DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

N792738435

FACILITY: W2Fuel LLC		**SRN / ID:** N7927
LOCATION: W BEECHER RD (M-34), ADRIAN		**DISTRICT:** Jackson
CITY: ADRIAN		**COUNTY:** LENAWEE
CONTACT: Perry Mulhollen , Environmental, Health & Safety		**ACTIVITY DATE:** 01/26/2017
STAFF: Mike Kovalchick	**COMPLIANCE STATUS:** Non Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Scheduled Inspection conducted on 1/26/17 and 1/2/17. Numerous compliance issues.		
RESOLVED COMPLAINTS:		

New Major HAP Source

Facility Contact

Perry Mulhollen (PM) Environmental, Health & Safety Manager

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Purpose

On January 26 and February 2, 2017, I conducted an unannounced compliance inspection of W2Fuel LLC (Company) located in Adrian, Michigan. I was accompanied by Zach Durham and Scott Miller with the DEQ-AQD Jackson District Office. (Note: Scott was only present on Day 2.) The purpose of the inspection was to determine the facility's compliance status with the applicable federal and state air pollution regulations, particularly Michigan Act 451, Part 55, Air Pollution Control Act and administrative rules.

Facility Location

The facility is located on a 25 acre property just inside the city limits of Adrian. There is an industrial plant just to the East of it and a residential area 600 feet NE of the plant across Beecher Road. See attached aerial photo dated October, 2015 which appears to show only 1 process stack on the production building roof at that time.

Facility Background

The Company submitted a Permit application dated December 29, 2006 identified as PTI application 5-07. The permit description was as follows:

"The production process involves base-catalyzed esterification of vegetable oils with methanol. The feedstock (i.e., soybean oil) is combined with methanol and sodium methylate (a catalyst) to form biodiesel (methyl ester). Glycerine is also formed as a byproduct. The processing equipment will be supplied by NextGen Fuel, Inc. and consists of a continuous, skid-mounted chemical process plant with a system capacity of 10,000,000 gallons per year. The ski-mounted process plant is a closed system. Methanol is the primary air contaminant emitted from the process plant. The process equipment is vented to an absorber for control of the methanol emissions." (Note: System throughput was rated as 24 GPM of biodiesel. 0.1 gallons wash water per gallon of biodiesel is required or 1.2 GPM. 0.125 gallons of methanol required per gallon of biodiesel. Methanol recovery was estimated at 99%.)

The following information about the absorber was found in the permit application:

"The methanol absorber consists of a counter current packed column. The incoming vegetable oil is used as the absorbing fluid. The absorber and biodiesel production equipment are integrated such that it is not possible to operate the biodiesel process without oil passing through the absorber."

"The system is designed to operate with incoming oil in the range 100 to 150 F. The packing promotes intimate contact between the liquid oil phase and the methanol vapor phase such that any methanol that exits the system will be close to the temperature of the incoming oil. The packings are from the Jaeger tripack range. They will be constructed using polypropylene. The methanol absorber has been designed to operate at an efficiency greater than 95%. The incoming methanol stream is from a vacuum unit that delivers an average flow rate of 1.5 cubic feet per minute (CFM) to the unit. In reality this is from a pump with a capacity of 15 CFM but is only actuated for a maximum of 10% of the operational time." A diagram shows the absorber unit to be 9 feet tall with 6 feet of it

containing packing material. It is 2 feet in diameter. The oil comes in through the top and goes through an oil distributor before reaching the packed bed then out the bottom. The packing material is held in place with a top and bottom mesh bed support. The methanol comes in through the bottom and rises up through the packing material and exits out the top after first passing through a demister. It then goes out to a vent on the roof. (Note: A demister is a device often fitted to vapor-liquid separator vessels to enhance the removal of liquid droplets entrained in a vapor stream.) No other information was provided about the absorber in the permit application.

In a letter dated February 12, 2007, the Company's consultant Soil and Materials Engineers, Inc sent a letter to Terry Wright of the DEQ to document the exempt status of the planned biodiesel processing plant. The letter indicated the steps the Company would take in order to fall under the Rule 290 exemption. *"Biofuel Industries Group, LLC will update the enclosed spreadsheets on a monthly basis with information on: the volume of biodiesel and glycerine produced; the operating time for the vacuum pump associated with the methanol absorber and the volume of biodiesel and glycerine shipped off-site. The spreadsheets include formulas that will automatically calculate monthly emissions to document compliance with the Rule 290 criteria."*

A letter dated March 5, 2007 from Terry Wright of the DEQ-AQD to the Company indicated the permit application was voided per Rule 290(a)(i). (Any emission unit that emits only noncarcinogenic volatile organic compounds or noncarcinogenic materials which are listed in R 336.1122(f) as not contributing appreciably to the formation of ozone, if the uncontrolled or controlled emissions of air contaminants are not more than 1,000 or 500 pounds per month, respectively.)

