

**Comments of the Plumbers and Steamfitters Local Union 157  
Concerning a Proposed Air Quality Permit for  
Lincolnland Agri-Energy, Robinson, IL**

**Presented to**

**Illinois Environmental Protection Agency  
Permit Section, Air Pollution Control Division,**

**&**

**U.S. Environmental Protection Agency, Region V,  
Air & Radiation Division, Permits & Grants Section  
& Air Enforcement Section**

**April 14, 2003**

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This document available on the web at:  
<http://www.sagady.com/workproduct/LincolnlandAgriEnergyComment.pdf>

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## **1 Introduction**

The Plumbers and Steamfitters Local Union 157 submit these comments for filing with the Illinois Environmental Protection Agency, Division of Air Pollution Control and the U.S. Environmental Protection Agency, Region 5, Air & Radiation Division.

The Plumbers and Steamfitters Local Union 157 represent construction workers and their families who are employed in the construction trades in the geographical area of Crawford County, Illinois. These individuals perform plumbing, pipefitting and steamfitting work in conjunction with industrial construction work, including the types of work necessary to construct the proposed LincolnLand Agri-Energy ethanol production facility.

The members of this Union are interested in maintaining a sustainable economy and sustainable economic development that can only be done when sound environmental policies and practices are followed. The proposed permit and construction of the plant will cause environmental degradation in the Crawford County area and emit pollution subject to long-range transport and smog formation. Such air pollution may very well jeopardize future jobs by making the environment less desirable for families to live and derive an income in this area. Issuance of an unlawful permit allowing excessive pollution will create a less favorable condition for future economic development.

Continued degraded air quality may result in construction moratoriums and other restrictions on growth, which can affect future employment opportunities for citizens in this state.

The union workers and their families represented by Plumbers and Steamfitters Local Union 157 work in and near this community and must endure the impact of poorly regulated industrial plants. All citizens, including the members of our Union, breathe the same polluted air and suffer the same health and safety impacts as other citizens. The Plumbers and Steamfitters Local Union 157 and its members have a significant interest in ensuring environment, health and safety laws protect their families as well as all other workers who are employed in the area.

The Plumbers and Steamfitters Local Union 157 urge close scrutiny for the LincolnLand Agri-Energy project. Our community and our union families believe the LincolnLand Agri-Energy evasion of applicable Clean Air requirements, their failure to employ state of the art emission control technologies, their expected future degradation of air quality as currently proposed and their failure to provide economic benefits of decent wages and working conditions for their workers during construction are all highly objectionable to our families and our community.

The comments below describe how the proposed project will cause greater actual pollution impacts than are indicated in the company's emission analysis and how these facts show that the permit should not be granted in its current form. The Applicant is unlawfully attempting to evade federally required disclosure of all expected emissions and full prevention of significant deterioration air quality review required under IEPA and EPA rules. Because of LincolnLand Agri-Energy's evasion of disclosure and failure to comply with applicable requirements, we trust that Illinois EPA will deny the permit application after full review of these comments and issue a cease and desist order against continuance of all site construction on this facility.

## **2 Requirements on the Applicant and the IEPA Decisionmaker Under the Definition of "Potential to Emit"**

Applicant is under a duty to show in its application the "potential to emit" for its proposed facility. "Potential to emit" is defined in both Illinois and U.S. EPA regulations:

"Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design only if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source."<sup>1</sup>

Applicant is under a duty to show the potential to emit for each emission unit on the site; as permitting authority IL EPA must find that each of these emission determinations is correct. To be permitted as a minor source with a federally enforceable state operating permit, the total potential to emit for the facility must not exceed major new stationary source thresholds which are 100 tons for any criteria pollutant for the subject emission source. All limitations on the potential to emit must be federally enforceable under the permit.

Commentors assert that the proposed permit may not be issued for the following reasons, articulated in subsequent sections of this Comment:

The potential to emit has been improperly calculated for NOX, VOC and carbon monoxide.

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<sup>1</sup> 35 IL Adm Code §203.128; 40 CFR §52.21(b)(4)

Not all emission units were considered in calculating the potential to emit for VOC.

The applicant's documentation of potential to emit calculations emission calculations and emission determination methods is incomplete and unverifiable.

The proposed permit does not properly limit the potential to emit through production rate and feedstock limitations so the annual emissions do not exceed the major stationary source thresholds and predicted emissions.

Emissions from the proposed facility will exceed major stationary source thresholds when no PSD application containing a best available control technology and air quality impact determination has been submitted and approved.

## **2.1 Potential to Emit Issues Related to NOX Emission Characterization**

### **2.1.1 Applicant's Understated Determination of Heat Input Rates in the Facility's Dryers and Thermal Oxidizer Leads to Understatement of the Proposed Facility's NOX Potential to Emit; Expected Emissions Exceed the NOX New Major Stationary Source Threshold**

Applicant's characterization of expected emissions has varied widely in the history of the permit application. For this reason, commentors devoted significant scrutiny to the basis for PTE calculations for the subject facility. The first issue of review involves review of heat input rates to the Applicant's proposed dryers and thermal oxidizer.

