

## Air Permit Review

**Permit Issue Date:**  
**CDS ID No. 3701500044**

**Region:** Washington Regional Office  
**County:** Bertie  
**NC Facility ID:** 0800044  
**Inspector's Name:** Arni Hopkins  
**Date of Last Inspection:** 01/17/2006  
**Compliance Code:** W/In Violation W/regard To Proc Compliance

<b>Facility Data</b>			<b>Permit Applicability (this application only)</b>	
<p><b>Applicant (Facility's Name):</b> Avoca Incorporated</p> <p><b>Facility Address:</b> Avoca Incorporated 841 Avoca Farm Road Merry Hill, NC 27957</p> <p><b>SIC:</b> 2087 / Flavoring Extracts And Syrups,nec <b>NAICS:</b> 31193 / Flavoring Syrup and Concentrate Manufacturing</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p>			<p><b>SIP:</b> <b>NSPS:</b> <b>NESHAP:</b> <b>PSD:</b> <b>PSD Avoidance:</b> <b>NC Toxics:</b> <b>112(r):</b> <b>Other:</b> Significant changes to testing, monitoring, and recordkeeping requirements for PSD and MACT avoidance conditions.</p>	
<b>Contact Data</b>			<b>Application Data</b>	
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<p><b>Application Number:</b> 0800044.06A <b>Date Received:</b> 03/23/2006 <b>Application Type:</b> Modification <b>Application Schedule:</b> TV-Significant <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 01819/T32 <b>Existing Permit Issue Date:</b> 10/27/2005 <b>Existing Permit Expiration Date:</b> 10/31/2008</p>	
<p>Brian Conner Environmental Technician (252) 482-2133 Post Office Box 129 Merry Hill NC, 27957</p>	<p>David Peele Director (252) 482-8622 SR 1502 Merry Hill NC, 27957</p>	<p>Brian Conner Environmental Technician (252) 482-2133 Post Office Box 129 Merry Hill NC, 27957</p>		
<p><b>Review Engineer:</b> Michael Brandon, P.E.</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> 04/04/06</p>			<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue</b> 01819/T33 <b>Permit Issue Date:</b> <b>Permit Expiration Date:</b> 10/31/08</p>	

### 1. Purpose of Application:

The applicant has proposed:

- a. changes to the monitoring and recordkeeping requirements for PSD/BACT, MACT/PSD avoidance conditions, and TAP limitations;
- b. updating of equipment descriptions;
- c. revision of source testing dates;
- d. a request to incorporate a definitive LDAR program as part of a PSD BACT determination;
- e. revision of n-hexane and hexane isomer emission rates and TAP modeling;
- f. the addition of a wastewater aeration tank as a significant source; and
- g. the inclusion of 11 existing insignificant activities to the permit.

The permit revision will also serve as a Title V application to implement the permit shield for the following sources.

- a. The isohexane storage tank (ID No. 490025), permitted as a 502(b)(10) change.
- b. The biomass extraction operation emission sources (ID Nos. ES-1004-1 and ES-1004-2) and control devices (ID Nos. CD-1004-1 FF1, CD-1004-2-EX1002, and CD-1004-2-EX1003) permitted as a 15A NCAC 2Q .0501(c)(2) modification (permit revision T29 on 11/10/04).
- c. The diesel fired peaking generator (ID No. ES-PkGen1) and control device (ID Nos. CD-CatOx1) permitted as a 15A NCAC 2Q .0501(c)(2) modification (permit revision T30 on 1/4/05).
- d. The emission sources (ID Nos. TK-9003, TK-9004, TK-9005, TK-9006, TK-9007, and TK-9009) and control device (ID Nos. CD-1001-1-2) permitted as a minor modification per 15A NCAC 2Q .0515.

Numerous modifications were made to the permit formatting to simplify and clarify the intent. This includes some corrections to equipment designation (e.g., process equipment that was listed as control equipment), equipment descriptions, and permit ID numbers were changed to reflect emissions units consistent with IBEAM entries (i.e., process ID Nos. were removed where equipment under that group designation was identified in IBEAM as specific individual sources).