The Company's facility officially opened for business on August 18, 2007.

A compliance inspection was conducted on July 16, 2008. It verified that the process as described in the original permit application had been installed. Data for June 2008 showed VOC emissions of 842 pounds for the Biodiesel plant emission unit. This was based on an assumed absorber control of 90%. The Rule 290 calculation work sheet indicated that compliance was anything less than 1000 pounds per month per emission unit. (It is 500 pounds per month for an "uncontrolled" process.) (Note: From the original permit application: *"In accordance with guidance published by the Michigan Department of Environmental Quality (MDEQ), "uncontrolled emissions" are being tracked because the methanol absorber is an integral part of the biodiesel plant and the process cannot operate without the absorber on line. These instructions have been prepared to assist in updating the Excel spreadsheets needed to document compliance with "Rule 290"".*) DEQ-AQD guidance document on Rule 290 can be found here: https://www.michigan.gov/documents/deq/deq-ead-caap-airpermit-eqp3558_292054_7.pdf

It provides further clarification on when 1000 pounds or 500 pounds is the appropriate emission limit to met in order to qualify for the exemption.

"If an emission unit is equipped with a control device (i.e., equipment that captures and/or destroys air

contaminants) and the control device is not vital to production of the normal product of the process or to its normal operation, then there are two options of recording emissions in Sections 2, 3, and 4:

1. record all uncontrolled emissions of air contaminants (i.e., all air contaminants entering the control

device); or

2. record all controlled emissions of air contaminants (all air contaminants leaving the control device).

Whatever option is chosen, make sure that option is used consistently throughout Sections 2, 3, 4, and 5.

If the emission unit is not equipped with a control device or the control device is vital to production of the normal product of the process or to its normal operation, then the quantity of each emission of air contaminant identified in Sections 2, 3, 4, and 5 should be recorded as uncontrolled emissions." Note: Federal NSPS defines an absorber as a recovery device; not a control device: *"Recovery device means an individual unit of equipment, such as an absorber, carbon adsorber, or condenser, capable of and used for the purpose of recovering chemicals for use, reuse, or sale."*)

Another compliance inspection was conducted on April 3, 2012. The inspection verified that Rule 290 calculations were still being done. At that time, biodiesel production was minimal so emissions were minimal.

The Company's original name was Biofuel Industries Group LLC. The Company was acquired through Bankruptcy Court on July 28, 2011 by LVA Adrian Biofuel, LLC. It was later renamed to W2Fuel LLC.

A local press article came out on March 3, 2016. The article indicated that an enzymatic reactor had been installed at the facility in November, 2015. The article further outlined that it would allow for the use of lower cost

feedstocks, such as recycled vegetable oils and other waste fats, rather than using virgin soy and corn oil. It noted that this change had increased the facility's production by 7 million gallons, taking the projected yearly amount up to 17 million gallons of biofuel. (Note: Another enzymatic reactor was later added in August, 2016.)

Regulatory Applicability (As it was understood prior to the January 26, 2017 inspection.)

Active Permits: None

Permit Exempt Equipment:

Methanol, sodium methylate/methanol solution, biodiesel, glycerine and soy oil tanks exempt per Rule 284(i) because tank capacities are less than 40,000 gallons and the vapor pressure of the liquids are less than 1.5 psia at storage conditions. Methanol tank also found to be exempt per Rule 290. Sodium Methylate tank also found to be exempt per Rule 290.

(2) Five million BTU natural gas fired boilers exempt per Rule 282(b)(I) but subject to 40 CFR 63 Subpart DDDDD

(1) Emergency Generator at 1.7 million BTU/hour exempt per Rule 282 (b) (ii) listed in Permit application but never installed.

Product Loading Station exempt per Rule 290.

Next Gen Biodiesel Plant exempt per Rule 290. Initially determined to be exempt in 2007 but the status has changed. See further report details.