Applicant's so-called heat input determination is a first order determination using only natural gas combustion rates. Under this approach, Applicant shows 135 MMBTU/hr of heat input to the thermal oxidizer and 42 MMBTU/hr heat input to each of 2 dryers for a total 219 MMBTU/hr heat input to both systems. Applicant goes on to calculate the state NOX PTE of 95.92 tons/year from these two sources solely on the basis of natural gas heat input to these devices and a 0.1 lb/MMBTU heat input emission factor for NOX.

Applicant's NOX PTE determination and IEPA's proposed acceptance of it are not valid because this first order methodology fails to consider NOX emissions implicit with heat inputs to combustion devices from inputs of volatile organic matter and carbon monoxide that are inherent in the physical and operational capability of the facility under its design. All of the heat inputs to the combustion devices are reviewed in the table below:

Heat Inputs to DDGS Dryers	MMBTU/hr	Notes
Natural Gas	84	
Methanator VOM	3.2	1, 4
Intrinsic Combustion of a portion of Dryer-Process-Derived VOM and CO in Dryers before output	unknown but not zero	
Possible Collection and Transfer to Dryers of Centrifuge VOM Fugitives	unknown	2
Heat Inputs to Thermal Oxidizer (TO)	MMBTU/hr	
Natural Gas	135	6
90% of stated CO input from dryers in TO inlet	0.84	5
98% of stated VOM input from dryers to TO inlet (as methane)	5	
98% of stated VOM input from other processes to TO inlet (as methane)	0.62	
1 calculated from data on exhibit 240.2 of application		
2 if fugitives are not collected then they contribute to VOCs emissions, but are not shown in Applicant's VOC PTE calculation		
3 methane at LHV of 21,518 BTU/lb		
4 this heat input is correct if gas flows shown in exhibit 240.2 are for total bio-methanator gas output; if these figures are instead only for biomethanator gas to run the standby flare, then this heat input will be a significant understatement of the actual heat input rate of the biomethanator gas output to the dryer		
5 CO at 4346 BTU/lb CO		
6 Calculated at base rate of 29.5 lbs/hr		

This table shows that total heat input for both thermal oxidizer and the 2 dryers of at least 228.7 MMBTU/hr plus any heat input associated with intrinsic combustion of dryer-derived VOM before exhaust from dryer units and any contribution from transfer of VOM fugitives from the centrifuge. At an emission factor of 0.1 lb-NOX/MMBTU and 8760 hour per year, this yields an NOX emission rate of at least 22.9 lbs/hr or 100.3 tons per year. Adding Applicant's admission of 0.8 tons per year of NOX from the product loading flare, **the final total NOX is 101.1 tons per year, which is an amount of NOX emissions over the 100 ton major stationary source threshold.** As a result, the permit may not be issued in its present form and the Applicant must submit a BACT and air quality demonstration under the Prevention of Significant Deterioration rules.

While the table above used the gas flow rate presented in Exhibit 240.2 of the application, Commentors cannot tell from that exhibit whether this is the gas flow rate of the methanator output to the dryer or merely the gas flow output of methanator gases being used as a pilot flame for the methanator flare instead of natural gas. If the latter is the case, it is possible that the total methanator gas flow output to the dryers would be considerably higher with a considerably higher heat input rate as well than is stated in the table.

In response, Applicant may argue that natural gas firing rates will be lessened to accommodate heat input from VOM streams being destroyed in the dryer and in the thermal oxidizer. Commentor has a two-fold response:

The first response is that the definition of “potential to emit” requires consideration of the maximum potential emissions within the capabilities of the equipment and its operational design. Applicant clearly admits it can operate its thermal oxidizer at 135 MMBTU/hr and the aggregate of the two dryers at total of 84 MMBTU/hr. Applicant then admits that it charges methanator gas to the dryers, that VOM is evolved in the hot atmosphere of the dryers that can be immediately subject to combustion (or at least thermal deterioration/pyrolysis) and that VOM from the distillation (and other) process and from the dryers is physically charged to the thermal oxidizer and these are undeniably BTU inputs that are part of the physical capability of the device under its intended design.

The second response is that Applicant’s facility will be bottlenecked by the steam production capability at the site. This means that any increase that occurs over planned BTU inputs to the thermal oxidizer will result in debottlenecking of the plant. As a result, the VOM inputs to the dryer/thermal oxidizer process will necessarily debottleneck the plant and function to increase emissions over planned levels from just natural gas combustion alone.

