summary Table). Therefore, a refined health risk assessment was required. The AERMOD model was used, with the parameters outlined below and meteorological data for 2013-2017 from Modesto to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the SHARP Program, which then used the Air Dispersion Modeling and Risk Tool (ADMRT) of the Hot Spots Analysis and Reporting Program Version 2 (HARP 2) to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 3-0 (PM Emissions from Panel Sawing)			
Source Type	Point	**Location Type**	Rural
Stack Height (m)	12.80	**Closest Receptor (m)**	61
Stack Diameter. (m)	0.55	**Type of Receptor**	Business
Stack Exit Velocity (m/s)	5.99	**Max Hours per Year**	4160
Stack Exit Temp. (°K)	294.11	**Emissions Type**	PM10
PM10 Emissions Rate (lb/hr)	0.00625	**PM10 Emissions Rate (lb/yr)**	26

*Modeled using AERMOD's "Capped & Horizontal Stack Releases."

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x, and PM10 with the emission rates below:

Unit #	**NO_x (Lbs.)**		**SO_x (Lbs.)**		**CO (Lbs.)**		**PM_{10} (Lbs.)**	
	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.	Hr.	Yr.
3-0	0	0	0	0	0	0	0.006	26

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

	Background Site	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	N/A	N/A	N/A	N/A	N/A	N/A
NO_x	N/A	N/A	N/A	N/A	N/A	N/A
SO_x	N/A	N/A	N/A	N/A	N/A	N/A
PM_{10}	Stanislaus Modesto 14th St (2016)	X	X	X	Pass[1]	Pass[1]
$PM_{2.5}$	Stanislaus Modesto 14th St (2016)	X	X	X	Pass[2]	Pass[2]

*Results were taken from the attached PSD spreadsheet.
1The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).
[2]The court has vacated EPA's $PM_{2.5}$ SILs. Until such time as new SIL values are approved, the District will use the corresponding PM_{10} SILs for both PM_{10} and $PM_{2.5}$ analyses.

III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk associated with the unit is greater than 1.0 in a million, but less than 20 in a million. **In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT).**

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

IV. Attachments

A. RMR request from the project engineer
B. Additional information from the applicant/project engineer
C. Facility Summary

APPENDIX F
Quarterly Net Emissions Change (QNEC)

Quarterly Net Emissions Change (QNEC)

The Quarterly Net Emissions Change is used to complete the emission profile screen for the District's PAS database. The QNEC shall be calculated as follows:

QNEC = PE2 - PE1, where:

QNEC = Quarterly Net Emissions Change for each emissions unit, lb/qtr.
PE2 = Post Project Potential to Emit for each emissions unit, lb/qtr.
PE1 = Pre-Project Potential to Emit for each emissions unit, lb/qtr.

Using the values in Sections VII.C.2 and VII.C.1 in the evaluation above, quarterly PE2 and quarterly PE1 can be calculated as follows:

$PE2_{VOC/Quarterly}$ = $PE2_{VOC/Annual}$ ÷ 4 quarters/year
= 11,250 lb-VOC/year ÷ 4 qtr/year
= 2,812.5 lb-VOC/qtr

$PE2_{PM10/Quarterly}$ = $PE2_{PM10/Annual}$ ÷ 4 quarters/year
= 24 lb-PM_{10}/year ÷ 4 qtr/year
= 0 lb-PM_{10}/qtr

$PE1_{Quarterly}$ = $PE1_{Annual}$ ÷ 4 quarters/year = 0 lb/qtr

Quarterly NEC [QNEC]			
Pollutant	**PE2 (lb/qtr)**	**PE1 (lb/qtr)**	**QNEC (lb/qtr)**
NO_X	0	0	0
SO_X	0	0	0
PM_{10}	6.0	0	6.0
CO	0	0	0
VOC	2,812.5	0	2,812.5