NSPS 40 CFR Subpart Kb-Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. Methanol and sodium methylate solution (in methanol stored in 20,000 gallon storage tanks. Although the size of the storage tanks exceeds the 75 cubic meter capacity referenced in 40 CFR 60.110b and 60.112b(b), the maximum vapor pressures for methanol and sodium methylate solution are less than 76.6 KPa referenced in 40 CFR 60.112b(b). Due to the low vapor pressures for methanol and sodium methylate solution, the requirements for vapor control devices, testing, monitoring, and recordkeeping are not applicable to the facility.

NSPS 40 CFR 60 Subpart RRR-Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes. The facility is subject to this standard because it produces glycerine (which is identified under 40 CFR60.707) as a final byproduct and the design capacity for glycerine production is more than 1,100 tons/year, referenced under 40 CFR 60.700(c)(3) It does not meet 0.01 scm/min vent stream exemption as vent flow described in original permit application was 1.5 feet per cubic feet which converts to 0.04 scm/min.

"§ 60.702 Standards.

Each owner or operator of any affected facility shall comply with paragraph (a), (b), or (c) of this section for each vent stream on and after the date on which the initial performance test required by § 60.8 and § 60.704 is completed, but not later than 60 days after achieving the maximum production rate at which the affected facility will be operated, or 180 days after the initial start-up, whichever date comes first. Each owner or operator shall either:……..

(c) Maintain a TRE index value greater than 1.0 without use of a VOC emission control device."

"Total resource effectiveness or TRE index value means a measure of the supplemental total resource requirement per unit reduction of TOC associated with a vent stream from an affected reactor process facility, based on vent stream flow rate, emission rate of TOC, net heating value, and corrosion properties (whether or not the vent stream contains halogenated compounds), as quantified by the equation given under § 60.704(e).

Vent stream means any gas stream discharged directly from a reactor process to the atmosphere or indirectly to the atmosphere after diversion through other process equipment. The vent stream excludes relief valve discharges and equipment leaks."

Refer to § 60.704 Test methods and procedures on how to determine the TRE.

"(d) The owner or operator of an affected facility that seeks to demonstrate compliance with the TRE index value limit specified under § 60.702(c) shall install, calibrate, maintain, and operate according to manufacturer's specifications the following equipment, unless alternative monitoring procedures or requirements are approved

for that facility by the Administrator:

(1) Where an absorber is the final recovery device in the recovery system:

(i) A scrubbing liquid temperature monitoring device having an accuracy of ±1 percent of the temperature being monitored expressed in degrees Celsius or ±0.5 °C, whichever is greater, and a specific gravity monitoring device having an accuracy of ±0.02 specific gravity units, each equipped with a continuous recorder; or

(ii) An organic monitoring device used to indicate the concentration level of organic compounds exiting the recovery device based on a detection principle such as infra-red, photoionization, or thermal conductivity, each equipped with a continuous recorder."

NSPS 40 CFR Part 60 Subpart VVa-Equipment Leaks of VOC in the Synthetic Organic Chemical Manufacturing Industry (SOCMI) for which Construction, Reconstruction, or Modification Commenced After November 7, 2006. (Similar to NESHAP for Equipment Leaks as stated below.)

The following additional applicable regulation apply to Major HAP sources:

NESHAP 40 CFR Part 63 Subpart FFFF-Miscellaneous Organic Chemical Manufacturing

NESHAP 40 CFR Part 63 Subpart DDDDD-NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

Example Biodiesel Air Permits issued in other States:

https://dnr.mo.gov/env/apcp/permits/docs/admdeerfield2015cp.pdf

https://dnr.mo.gov/env/apcp/permits/docs/mid-ambiofuels-mexico.pdf

http://www.dec.ny.gov/dardata/boss/afs/permits/261010127800001.pdf

https://www.pca.state.mn.us/sites/default/files/06900025-002-aqpermit.pdf

https://www.iowadnr.gov/portals/idnr/uploads/air/operpermit/finalpermits/15-TV-008.pdf