### **2.1.2 The Proposed Permit Doesn’t Provide Effective, Federally Enforceable Production Rate or Throughput Limits that Achieve the Required Limitations on the Potential to Emit for NOX**

Given the fact that the steam production capabilities of the facility from the heat recovery boiler downstream from the thermal oxidizer is the essential plant bottleneck on production, we next evaluate the proposed permit to determine if there is an effective limitation throughput or production rate limitation on the potential to emit for NOX from the thermal oxidizer and dryer as configured.

The primary federally enforceable limitations on plant throughput and production rates are found at condition 1, provisions a-c. In this section, the proposed permit limits the maximum denatured ethanol production rate per year, the annual grain receipts in bushels per year and the types of fuel permitted in oxidizers and feed dryers.

A search of the permit also shows condition 13 which contains the sentence:

“These limits are based on maximum firing rate (135 mmBTU/hour for boiler and 42 mmBTU/hour for each of the two dryers exhausted to the boilers), emission



factors, nominal boiler control efficiency for process emissions (90% for PM and CO), and continuous operation.” (Permit at page 5, Condition 13)

This latter permit language, however, is not written in the form of a federally enforceable limit but more in the form of a reference to the design basis in the application for the facility.

The federally enforcement conditions limiting throughput and production rate in Condition 1 of the proposed permit do not effectively limit the potential to emit for the dryers and the thermal oxidizer. An overall plant limit on the production rate doesn't effectively limit the potential to emit from the dryers/thermal oxidizer because the overall production rate can be strongly related to fermentation efficiency and other factors in plant operation. Similarly, the limitation on grain feedstock inputs doesn't directly limit the potential to emit for the dryers/boilers because of variations in starch to sugar conversion and fermentation efficiency.

The proposed permit must be amended with clear annual limitations on the total volume of natural gas burned in order to properly limit the potential to emit for the dryers and thermal oxidizer. Without such a limitation there is no guarantee that annual emissions will comply with annual NOX limits in an attempt to regulate this plant as an alleged synthetic minor facility.

### **2.1.3 Entrainment of Dryer Gases in DDGS Output Stream**

Applicant has failed to show drawings and information that indicates how it will prevent or limit combustion gases with NOX and CO carryover from entering the DDGS output train and input to the cooling cyclone.

## **2.2 Potential to Emit Issues Relating to Volatile Organic Compound Emission Characterization**

### **2.2.1 Applicant Has Failed to Identify and Quantify All Emission Points for Volatile Organic Compounds**

Applicant has failed to identify all emission sources associated with their overall process equipment.

Applicant's cook water recycle tank will receive volatile organic materials carried over from the fermentation scrubber, distillation bottoms and methanators, but vents and displacement losses on this tank are not identified or shown as an emission source.

While Applicant implicitly acknowledges that the mixer that receives milled corn and cook water is a source of VOC emissions because it is vented to a gas collection system for control, Applicant nevertheless ignores the potential of this emission unit to discharge uncontrolled VOC emissions through the milling baghouse bottom bin rotary corn feeder, including feeder exhaust and seal leakage. Any such exhaust and leakage would be discharged uncontrolled through the milling baghouse and through the S30 discharge point. In addition, it appears that all dry mill #1 and #2 gases are routed through the milling baghouse, but there is no analysis or acknowledgment of the potential for dry milling to release naturally occurring VOC emissions associated with corn volatiles. Such volatiles can arise from corn oil related products, spontaneous fermentation occurring within the delivered corn or products of off-specification fermentation processes arising from corn contamination with undesired biological agents. Applicant does not address the potential for discharge of corn volatiles through the grain unloading baghouse from discharges from the hammermill feed area.

While Applicant has maintained that it will not conduct any corn drying operations, it is nevertheless standard operating procedure to pass ventilation air through corn storage silos to reduce grain temperatures. VOC emissions associated with this practice have not been identified. In addition, Applicant must be required to state what standards for dryness in delivered corn will be imposed on suppliers, if any, in order to determine the potential for VOC-related emissions from corn storage.

Applicant does not address venting and displacement losses in its two liquefaction tanks and flash receiving tank. These tanks will be receiving heated process material cooked with VOC laden cook water and must be addressed from an emission control standpoint.

Applicant admits that vacuum distillation techniques will be used in their distillation system but Applicant does not show or indicate how VOC discharges associated with steam eductors to produce such vacuum will be condensed and treated and how wastewater and eductor output condenser gases will be treated and disposed without causing uncontrolled VOC emissions.

Applicant employs a molecular sieve to process 190 proof ethanol to 200 proof ethanol, but Applicant does not indicate how VOC-contaminated wastewater rejects from the sieve are treated and disposed and the uncontrolled emission potential posed by this operation.