Changes to the Title V permit are as follows:

PAGE	CONDITION	CHANGE
NA	Insignificant Activities	<p>The following insignificant activities were added:</p> <ol style="list-style-type: none"> <li>1. wastewater treatment plant equalization tank No. 1 (ID No. IWWTP-ET1)</li> <li>2. wastewater treatment plant equalization tank No. 2 (ID No. IWWTP-ET2)</li> <li>3. wastewater treatment plant aeration tank No. 2 (ID No. IWWTP-AT2)</li> <li>4. wastewater treatment plant aeration tank No. 3 (ID No. IWWTP-AT3)</li> <li>5. wastewater treatment plant clarifier (ID No. IWWTP-CLR)</li> <li>6. distillate fuel oil tank for boilers; 50,000 gallons (ID No. ITK9238)</li> <li>7. distillate fuel oil tank for boilers; 50,000 gallons (ID No. ITK9239)</li> <li>8. distillate fuel oil tank for generator; 350 gallons (ID No. ITK102)</li> <li>9. distillate fuel oil tank for generator; 350 gallons (ID No. ITK103)</li> <li>10. distillate fuel oil tank for fire pump; 285 gallons (ID No. ITKFP)</li> <li>11. distillate fuel oil-fired engine for fire pump; 285 hp (ID No. IFP)</li> </ol>
4	Section 1 Equipment List	<p>The operating scenarios for the concrete operations were removed and the equipment (six tanks) specifically listed as in IBEAM. The operating scenarios were placed into the permit under a review for concentration and dissolution. The scenarios did not invoke any new regulation and are not addressed in any enforceable permit requirement. This information on the scenarios is necessary as the basis of review only and does not need to be included in the equipment list.</p> <p>The botanical extraction cryogenic condenser system description was modified to include the coupled condenser system for control and defrost cycles.</p>
5	Section 1 Equipment List	<p>The biomass extraction cryogenic condenser system description was modified to include the coupled condenser system for control and defrost cycles.</p> <p>Distillation column ID No. A2 is an emission source, not a control device.</p> <p>Condenser control devices on the plant nutrient extraction processes have condensate receivers that were listed as control equipment. These condensate receivers are integral to the condenser and, apparently, used for solvent reclaim. They are, in fact, emission sources. However, they were listed as part of the condenser system until such time that they become subject to a standard (MON) that may classify the recovery condenser as process equipment.</p>
6	Section 1 Equipment List	<p>The wastewater treatment plant aeration tank No. 1 was determined to be a significant source whose emissions are included in the PSD/BACT determination for the Rotocel operations. This source was moved from the insignificant activities list.</p>
7-27	Section 2.1	<p>Sections 2.1 C, D, and E, were combined under Section 2.1 C, because all the sources listed have identical applicable requirements.</p> <p>Section 2.1 F, was recodified to 2.1 D.</p> <p>Section 2.1 G, was recodified to 2.1 E.</p> <p>Section 2.1 H, was recodified to 2.1 F.</p> <p>Section 2.1 I, was combined with 2.1 C, (Same applicable requirements)</p> <p>Section 2.1 J, was recodified to 2.1 G.</p> <p>Section 2.1 K, was recodified to 2.1 H.</p> <p>Section 2.1 L, was recodified to 2.1 I.</p> <p>Section 2.1 M, was recodified to 2.1 J.</p>