http://wwwapp.epa.ohio.gov/dapc/permits_issued/574463.pdf

https://www.valleyair.org/notices/Docs/2015/08-26-15_(S-1153325)/S-1153325.pdf

https://dnr.mo.gov/env/apcp/permits/docs/agprocessing-stjoebiod-2012opf.pdf

http://app.adem.alabama.gov/efile/Download.ashx?lib=Air&docId=003733259

Arrival & Facility Contact Day 1

Visible emissions or odors were not observed upon our approach to the Company's facility. We arrived at approximately 1 PM, proceeded to the facility office to request access for an inspection, provided my identification, and met with Perry Mulhollen (PM) who is the Environmental, Health & Safety Manager. A pre-inspection conference was held with PM. I informed PM of my intent to conduct a facility inspection and to review the various records as necessary. PM extended his full cooperation during the inspection, accompanied me during the full duration of the inspection, and fully addressed my questions. PM noted that he had only been on the job for six months with much of that time had been focused on compliance issues with the Company's Iowa biodiesel plant. He admitted that he was not yet up to speed on all the compliance issues for the facility and mentioned that an environmental audit was scheduled to be conducted in February, 2017 by a consulting firm.

Pre-Inspection Meeting Day 1

PM outlined that the Company is currently operating (2) 12 hours shift per day, 7 days a week, 350 days a year. They have 30 employees. They currently have more demand for their Biodiesel product than they can produce. Back in June of 2016, the Company finally switched into full production mode after years of producing very limited quantities of Biofuel. PM indicated that an enzymatic reactor had been installed in November, 2015. A second enzymatic reactor was installed in late August 2016. Neither of these 2 processes are controlled. PM indicated that the Company had stopped filling out required Rule 290 spreadsheets to show that their facility was exempt from PTI permitting prior to him starting his job. PM produced a Rule 290 spreadsheet that was filled out for August, 2013 which was probably when the practice was discontinued. He cited frequency employee turnover and ownership changes for the reason. He indicated that it was likely that they could reconstruct more recent records based on the production data that they were maintaining. PM also produced a spreadsheet that leak

detection was being conducted for the areas surrounding the glycerin tanks, the glycerin poly tanks, the waste water tanks, the sump pits, process, and the methanol day tank. See Attachment (1). Attachment (2) is the process flow diagram for the enzymatic process. It shows it as it was prior to the addition of the second Reactor. Attachment (3) is for the flow diagram for the original Biodiesel plant.

Onsite Inspection Day 1

PM started to give us a tour of the facility but it was cut short due to a spill on the production area floor that forced us to leave the area. Before this happened, we were able to examine the absorber control device. After tracing the various pipes it became obvious that the vegetable feedstock pipe did not route into the control device although the methanol feed pipe was still being routed into the bottom of the absorber. An additional plant employee who accompanied us appeared to be surprised by the discovery. A possible explanation on what happened was given after discussions with other plant personnel ensued. Approximately three months ago, the absorber purportedly had plugged up. Since the vegetable feed stock pipe goes first into the absorber prior to going through the rest of the production process, the plugging of the absorber halted the production of the biodiesel. The vegetable feedstock pipe was then simply rerouted to bypass the absorber. With no vegetable stock being used, there is nothing in the absorber to absorb the methanol gas. Another explanation was also offered on why they didn't bother to fix the absorber. A plant engineer purportedly indicated that the absorber wasn't working to begin with or otherwise how it was designed. (i.e. the vegetable oil was not absorbing the methanol.) (Note that the plugged absorber had no effect on the 2 enzymatic reactors since those are separate uncontrolled processes.) (Additional Note: The following is what an internet search provided on this topic:

Background information on the suitability of using soybean oil(a triglyceride) as a solvent to capture methanol in an absorber:

https://www.researchgate.net/figure/259900845_fig2_Fig-2-The-molar-ratio-of-alcohol-methanol-or-ethanol-to-triglycerides-during-reaction

"The miscibility of triglycerides and methanol are rather poor due to molecular dissimilarity in size and polarity and therefore when in contact they form two liquid phases. The initial concentration of oil in the methanol at 20.1 C is only about 3.7 g/L which could be almost neglected in terms of mole fraction"

"At atmospheric pressure methanol and triglycerides are almost immiscible up to 60. 1 C"

https://www3.epa.gov/ttnchie1/mkb/documents/fpack.pdf

"*The pollutant to be absorbed must be soluble in the fluid.*"