Applicant does not address venting and fugitive losses of VOC from its stillage centrifuging operations, centrifuge cake/syrup mixing operation and all transfer and loading operations between the centrifuge, mixing operation and dryer input. Applicant has failed to identify all tank vents and potential displacement emission sources associated with surge storage capacity in the evaporator system, including surge tanks for liquid output of the centrifuge, syrup and post evaporator wastewater output. Finally, in

this area of the facility, Applicant has indicated that there will be times when the plant continues to operate when the dryers are down. Under this condition, centrifuged, VOM contaminated wet solids will continue to be generated to receipt for surge storage, for loadout and disposal/disposition. Applicant has failed to identify how such surge storage and loadout will be accomplished and the fugitive VOC emissions potential of such operations.

Applicant does not address the occurrence and disposition of fermentation upset, stalled fermentation or other upset conditions, and whether any non-process blowdown of any of the process tanks can or will occur and the emission potential and frequency of such events.

Applicant's submittal fails to identify all systems of the plant which have a system to bypass VOC emission control equipment, including information on what conditions will cause such bypasses to occur and the VOC emission potential during bypass incidents.

Applicant has failed to identify any system for internal process spill containment and the potential emissions associated with such events, including emissions from wastewater sewers.

For the reasons cited in this subsection, the air quality permit application for the Lincolnland Agri-Energy facility must be deemed incomplete and unapprovable under the requirements of 35 IL Adm Code 201.152. Moreover, any waiver of these application content requirements that are necessary in order to determine this facility does not have aggregate emissions over the major stationary source threshold for VOC emissions constitutes an unlawful abuse of discretion by Illinois EPA. Applicant must be made to identify and quantify the VOC emissions potential of all of the uncharacterized VOC emitting processes identified by Commentors.

### **2.2.2 Applicant Continues to Use Poorly Documented Information to Justify VOC Emissions Characterizations**

On December 3, 2002, Donald Sutton, Manager, Permit Section, IL EPA Division of Air Pollution Control wrote to LincolnLand Agri-Energy in part seeking....

“....further justification of the uncontrolled and controlled (where applicable) VOM rates for the following operations: Grain Drying (if present), Fermentation (controlled by scrubber), Distillation (Controlled by Scrubber)[since modified to embody control by thermal oxidizer], Fugitives from Valves, Piping, etc....”  
(Sutton letter at p. 1)

On December 18, 2002, Indeck official Jim Schneider of LincolnLand Agri-Energy wrote back with a response. In the response, Applicant amended the plant configuration and application from the prior amendment of October 8, 2002. However, many aspects of the response as to the requested justification for stated uncontrolled and controlled VOM emission rates were not, and remain, incomplete, unverifiable and unsupported.

Commentors object to Applicants failure to adequately justify its statement of a 238 lb/hour uncontrolled emission rate for the DDGS dryers and its 56.05 lb/hr process vent uncontrolled emission rate. Applicant states as its sole justification:

“Data based on test data, engineering estimates and DDGS throughput.”

Applicant’s prior application amendment relied solely on a 0.1 lbs VOC/gal of ethanol production “engineering estimate” for ethanol fermentation uncontrolled emissions and a 0.01 lbs VOC/gal “engineering estimate” for uncontrolled VOC emissions from distillation and other process units. No basis, calculations, test data, mass balance calculation or other convincing information supported these estimates.

In the December 18, 2002 letter, Applicant submitted some stack testing information on a dryer stack, distillation scrubber and fermentation scrubber at an ethanol plant in Russell, KS. However, this plant is not a corn ethanol fermentation facility. The Renewable Fuels Association reports this as a 40 Mmgal/year Milo/wheat starch facility. Applicant claims the facility to be a 31 Mmgal/year facility. Applicant goes on to use a dryer uncontrolled VOM rate which is 2 times the projected rate of the Russell, KS facility, presumably on the assumption that the KS plant had two dryers that had the same throughput as the proposed LincolnLand Agri-energy plant. Thus Applicant assumes that a plant with its statement of total ethanol plant being less than the production capacity of the Lincolnland plant would have the same production capacity DDGS throughput rates as the Lincolnland plant. Either the plants are comparable or they are not, but Applicant’s presentation isn’t persuasive.

Commentors question why Applicant is unable to cite test results from a similar sized corn fermentation facility.

Similarly, the Indeck response stated that the VOC emission factor for the DDGS Cooler Cyclone was 0.2 lb/ton of throughput. Applicant states:

“Data based on engineering estimates and DDGS throughput.”

No other basis is provided. Applicant has not provided any convincing information at all to support this emission estimate other than emissions declaration by Applicant fiat. Applicant must submit calculations and other basis for such emission factor estimates. A convincing basis for VOC emissions from the DDGS cooler cyclone

emission point is particularly important since this will exist as an uncontrolled emission release and with a potential for odorous impacts on the neighboring community.

Emission characterization during air quality permitting is not an exercise in blind faith in applicant's statements and if an engineering basis for such projections exists it must be disclosed and verified as part of the permit process. Applicant has failed to do so for several submitted emission estimates and IL EPA has unlawfully abused its discretion by failing to require the Applicant to state a demonstration of the engineering basis of its uncontrolled emission estimates. As a result, the permit must be denied on the basis that the application is incomplete and unapprovable under the requirements of 35 IL Adm Code 201.152.