PAGE	CONDITION	CHANGE
		Section 2.1 N. was combined with 2.1 C. (Same applicable requirements) Section 2.1 O. was recodified to 2.1 K. Section 2.1 P. was recodified to 2.1 L.
13	Section 2.1 E.2.c.	Compliance with the MACT avoidance condition is now contingent on a 24-hour average condenser outlet temperature rather than a once daily temperature measurement. This is consistent with most MACT requirements when the regulations are applicable.
13	Section 2.1 E.2.d.	Concentration of n-hexane is to be determined by supplier certification rather than material safety data sheets. This provides for an accurate account of solvent content as opposed to a generic description.
13	Section 2.1 E.2.e.	The Permittee is now required to submit an engineering evaluation showing the methodology of efficiency determination for the Botanical extract operations control condensers.
22	Section 2.1 K.3.e (recodified from 2.1 K.3.f.)	Compliance with the PSD BACT limitation is now contingent on a 24-hour average condenser outlet temperature rather than a once daily temperature measurement. The BACT limit is hourly and annual and should have been based on the 1-hour and 8-hour ozone ambient standards and the monitoring required accordingly. The once per day measurement is deemed to ensure compliance with the one hour or eight hour standards with less accuracy than the proposed 24-hour average because a mean value will at least take into account any temperatures above the cutoff, whereas the once a day measurement may not. The relationship of hexane emissions on ozone impact is not ideal; therefore an ideal compliance averaging time is not necessary.
23	Section 2.1 K.4.c	Compliance with the MACT avoidance condition is now contingent on a 24-hour average condenser outlet temperature rather than a once daily temperature measurement. This is consistent with most MACT requirements when the regulations are applicable.
23	Section 2.1 K.4.d	Concentration of n-hexane is to be determined by supplier certification rather than material safety data sheets. This provides for an accurate account of solvent content as opposed to a generic description.
22	Section 2.1 K.3.h.	The testing requirement for Biomass extract operations control condensers (old Section 2.1 O.3.c.) was removed as efficiency is best obtained from thermodynamic parameters (i.e., inlet and outlet temperature for vapor pressure determination). The Permittee is now required to submit an engineering evaluation showing the methodology of efficiency determination.
27	Section 2.1 L.4.d.	The peak generator operational limitation for PSD avoidance was reduced from 2,500 hours per consecutive month period to 1,500 hours per consecutive month period to reflect new emissions data.
27-37	Section 2.2	Section 2.2 A. was renamed "FACILITY WIDE" and now incorporates facility wide provisions for MACT "MON" applicability- 2.2 A.4 (old 2.2 E.), last MACT TAP assessment requirements-2.2 A.5, odor control requirements- 2.2 A.3. (old 2.2 D), and TPER requirements-2.2 A.2 (old 2.2 E.) as well as VOC work practice standards- 2.2 A.1. Section 2.2 A.5. is new. Section 2.2 A.4 is revised. Section 2.2 C. was updated with a requirement for the Permittee to provide a study to demonstrate that modeled TAP limits for n-hexane from the Rotocel operations will never be exceeded based on the inherent characteristics of the process's emissions. Sections 2.1D and 2.2 E. were deleted as noted above.