"*VOC Control: Absorption is a commonly applied operation in chemical processing. It is used as a raw material and/or a product recovery technique in separation and purification of gaseous streams containing high concentrations of organics (e.g., in natural gas purification and coke by-product recovery operations). In absorption, the organics in the gas stream are dissolved in a liquid solvent. The contact between the absorbing liquid and the vent gas is accomplished in counter current spray towers, scrubbers, or packed or plate columns (EPA, 1995). The use of absorption as the primary control technique for organic vapors is subject to several limiting factors. One factor is the availability of a suitable solvent. The VOC must be soluble in the absorbing liquid and even then, for any given absorbent liquid, only VOC that are soluble can be removed. Some common solvents that may be useful for volatile organics include water, mineral oils, or other nonvolatile petroleum oils. Another factor that affects the suitability of absorption for organic emissions control is the availability of vapor/liquid equilibrium data for the specific organic/solvent system in question. Such data are necessary for the design of absorber systems; however, they are not readily available for uncommon organic compounds.*

The solvent chosen to remove the pollutant(s) should have a high solubility for the vapor or gas, low vapor pressure, low viscosity, and should be relatively inexpensive. Water is used to absorb VOC having relatively high water solubilities. Amphiphilic block copolymers added to water can make hydrophobic VOC dissolve in water. Other solvents such as hydrocarbon oils are used for VOC that have low water solubilities, though only in industries where large volumes of these oils are available (e.g., petroleum refineries and petrochemical plants) (EPA, 1996a). Another consideration in the application of absorption as a control technique is the treatment or disposal of the material removed from the absorber. In most cases, the scrubbing liquid containing the VOC is regenerated in an operation known as stripping, in which the VOC is desorbed from the absorbent liquid, typically at elevated temperatures and/or under vacuum. The VOC is then recovered as a liquid by a condenser (EPA, 1995).")

At this point, we decided to conduct a roof inspection. The highest part of the plant roof is accessed via a series of three ladders. The first one was inside the building with next 2 located on the roof itself. We only ascended

the first two as the third one didn't look safe and there was no need to climb higher since the highest production building roof was visible. The only notable findings was that there was 3 identical stacks on the production building roof protected with flame arrestors. One of them was the stack from the absorber. PM did not know what the other 2 were being used for. PM consulted with other plant personnel and determined that the other stacks were from the 2 enzymatic reactors. It was clear that those 2 reactors were venting directly to the atmosphere with no controls at all. Unknown and possibly significant amounts of methanol were being released. The need for flame arrestors on these 2 stacks suggested the presence of significant amounts of methanol. As outlined in the original PTI application, the roof height of the production building is 49 feet with the stack being 4 feet high above the roof with a diameter of 4". Observations suggest that this is correct for all 3 stacks. At this point, the inspection ended due to the lack of key plant personnel who were busy addressing the active spill not to mention the lingering safety issues.

Recordkeeping Review Day 1

Due to time constraints and the general lack of availability of key records and time to find them, I informed PM that it would best if I simply followed up with an email that outlined exactly what I needed to look at it.

The following email was sent to PM the morning after the inspection:

"Thu 1/26, 9:18 AM

Perry,

It was a pleasure meeting with you yesterday during our inspection. To summarize our concluding discussions, it is very important that the Company move quickly to get back into compliance. Resolving the issue with the absorber, determining what the current actual emissions are, hiring a consultant to work on a new permit application and determining new emission control strategies and associated required stack testing, reviewing all federal requirements to ensure that you are in compliance with them, getting familiar with the MAERS emission reporting system are good places to start on.

Per our discussions yesterday during the inspection; below is my request for additional information. Please provide this information by no later than COB next Tuesday:

Please provide complete written descriptions of the 2 enzymatic reactors and associated process. What name do you use for each reactor to describe it? Please reconfirm exactly when they were installed and became operational. Please provide which feedstock you are using for these reactors. Please confirm design capacity of each of these 2 reactors. (ie press reports indicated that the first reactor increased production by 7 million gallons for a total of 17 million gallons per year.) Are the reactor vessels the only emission points from this process? Please reconfirm the temperature of the reactor vessels. Why do these processes have no methanol control especially in light of the fact that methanol is expensive and recovery generally makes sense?

What changes have been done to the original esterification process as described in permit application 5-07? (Original Description of Emission Unit. Next-Gen biodiesel processing plant, including Flow-Control & Reaction Skid, Glycerine Separation Skid, Methanol Recovery Skid, and Bio diesel Wash Skid, and Methanol Absorber. The absorber is integral to the production process.)