### **2.2.3 Commentor's Revised VOC Calculation for the Thermal Oxidizer Assuming Applicant's Uncontrolled VOM Emission Rates But Correcting for High Molecular Weight and Oxygenate Compounds**

Commentors note that Applicant corrected the emission projection results that were done on the Russell, KS fermentation scrubber and distillation scrubber VOM emissions by factors of 2.0 and 1.9 from based test results reported as non-methane hydrocarbon (see page 4 of the December 18, 2002 letter from LincolnLand Agri-Energy to Donald Sutton, IL EPA). However, Applicant did not use any such scaler on the non-methane hydrocarbon stack test results reported for the Russell, KS dryer.

One approach would be to use the 2.0 scaler on the results on the theory that many of the compounds emitted with be oxygenates and higher boiling point/higher molecular weight compounds. Even the Applicant at one time in previously submitted information suggesting that 70% of the VOC on a mass basis would consist of acetic acid, which is a oxygenate.

This would mean the corrected uncontrolled emission rate considering high molecular weight and oxygenate compounds would be 238 times 2.0 or 476 lbs/hour. Rolling back this input to the thermal oxidizer by 98% yields a VOC emission of 9.52 lbs per hour 41.7 tons per year. Adding the post control distillation/other process emission number already corrected for oxygenates by Applicant of 1.121 lb/hr and 4.91 ton per year, Commentors conclude that the final thermal oxidizer emissions for combustion of dryer and process emissions and correcting all inputs and outputs for heavy molecular weight compounds/oxygenates are 10.641 lbs/hour and 46.61 tons per year.

There is simply no basis stated at all for Applicant's differential treatment in making oxygenate/high molecular weight corrections to the fermentation and distillation/other process stack test results expressed as non-methane hydrocarbon and yet not making such corrections to the reported non-methane hydrocarbon results for uncontrolled dryer VOM. Fermentation processes feature high production of oxygenated

compounds in the form of alcohols, aldehydes, ketones and organic acids. The lower molecular weight, low boiling point compounds will be evolved in fermentation and distillation processes. The higher molecular weight, higher boiling point compounds (and potentially more odorous materials) will preferentially be released in DDGS dryers, potentially along with some limited pyrolysis products.

#### **2.2.4 Even Assuming Applicant's Assumptions About Uncontrolled Dryer VOM and Distillation Process VOM from the Russell, KS Ethanol Plant, Applicant Still Mistakenly Understated its Thermal Oxidizer/Dryer-Related Total VOC Emissions by Saying it was Including VOC from Natural Gas Combustion But, in Actuality, Not Doing So**

Applicant used the 119 lb/hr projection from the Russell, KS dryer and doubled it for the 2 dryers at the LincolnLand Agri-Energy plant for an estimate of 238 lbs per hour of uncontrolled volatile organic matter (see review in the prior section for Commentor's correction of this emission number for oxygenates).

Applicant then took an extrapolation from the test results for the distillation scrubber stack test at the Russell, KS plant assuming 80% efficiency and extrapolated to an uncontrolled emission rate of 29.5 lb/hr [and **assuming no size correction for any size difference** between the Russell, KS plant and the Lincolnland Agri-Energy plant]. Applicant then multiplied the 29.5 lb/hr distillation/other process uncontrolled emission rate by a scaler of 1.9 to correct for non-methane organics stack test understatement of the emissions of high molecular weight and oxygenate compounds to arrive at a final uncontrolled emission rate of 56.05 lbs/hour.

Then, Applicant inexplicably and incorrectly claimed in a attachment sheet to the December 18, 2002 letter entitled "Lincolnland Agri-Energy, LLC, DDGS Production Emissions" the following:

"Data based on test data, engineering estimates and DDGS throughput.  
**Contribution from fuel combustion included within the emission factor.**  
**Emissions from fuel combustion included in totals listed below.**" (All emphasis supplied by Commentor)

Under "Process Vent Contribution to TO Stack," Applicant takes the exact same 56.05 lb/hr rate shown in preceeding paragraphs and calculates VOM emissions at 1.121 lb/hr and 4.91 ton/year based on 98% control efficiency. Under "Dryers & Natural Gas Contribution to TO Stack," Applicant takes the exact same 238 lbs of VOM (as carbon) from the dryer uncontrolled emission estimate and calculates a final VOM emission of 4.76 lb/hr and 20.8 ton/year. This is a total of 25.71 tons per year, but Applicant writes 25.76 ton/year in the overall emission table.