PAGE	CONDITION	CHANGE
	Section 2.2 A.2.d.	Prohibition of dryer operation is removed based on the following review for permit revision R23. "The completed application, received on May 22, 2001, is made to request a revision to the existing permit for the processes in Building No. 1003-2. Currently, both the ethyl vanillin glucoside (EVG) and Plant Nutrient Extraction (PNE) processes are permitted to operate in this building. Also currently, these two processes share three tanks. This application seeks to replace these tanks, with tanks already in the building but not currently in use, for one of the processes. The end result will be that the two processes will be physically able to operate simultaneously. The existing permit limits the two processes to not run simultaneously by stating <i>the dryer may not be used during the concentrated plant extracts production (PNE)</i> . Because the dryer is used during the EVG process the stipulation limits the facility to operating either, but not both, of the processes. The application also seeks to remove this language and presents the case that no existing limits would be violated..... The facility has stated that simultaneous operation of the two processes would not exceed any applicable emission limits nor require any new emission limits in the air permit. Their reasons follow. (1) The facility currently operates under a 250 tpy limit on VOC emissions to avoid PSD. According to IMPAQ, 1999 VOC emissions were only 211 tons facility-wide. Therefore the facility could increase VOC emissions significantly and stay under the limit. They request continued recordkeeping to verify that VOC emissions remain below 250 tpy. (2) The EVG process has an 2D .1100 TAP limit on chloroform. The PNE process emits ethyl acetate, for which the facility operates under a 2Q .0711 facility-wide limit. Because the processes emit different TAP's, there will be no problem with joint emissions exceeding a short-term limit for a TAP that is emitted in common. The facility again requests continued record-keeping to demonstrate that the existing limits for each pollutant are not exceeded."
31	Section 2.2 B.1.a	PSD BACT condition was clarified to make it clear that BACT applies to Rotocel recycle tanks are being used for concrete to be processed in the recovery operations.
32	NA	The testing requirement for botanical extraction condenser (old Section 2.2 B.1.c.ii.) was removed as efficiency is best obtained from thermodynamic parameters (i.e., inlet and outlet temperature for vapor pressure determination). The remainder of the testing requirement for the Rotocel operation was removed as the testing was completed. The Permittee is now required to submit an engineering evaluation showing the methodology of efficiency determination (see new Section 2.1 E.2.e). Further testing may be required under 2.2 B.1.b. if the DAQ deems it necessary.
33	Section 2.2 B.1.i (recodified from 2.2 B.1.j.)	Compliance with the PSD BACT limitations are now contingent on a 24-hour average condenser outlet temperature rather than a once daily temperature measurement. The BACT limit is hourly and annual and should have been based on the 1-hour and 8-hour ozone ambient standards and the monitoring required accordingly. The once per day measurement is deemed to ensure compliance with the one hour or eight hour standards with less accuracy than the proposed 24-hour average because a mean value will at least take into account any temperatures above the cutoff, whereas the once a day measurement may not. The relationship of hexane emissions on ozone impact is not ideal; therefore an ideal compliance averaging time is not necessary.
34	Section 2.2 B.1.k. (recodified from 2.2 B.1.l.)	Scrubber operating parameters were changed to reflect the fact that warmer temperature are less conducive to absorption (not cooler temperatures) and to reflect actual source test conditions.
35-43	Section 2.2 B.2.	LDAR requirements of 40 CFR 63, Subpart UU were summarized in this new section. The only deviation was that the FID is required to be calibrated by the manufacturer every year instead of before any monitoring. This was determined to be allowable as this is not a MACT requirement and the original citation was purely for convenience. References in Section 2.1 K.3.c and 2.2 B.1.f were changed from reference to 40 CFR 63, Subpart UU to Section 2.2 B.2.

<b>PAGE</b>	<b>CONDITION</b>	<b>CHANGE</b>
44	Section 2.2 C.1.c.	The table was revised to include a requirement for the Permittee to provide a study to demonstrate that modeled TAP limits for n-hexane from the Rotocel operations will never be exceeded based on the inherent characteristics of the process's emissions. Sections 2.1D and 2.2 E. were deleted as noted above.
47	General Conditions	The General Conditions were updated.

**2. Application Chronology:**

The application chronology is detailed on the attached IBEAM Report.

**3. New Equipment/Change in Emission and Regulatory Review**

There is no new equipment or change in emissions from the equipment. Regulatory changes were made as previously described in the changes table and new hexane TAP emissions modeled.

**4. Facility Wide Toxic Air Pollutants - State Enforceable Only**

Air dispersion modeling was submitted for review on March 28, 2006 to address the revised emission rates for n-hexane and other hexane isomers. However, this is being put on hold because of the five-day averaging of n-hexane emissions to show compliance with the 24-hour AAL is not acceptable. The Permittee will be required to provide a study to demonstrate that modeled TAP limits for n-hexane from the Rotocel operations will never be exceeded based on the inherent characteristics of the process's emissions. A remodeling and the study are due September 1, 2006.

**5. Facility Compliance Status:**

The facility is presently under review for the issuance of several notifications of violations.

**6. Facility Emissions Review:**

No changes were made that will affect emissions at this facility.

**7. Conclusions, Comments, and Recommendations:**

The RCO and WARO recommend issuance of permit revision 1819T33.