What information do you have regarding the vacuum pump that is used to move around the methanol vapor? (Originally described as the VP301 Vacuum pump in the permit application… Vacuum unit delivers an average flow rate of 1.5 cubic feet per minute (CFM) to the unit. Pump is at 15 CFM but only operates at 10% of time. 6 feet of packing material in absorber.)

Please provide any evidence you have that would show the date on when the feedstock piping was rerouted from the top of the absorber.

Please provide a detailed explanation on why a decision was made to make this alteration to the absorber? Who was involved in that decision?

It was mentioned during the inspection that an engineer had determined that the absorber as previously designed was not working as the feed stock simply was not absorbing the methanol. Who is this engineer? Can you provide further details on what he knows about this?

What is the average temperature of the feedstock going into the absorber?

Can you provide any technical information at all that shows the absorber has been working as designed to recover 90% to 95% of the methanol emissions?

What is the average amount of methanol that is used at the facility per day? (We were provided with a number of 7000 gallons. Is that correct?) Provide a break down between the 3 different production emission units.

Is the Biodiesel cleaned with water? What is the percent of methanol in the final biodiesel product?

What is the percent of methanol in the glycerin product that is shipped offsite?

What is percent of methanol in water waste that is shipped offsite? What is the monthly amount of methanol in the waste?

Can you do a mass balance on the methanol? (ie monthly amount of methanol purchased, amount of methanol used up in the reaction, amount of methanol in the final biodiesel and glycerin products and amount of methanol in any waste stream with difference equally releases to the atmosphere.) If so, please do so for the month of December 2016.

Please provide monthly actual methanol/VOC calculations starting in December 2015 and ending at the end of December 2016. (Assume zero percent control unless you can show that the absorber is actually working as designed.) This should include emissions from the outdoor tanks, fugitives, and the 3 emissions points from the reactors and absorber. (A good start would be using the Rule 290 calculation sheets.) If possible, also provide the same information above but for potential methanol/VOC emissions based on current design capacity.

Please provide biodiesel production data over the same period.

Please provide any maintenance records you have for the absorber.

When did the Company stop doing Rule 290 calculations? Why?

Please further explain current ownership of the plant. For instance, in our file it refers to a letter dated September 12, 2001 from a Mr Paul Orentas, CEO W2Fuel, stating the facility was purchased on July 28, 2011, and identifying the new name of the facility as LVA Adrian Biofuel, LLC. (Or rather acquired via asset purchase in bankruptcy court. When did the name change back to W2Fuel LLC?

What is the size of the methanol tank outside? What is the size of the sodium methylate tank outside?

Is the feedstock still stored in (12) 30,000 gallon tanks? What is the temperature of the tanks?

In the permit applications, Methanol feed rate was 2.5 gallons per minute, sodium methylate solution feed rate was 0.25 gallons per minute and soy oil feed rate was be 24 gallons per minute. What is the current feed rates for all the processes now?

Is Biodiesel still stored in (12) 30,000 gallon above ground storage tanks. Is Glycerin still stored in (2) 20,000 gallon above ground storage tanks.

Do you have any documentation to show that the Company is in compliance with the following federal requirements or otherwise not applicable? (Assume that you are now considered a Major source of HAPS.)

40 CFR 60 Subpart VV-Standards of Performance for Equipment Leaks of VOC in Synthetic Organic Chemicals Manufacturing Industry.

40 CFR 60 Subpart RRR-Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes. Produces glycerine more than 1,100 tons/year.

40 CFR 61 Subpart V-National Emission Standard for Equipment Leaks (Fugitive Emission Sources) Need to implement a maintenance and inspection program to detect and repair leaks from piping and equipment containing more than 10% methanol.

40 CFR 63 Subpart I National Emission Standards for Organic Hazardous Air Pollutants for Certain Processes Subject to the Negotiated Regulation for Equipment Leaks

40 CFR 63 Subpart EEEE. National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution(Non-Gasoline)

40 CFR 63 Subpart FFFF. National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing.

40 CFR 63 Subpart DDDDD-NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters.

What are the product loading station emissions calculations from loading tanker trucks or rail cars with biodiesel or glycerine?

This statement was in the Company's original permit application: "2 150-HP natural gas fired York Shipley boilers to generate steam. Each boiler rated at 5 million btu/hour. One boiler used as back-up. 3 million for transesterification process, 1 million for esterification process, 500k for heat rail car. " Any changes to this?