Despite the labels about “fuel combustion included within the emission factor,” “natural gas contribution” and “fuel combustion included in totals listed below,” no such inclusion was accomplished in Applicant’s emission table, with the possible exception of the dryer CO emission factor and calculation. Applicant’s derivation of the 56.05 lb/hr and 238 lb/hr uncontrolled emission rates and such claims about natural gas combustion being included as to VOC contributions cannot both be true at the same time. Applicant’s VOC emission presentation for the thermal oxidizer stack is wrong and misleading and constitutes an appealable issue of clear technical and legal error, which must not be accepted as valid by IL EPA.

Assuming for the moment that applicant’s emission characterization indicates 25.71 tons per year of VOC from controlled dryer VOC emissions, Commentors go on to add in the contribution from fuel combustion as set forth in the table below:

<b>VOC Emission Projection from Natural Gas Combustion in the LincolnLand Agri-Energy Dryers and Thermal Oxidizer</b>		
Thermal Oxidizer VOC from Natural Gas Combustion	Final emission 0.74 lb VOC/hr 3.24 tons VOC/year	135 MMBTU/hr; 8760 hr/year; 1000 BTU/scf; 5.5 lbs VOC/MMscf from AP-42 Table 1.4-2
Final VOC Emission from contribution from 2 Dryers	Uncontrolled 0.46 lb VOC/hr 2.01 tons VOC/year  Controlled 0.0092 lbs VOC/hr 0.04 tons VOC/year	84 MMBTU/hr; 5.5 lbs VOC/MMscf from AP-42 Table 1.4-2; <b>assume thermal oxidizer control of 98% efficiency</b>
Final Total of VOC Emissions from Natural Gas Combustion at Thermal Oxidizer Outlet	0.75 lbs VOC/hr 3.28 tons VOC/year	

In the subsequent section Commentors explain the significance of the emissions calculation in the preceding table.

**2.2.5 Commentor’s Summary Table Shows Revised Annual VOC Emissions at Applicant’s Facility Exceeds the VOC Major Stationary Source Threshold; as a Result, the Permit May Not be Issued in its Current Form**

Commentors summarize the revisions to VOC emission estimates discussed in aforementioned sections in the table below for Applicant’s facility:

<b>Commentor's Exposition of Revised VOC Annual Emission Estimates for Applicant's Ethanol Production Facility</b>		
VOC Emission Unit	VOC Emission (tons/year)	Notes
Thermal Oxidizer/DDGS Dryer control of process and dryer VOM emissions	46.61	Commentor's revision on the basis of Applicant's failure to correct for high molecular weight/oxygenate compounds
Natural Gas Combustion from Thermal Oxidizer and Dryer	3.28	Commentor's revision on the basis that Applicant said it considered this emission but didn't actually include it upon examination
DDGS Cooler Cyclone	14.54	Applicant's estimate, but no basis
Fermentation Scrubber Exhaust	37.50	Applicant's estimate
Product loading	8.05	Applicant's estimate
Fugitive leaks	4.10	Applicant's estimate
Storage tanks	2.74	Applicant's estimate
BioMethanator Flare	0.00	Applicant's estimate but doubted by Commentor
<b>Total VOC Emissions</b>	<b>116.82</b>	<b>Exceeds the VOC Major Stationary Source Threshold</b>

This table shows that Commentor's revised total VOC emissions for Applicant's proposed facility is 116.82 tons per year, which exceeds the VOC new Major Stationary Source Threshold under both IL EPA and U.S. EPA regulations.

Most of the basis of this revised emissions estimate arose from the need to consider emissions of oxygenated and higher molecular weight volatile organic compounds instead of simply relying on non-methane hydrocarbon test results which discounts the effect of such oxygenates and higher molecular weight compounds on total VOC emission calculations.

Emission characterizations for PSD applicability and non-applicability determinations must reflect volatile organic compound emission calculation analysis that takes the full mass of oxygenated VOCs into account. EPA directives on this matter are clear that use of "as carbon" measurements for purposes of new source review and Title V applicability and compliance are not permissible:

"For the other regulated pollutants that you listed, with the exception of VOC, calculation of the actual or potential emissions for purposes of NSR and title V



applicability should follow the EPA principles for developing emission factors, inventories and test methods for the subject pollutant. For VOC emissions, however, it is recognized that the EPA's test methods do not measure the pollutant mass exactly or only measure a subset of the pollutant mass.<sup>2</sup> Nevertheless, for the purposes of both NSR and title V applicability, our policy has been that VOC emissions should be calculated as the total mass of VOCs. That is, a value for each volatile organic compound known to be emitted should be calculated separately and the sum of the individual values should be reported as total VOCs (e.g., 20 tpy of toluene and 26 tpy of methyl ethyl ketone should be calculated separately and then reported as 46 tpy of VOC). This follows our guidance in the document titled "Procedures for Preparing Emission Factor Documents," where we indicate that emission factors for VOCs should be reported "in terms of actual weight of the emitted substance." Those organic substances which are specifically excluded from EPA's definition of VOC at 40 CFR § 51.100(s), because they have "negligible photochemical reactivity," should not be included in the total VOC emission calculation for NSR and title V applicability. The document also provides an exception in the case of unknown species by stating that such emissions should be calculated using an "educated guess" or a molecular weight of 44 (for reporting as propane). Where necessary, this procedure should be used to calculate emissions of those volatile organic compounds that cannot otherwise be quantified."

