

**Covered Source Permit Review No. 0040-01-CT**  
**Application for Minor Modification Nos. 0040-10 and 11**  
**186 tph Drum Mix Asphalt Concrete Plant**

**Applicant:** Grace Pacific Corporation

**Equipment Description:**

No change from previous permit review for application no. 0040-09.

**Equipment Location:**

No change from previous permit review for application no. 0040-09.

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**Proposed Project:**

The Standard Industrial Classification Code (SICC) for this plant is 2951- Asphalt Paving Mixtures and Blocks.

The permit applications proposed the following modifications to its operations:

1. Add cooking oil and biodiesel as other sources of fuel for the drum/mixer dryer with a combined maximum of 360,000 gal/yr (which would replace the equal amount of fuel oil no. 2 used);
2. Standard conditions to store and burn cooking oil; and
3. Convert the diesel engine generator's hour limitation to an equivalent fuel limitation.

Cooking oil is considered as used/unused cooking oil as well as grease trap wastes. Biodiesel cooking oil that has been processed into fuel that is similar to fuel oil no. 2. All of the proposed changes do not increase potential emissions. Therefore, they are considered minor modifications.

This permit review is based on application no. 0040-10 received October 31, 2005 and its revisions dated November 18 and 28; and application no. 0040-11 dated February 2, 2006. The application fees of \$100.00 x 2 for a non-toxic minor modification of a temporary covered source permit will be processed and the receipt will be issued with the permit.

**Air Pollution Controls:**

No change from previous permit review for application no. 0040-09.

**Applicable Requirements:**

No change from previous permit review for application no. 0040-09.

**Non-Applicable Requirements:**

No change from previous permit review for application no. 0040-09.

A Best Available Control Technology (BACT) analysis is required for new sources or modifications to existing sources that would result in a net significant emissions increase as defined in HAR, Section 11-60.1-1. This is an existing source with proposed modifications in operations. However, since the increase in emissions are less than significant levels, a BACT analysis was not performed. Please refer to the **Project Emissions** for comparisons to the increase in emissions.

**Insignificant Activities/Exemptions:**

The facility did not propose any insignificant activities/exemptions.

**Alternative Operating Scenarios:**

The facility did not propose any alternate operating scenarios.

**Project Emissions:**

The new types of fuel will increase the potential air pollutant emissions at this facility. cooking oil and biodiesel will increase certain air pollutants in comparison to fuel oil no. 2. However, some air pollutants will have decreased potential emissions. The change in emissions were determined using the information below and the assumed maximum fuel oil no. 2 consumption of 1.8 gal/ton of asphalt.

Source performance tests of a boiler (with a wet scrubber) burning cooking oil and fuel oil no. 2 revealed the differences as shown in **Table 1**. Since these results included the use of a wet scrubber, no further efficiency factor will be applied for the use of the baghouse for this review.

**Table 1**

**Cooking Oil vs Fuel Oil No. 2**

POLLUTANT	Cooking oil <sup>1</sup> (lb/MMBtu)	Fuel Oil No. 2 <sup>2</sup> (lb/MMBtu)	Difference (lb/MMBtu)	Hourly Increase <sup>3</sup> (lb/hr)	Annual Increase <sup>4</sup> (ton/yr)
SO <sub>2</sub>	0.0001	0.0085	-0.0084	n/a	n/a
NO <sub>x</sub>	0.1461	0.1188	0.0273	1.28	0.69
CO	0.0735	0.0146	0.0589	2.76	1.48
PM	0.0360	0.0490	-0.0130	n/a	n/a
PM <sub>10</sub>	0.0360	0.0490	-0.0130	n/a	n/a
VOC	0.0076	0.0040	0.0036	0.17	0.09
HAPs	insignificant	insignificant	insignificant	insignificant	insignificant

Notes:

1. All values were results of a 10/18/02 source performance test (SPT) for a boiler with a wet scrubber at HC&S Puunene Mill. Since there were no test for PM<sub>10</sub>, it is assumed that PM=PM<sub>10</sub>.

