



San Joaquin Valley Air Pollution Control District

Fax Transmittal

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Date : December 15, 2005

To : John Dunlap

Fax Number : (916) 341-0849

From : Sheraz Gill

Number of pages (including cover sheet): 5

Description : BION System

- | | |
|--|--|
| <input type="checkbox"/> Per Your Request | <input checked="" type="checkbox"/> For Your Information |
| <input type="checkbox"/> Per Our Conversation | <input type="checkbox"/> For Your Approval |
| <input type="checkbox"/> Take Appropriate Action | <input type="checkbox"/> Review & Comment |
| <input type="checkbox"/> Please Answer | <input type="checkbox"/> Review & Return |
- Original transmittal will follow via mail

Remarks / Response :



San Joaquin Valley Air Pollution Control District

December 14, 2005

BION Corporation
James Morris
P O Box 323
Old Bethpage, NY 11804

Re: BION System

Dear Mr. Morris:

The District has reviewed the October 20, 2005 report for your BION waste treatment process. While the District has **some** preliminary comments, the District has preliminarily determined that the BION NMS technology is an **approvable** VOC and NH₃ control option for dairies and has the potential of reducing H₂S emissions. The District is looking forward to the opportunity to more fully evaluate the BION NMS technology when proposed at a specific San Joaquin Valley dairy in the future. No control technology **can** be endorsed, or guaranteed approval until a full site-specific project analysis has been completed.

The District encourages the development and installation of innovative control technologies. **As** you know, the final **Best** Available Control Technology (BACT) guideline outlining control technologies for dairies has not yet been established. Nevertheless, over the last year or so, a lot of work has been contributed towards the development of guidelines for BACT. The District is currently awaiting a recommendation from the Dairy Permitting Advisory Group (DPAG), which consists of dairy industry representatives, scientists with expertise in **dairy** air quality issues, environmentalists, and District representatives. This recommendation is expected to be **made** by the end of this year, which will include an evaluation of the BION NMS system. The District will then release a draft dairy BACT guideline a couple of months thereafter, and take that document through a public workshop process before finalizing.

In regards to your report, the District has the following preliminary comments:

- 1) Emission reductions have been partially demonstrated from the actual measurement from the micro-aerobic zone; however, **actual** emission reductions have not been demonstrated from the entire process stream associated with this technology. Evaluating only one link in the manure management chain is not **sufficient** to determine emissions reductions along the entire chain.

David L. Crow
Executive Director / Air Pollution Control Officer

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James Moms
December 14,2005
Page 2

Although attempts to estimate the emission reductions have been provided, the District has reassessed those emissions reductions **from** the entire process using conservative assumptions in the absence of actual values (see attachment).

- 2) Testing to date has generally been limited to the micro-aerobic system itself and has not been comprehensive in terms of evaluating emissions changes with and without the system. Accurate control efficiency, however, could be obtained by **measuring** emissions for a system before installing the BION system. Each **dairy** is unique and has **different** manure management practices, therefore, emissions from the various operations will vary from dairy to dairy, and knowing actual baseline emissions are very important in determining control efficiency.

There are always concerns with any new technology that need to **be addressed** before a technology is fully approved by the District. New technologies need to be reviewed with respect to a site-specific proposal as part of the application process and many assurances as to the operation and emissions reduction must be provided.. As we have discussed, the District does not endorse any particular technology or vendor. However, putting aside site-specific issues that may arise with later proposals, the District supports the **BION NMS** technology assuming the claimed emission reductions from your technology are accurate. Emissions data demonstrating the control efficiency of this system will be required to confirm the proposed reductions. This data can be obtained following the installation of the technology.

We look forward to work with you on a site-specific project. If you have any questions, please call Mr. Sheraz Gill at (559) 230-5900.

Sincerely,

David Warner
Director of Permit Services



Samir Sheikh
Permit Services Manager

SG

Attachment – Control Efficiency

The following emissions levels and control efficiencies for this technology were proposed. The measured values are highlighted. The remaining values are estimated by BION.

Emissions Data provide by BION from each emissions point			
Unit #	Emission Point	NH ₃	VOC
1	Manure Basin	0.000225	0.00015
2	Milk House Basin	0.000075	0.00005
3	Anaerobic Digestion	0	0.0803
4	Contact Chamber	0.00087	0.000579
5	Coarse Solids	0.00039	0.00016
6	Anaerobic Zone	0.12	0.0303
7	Microaerobic Zone	0.075 ¹	0.0499
8	Fine Solids	0.00039	0.00016
9	Secondary Lagoon	13.44 ²	0.206
Total Liquid Manure Management		13.64	0.368
Baseline ³		15.7	2.7
10	Land Application	0.4084	2.38
Total Land Application		0.4084	2.38
Baseline ³		29.1	5.0

Based on the above table, the control efficiency for liquid manure management and land application is as follows:

BION Control efficiency		
	NH ₃ (%)	VOC (%)
Liquid manure Management	13.1	86.4
Land Application	98.6	52.4

The estimated values proposed by BION have been re-calculated below to conservatively estimate control efficiencies for both VOC and ammonia emissions using the following conservative assumption:

¹ It appears that this value is not correct based on BION's proposal – Need to verify

² Baseline emissions used to calculate this value were fairly higher than Districts baseline

³ Districts Draft Breakdown of Emission Factor Report

Assumption:

In order to be very conservative in estimating a control efficiency, where no value was actually measured, and where there is no other reasonable way to estimate emissions, the worst-case value is assumed based on the measured value from the microaerobic zone of 0.0499 lbs for VOC and 0.23 lbs for NH₃

Re-calculated Emissions Data from each emissions point				
Unit #	Emission Points	NH ₃	VOC	Basis
1	Manure Basin	0.23	0.0499	No actual measurement, worst-case values used
2	Milk House Basin	0.23	0.0499	No actual measurement, worst-case values used
3	Anaerobic Digestion	0.23	0.0803	No actual measurement, worst-case value used. For VOC identical calculation used as used by vendor
4	Contact Chamber	0.23	0.0499	No actual measurement, worst-case values used
5	Coarse Solids	0.01	0.0100	Negligible emissions assumed since material will be largely solids
6	Anaerobic Zone	0.37	0.0499	No actual measurement, However, vendor calculation used
7	Microaerobic Zone	0.23	0.0499	Measured values
8	Fine Solids	0.01	0.0100	Negligible emissions assumed since, material will be largely solids
9	Secondary Lagoon	3.77	0.206	Identical method used to estimate emissions from vendor. However, baseline emissions for ammonia were quite different
Total Liquid Manure Management		5.31	0.556	
Baseline ³		15.7	2.7	
10	Land Application	6.99	2.38	Identical method used (BION) to estimate emissions for VOCs. For NH ₃ , assuming only 24% of N ₂ is available in the secondary lagoon (BION), only 24% of emissions would be potentially generated from land application. (29.1 x 0.24 = 6.99)
Total Land Application		6.99	2.38	
Baseline ³		29.1	5.0	

Based on the above table, the control efficiency for liquid manure management and land application is as follows:

Re-calculated Conservative Control Efficiency		
	NH ₃ (%)	VOC (%)
Liquid manure Management	66.2	79.4
Land Application	76	52.4