"It is the EPA's intent that a consistent approach be taken, wherever possible, to quantify and report pollutant emissions for its various air programs. Thus, the methods described above for quantifying pollutant emissions would also apply to our procedures for such things as NSR netting, emission trading and offsets, as well as for other SIP-related programs for criteria pollutants."<sup>2</sup>

This is clear articulation of EPA policy for the Prevention of Significant Deterioration permitting program. As a result, reliance on emission estimation methods reflecting VOCs measured only as carbon that understate the total mass of VOC species emitted cannot be used in an attempt to evade major stationary source status. Applicant's emission characterization and IL EPA's acceptance of it absolutely breaches the required conduct for federally significant air quality permitting pursuant to the Clean Air Act Prevention of Significant Deterioration program.

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<sup>2</sup> June 5, 2001 letter from John Seitz, Director, EPA Office of Air Quality Planning and Standards, to D. Edward Settle, Manager, Air Quality, ThermoRetec Corporation, Golden, CO available on EPA's Region 7 NSR website or from Commentors.

**2.3 Potential to Emit Issues Related to Carbon Monoxide Emission Characterization**

**2.3.1 Applicant’s Carbon Monoxide Emission Projection is Defective Because of Applicant’s Failure to Consider Natural Gas Combustion Contributions Even When it Claimed Such Contributions Were Being Considered**

Applicant’s carbon monoxide emission projection is defective for the same reason that Applicant’s VOC emission project was defective. Applicant again falsely labels its calculation as including contributions from natural gas combustion when, in fact, the calculation fails to consider such a contribution.

Commentor’s show a revised carbon monoxide emission projection for the subject facility in the table below:

<b>Commentor’s Carbon Monoxide Emission Projection for the LincolnLand Agri-Energy Facility</b>		
Contribution from Combustion of Natural Gas in the Thermal Oxidizer	11.34 lb/hr 49.67 tons/year	135 MMBTU/hr; AP-42 factor of 0.084 lb CO/MMBTU
Contribution from Dryer Exhaust Input	Uncontrolled 215.8 lb/hr 945 tons/year Controlled 21.6 lb/hr 94.61 tons./year	Assume applicant’s 13.0 lb/ton DDGS and 90% control in oxidizer; 145446 ton DDGS/year; assume applicant’s assertion that nat gas combustion generation of CO and CO generation from thermal degradation of DDGS and VOCs producing CO are reflected in 13.0 lb CO/ton DDGS factor
Contribution from combustion of BTU content of dryer and distillation/other process VOCs	0.484 lb/hr 2.12 tons/year	Assume 238 lbs/hr of VOC as carbon from dryer and 29.5 lbs per hr of VOC as carbon from distillation/other processes; assume BTU value as equivalent methane at 21,518 BTU/lb (LHV); assume 0.084 lb CO/MMBTU
<b>TOTAL CO Emissions</b>	<b>33.42 lbs/hr 146.4 tons/year</b>	<b>Calculated CO Emissions Exceed the CO Major Stationary Source Threshold</b>

From the table above Commentor’s carbon monoxide emission projection shows the proposed facility exceeds the carbon monoxide major modification threshold; the proposed permit may not be issued and Applicant must submit a Prevention of Significant

Deterioration permit application with Best Available Control Technology and air quality impact demonstration.

For the same reasons as set forth in the prior section on the failure of the permit to adequately limit the NOX emissions, the same criticisms apply to the failure of the proposed permit to properly limit the potential to emit of carbon monoxide as well.

The most recent overall annual emission tables show that a 1.04 ton per year carbon monoxide emission associated with the biomethanator flare is not additive to the potential to emit. If this represents such gas being used as a pilot flame on the outdoor flare then the failure to add this amount to the CO potential to emit is an error. Finally, if the 1.04 ton per year of carbon monoxide is representative of emissions only when the full output of the methanator is directed to the flare when the dryers are down, then the emission calculations appear to have failed to consider both carbon monoxide and NOX contribution of the outdoor flare pilot to the overall facility potential to emit.

Finally, the December 18, 2002 letter from Indeck to Donald Sutton promised emission test based information on uncontrolled carbon monoxide emissions from DDGS dryers by the end of March 2003, but a public disclosure of the file as of April 10, 2003 revealed no such information in the file. Applicant has thus failed to establish the most reliable estimate of uncontrolled carbon monoxide emissions for the facility when Applicant previously promised to provide this data.