2. All values except for VOC were results of a 10/16/02 source performance test (SPT) for a boiler with a wet scrubber at HC&S Puunene Mill. Since there were no test for PM<sub>10</sub>, it is assumed that PM=PM<sub>10</sub>.

VOC values were converted from AP-42 emission factors, table 1.3-3, 9/98 for fuel oil no. 2 combustion  
0.556 lb/1000 gal x 1 gal/0.140 MMBtu = 0.0040 lb/MMBtu.

3. Sample hourly NO<sub>x</sub> increase  
0.0273 lb/MMBtu x 0.140 MMBtu/gal x 1.8 gal/ton x 186 ton/hr = 1.28 lb/hr.

4. Sample annual NO<sub>x</sub> increase  
0.0273 lb/MMBtu x 0.140 MMBtu/gal x 360,000 gal/yr x 1ton /2,000 lbs = 0.69 ton/yr.

The differences in burning biodiesel and fuel oil no. 2 are shown in EPA420-P-02-001, *A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions*, dated October 2002 (see Appendix C of the application). This EPA document showed that besides an average of 10% increase in NO<sub>x</sub>, all other criteria pollutants decrease when using biodiesel. HAPs are not certain, but assumed to be insignificant. The calculated NO<sub>x</sub> increase would be as follows:

$$0.1188 \text{ lb/MMBtu} \times 0.140 \text{ MMBtu/gal} \times 10\% \times 360,000 \text{ gal/yr} \times 1\text{ton}/2,000 \text{ lbs} = \underline{0.30 \text{ ton/yr}}$$

The applicant took a conservative approach and assumed that 90% of the nitrogen in the biodiesel will convert to NO<sub>x</sub>. The calculated NO<sub>x</sub> increase would be as follows:

$$90\% \times (30 \text{ NO}/14 \text{ N}) \times 0.04\% \text{N} \times 360,000 \text{ gal/yr} \times 8.33 \text{ lb/gal H}_2\text{O} \times 0.894 \text{ density of diesel} \times 1\text{ton} /2,000 \text{ lbs} = \underline{1.03 \text{ ton/yr}}$$

**Table 2** is a summary of the worst case increases from the cooking oil and biodiesel. Since these increases will remain below significant levels, a comparison to the past 2-yr

average of actual emissions was not needed and a new BACT review was not required. Decreases in potential emissions from using the new fuels are not creditable since fuel oil no. 2 will still be used.

**Table 2  
Modification Comparison to Significant Levels**

<b>Pollutant</b>	<b>Modification Increases (tpy)</b>	<b>Significant Levels (tpy)</b>
SO <sub>2</sub>	n/a	40
NO <sub>x</sub>	1.03	40
CO	1.48	100
PM	n/a	25
PM <sub>10</sub>	n/a	15
VOC	0.09	40
HAPs	Insignificant	

Note:

CO and VOC increases are when cooking oil is used and the NO<sub>x</sub> increase is when biodiesel is used. All other criteria pollutants have no increase in potential emissions.

Since individual pollutants are below 2 tons/yr, this change is considered a minor modification as defined in HAR 11-60.1-81. As such, there are no changes in applicability requirements.

**Ambient Air Quality Analysis (AAQA):**

A new AAQA is not required for this modification since the increase in emissions is considered insignificant.

**Other Issues:**

None.

**New Permit Conditions:**

1. The following additional fuels maybe be used: cooking oil and biodiesel;
2. The combined total of cooking oil and biodiesel shall not exceed 360,000 gallons in any rolling 12-month period;
3. Standard conditions to store and burn cooking oil; and
4. The total fuel consumption of the 725 kW diesel engine generator shall not exceed 112,104 gallons of fuel oil no. 2 (equivalent to 2,076 hours x 54 gal/hr) in any rolling 12-month period.

**Conclusion and Recommendation:**

In conclusion, it is the Department of Health's preliminary determination that the facility will comply with all State and Federal laws, rules, regulations, and standards with regards to air

**Reviewed by: CS**

March 22, 2006

pollution. This determination is based on the application submitted by Grace Pacific Corporation.

Therefore, a minor modification to a CSP for Grace Pacific Corporation is recommended subject to the following:

1. Above permit conditions; and
2. 45-day EPA review period.