### **3 Applicant has Not Adequately Characterized Expected Hazardous Air Pollutant Emissions from the Proposed Facility**

Applicant has failed to provide required information about Clean Air Act hazardous air pollutants from the proposed facility. Applicant's ethanol production facility and production process can be expected to discharge the following Clean Air Act listed hazardous air pollutants:

methanol, formaldehyde, acetaldehyde, propionaldehyde

Applicant has failed to characterize these emissions at its proposed facility and failed to provide any hazardous air pollutant information in its December 18, 2002 application amendment.

The permit should be amended to include federally enforceable limitations on hazardous air pollution emissions from the facility.

**4 Particulate Emissions from the DDGS Cooling Cyclone are Likely to be Problematic**

Applicant has proposed and IL EPA apparently is willing to accept the most minimal air pollution control system for the DDGS cooling cyclone. Aside from allowing uncontrolled volatile organic compound emissions, this proposed source is likely to have particulate emission and visible emission problems. IL EPA's allowance for an extremely lax 30% opacity limitation covering this source is bad enough and will encourage the source to allow a visual blight in a rural community. PM emissions from this source are predicated on a gas concentration rate of 0.02 grains per dry standard cubic foot. It is not likely that the mechanical cyclone collector will be able to achieve this limit if uncontrolled PM emissions are significant.

**5 Applicant Has Not Provided Important Physical Stack Information and Gas Exit Conditions on Emission Points**

Even if a source is minor, it may not be permitted to cause significant deterioration of air quality. In order to know that the source is not causing significant deterioration of air quality in the form of excessive consumption of PSD increments, the physical stack conditions and physical gas exit parameters must be known. Applicant has failed to provide this information on most or all of the stacks, notably including the thermal oxidizer stack. Such failure is highly objectionable.

**6 Applicant and Illinois EPA are Prohibited from Holding a Site Plan as Confidential Information**

Applicant has declared its site plan as confidential and IL EPA has not disclosed this information. A site plan must always be disclosed since such site plans constitute "emission data," whose disclosure is required under 42 U.S.C. §7414(c) and 40 CFR §2.301. A site plan constitutes "emissions data" because it is necessary to determine the ambient impact of an emission source in air quality dispersion analysis through considerations of stack location and the necessity to consider downwash. U.S. EPA guidance published at 56FR7402 shows data elements as "emissions data" that would be contained in a site plan.

**7 Other Comments Germaine to the LincolnLand Agri-Energy Permit Review**

The permit should be amended to include three types of federally enforceable emission limitations for the thermal oxidizer stack and the fermentation scrubber stack: pound per hour limits, gas concentration limits and pound of emission per unit of production rate or feedstock throughput rate.

The conditions relating to the fermentation scrubber should include a prohibition on scrubber bypass, minimum pressure drop requirements and a minimum scrubber liquid recirculation rate.

All PM emission limitations on the thermal oxidizer and the DDGS cooling cyclone should include test method and emission limitation compliance with the total of both filterable and condensable particulate matter (both “front half and back half” of filter trains). This is not clear in the proposed permit.

Given the large fluxes of carbon monoxide expected in the proposed facility, the permit provision allowing removal of the CO continuous monitoring requirement at 18a(iii) should be dropped.

## **8 The Applicant Has Commenced Construction of a Major Stationary Source in Violation of the Federal Clean Air Act, Federal Air Pollution Regulations and IEPA Regulatory Requirements**

The Applicant apparently commenced construction earlier this year on this new major stationary emission source without the required federal and/or state Prevention of Significant Deterioration permit. Exhibit 1 is a news article reporting on this commencement of construction.

Given the major stationary source status of the LincolnLand Agri-Energy facility, this source must have a Prevention of Significant Deterioration permit reflecting Best Available Control Technology and the required air quality impact review before such construction may be lawfully commenced.

Applicant is thus immediately vulnerable to a federal enforcement order from EPA under 42 U.S.C. §7477 and to citizen suits in the Federal District Court for the Southern District of Illinois after a 60 day notice pursuant to 42 U.S.C. §7604(a)(3). With the filing of these comments, the Plumbers and Steamfitters Local Union 157 bring this matter to the attention of both the Illinois Environmental Protection Agency and air enforcement and air permit review offices of the U.S. Environmental Protection Agency, Region 5, Air and Radiation Division. Commentors urge the Applicant to immediately cease construction until such time that Applicant has submitted the required Prevention of Significant Deterioration permit application and obtained the required permit from Illinois EPA.

Commentors ask that IL EPA respond to each and every point raised in this document in a written responsiveness summary if it proceeds to issue the proposed permit in any form and that the permit be subject to a 30 day delayed effective date to allow Commentors time to commence a contested case appeal to the Illinois Pollution Control

Board or to take other action to ensure compliance with federal and state air permitting regulations.

Respectfully submitted,

**Charles L. Berger, Attorney for  
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**Alexander J. Sagady  
Environmental Consultant**