Are these vent parameters correct for all 3 stacks from production?....roof height 49 feet. At least 4 feet above roof diameter 4" inches at 1.5 cubic feet per minute with max temp of 150 F.

It was mention during the inspection, that there was a process that discontinued shortly after you started working at the Company. Please provide a complete written description of this process, when it was installed, when it was removed. What emissions from this system controlled?

When did the Company switch to basically full production mode? Was that in June, 2016?

Has the Company investigated whether they are in compliance with the Emergency Planning and Right to Know Act such as filing chemical inventory forms with emergency response authorities?

When exactly is an environmental audit scheduled to occur at your facility?

That is about it for now. Do the best you can in providing responses to my questions. Let me know if you have questions. Thanks!

The following is the email response received from PM. See Attachment (4).

Post-Inspection Meeting Day 1

We held a brief post-inspection meeting with PM. I indicated that I had numerous compliance concerns and would need a lot of additional information to sort it all out. I further stated that I would be sending an email requesting the records later in the day. We thanked PM for his time and cooperation, and we departed the facility at approximately 3:20 PM.

Arrival & Facility Contact Day 2

Visible emissions or odors were not observed upon our approach to the Company's facility. We arrived at approximately 9:15 AM on February 2nd, proceeded to the facility office to request access for an inspection, provided my identification, and met with PM. We also met with Roy Strom(RS) who is the COO for the Company. A pre-inspection conference was held with PM & RS. I informed PM & RS of our intent to finish conducting a facility inspection as a follow-up to last week's inspection and to go over their answers to our previous inquiry that can be found in Attachment (4). PM & RS both extended their full cooperation during the inspection, accompanied us during the full duration of the inspection, and fully addressed our questions as best as they could.

Pre-Inspection Meeting Day 2

The Company provided some additional information not covered previously. This include the following:

1) They clarified that the enzymatic reactors are both batch reactors. It takes about 48 hours to complete a reaction.

2) The enzymatic reactors go through a 5 hour cycle where they are heated to 120 Deg. F in order to kill the enzymes and complete the reaction

3) The feedstock is heated to 160 deg F. to remove water that would interfere with the catalyst.

4) The sodium methylate catalyst solution contains 30% methanol in order to make sure that the catalyst is in liquid form.

5) IProcess flow diagrams previously provided were not correct or updated.

6) There is a separate waste water tank that contains methanol. A truck delivers the wastewater to a bio-digester facility in Flint every couple of days. The quantities of waste water were not immediately available.

7) There is both a wet methanol tank and a "dry" methanol tank. The dry tank is used to supply the feed to the biodiesel processes. The wet methanol tank contents are periodically delivered to Defiance, Ohio where the methanol is distilled and eventually returned to the facility as dry methanol.

8) For the main production line, the Skid #3 flash dryer sends vapor through the VP301 pump and then on to the absorber.

9) For the main production line, other processes that have vapor head pass through a chiller and then on to a wet methanol tank with remaining vapor sent to the absorber.

10) For the enzymatic process, the front dryer skid pump from the dryer can send water/methanol vapor out the West side of the building (see attached photo) or alternatively the operator can send to a waste water tank that has a vent on it. A truck picks it up every 2 days.

11) For the enzymatic process, a decanting process produces a glycerin/methanol mixture that is sent to 2 indoor storage tanks. Methanol emissions from these tanks combine and exhaust out the South side of the building near the wet methanol tank(now labeled glycerin tank) See attached photos.

12) For the main production line, a wash tower sends waste water containing some methanol to the same waste water tank used by the enzymatic process.

13) A consultant would conduct an environmental audit at the facility starting Monday, February 7.

14) They would make a decision regarding choice of a consultant to handle the required permit application and related compliance issues within the next few days and were hopefully that they could start immediately.

Onsite Inspection Day 2

PM and RS showed us around the facility. We first started outside to look at the tank farm and the material/product loading/unloading areas. The tanks look to be well maintained. See attached photos. In general, the vapors from the trucks/railcars are not being controlled. However, Part 7 Rules do not appear to apply to this operations as they handle less than 5 million gallons per year of a particular material and the vapor pressures are modest. Little odor was noted other than that from vegetable oil. Other emission points include a small vent coming out the West side of the building from the dryer in the enzymatic process flow, and a side vent on the South side of the building coming from the indoor glycerin/methanol tanks.

Near the feedstock truck loading area was located a water tote. (See attached photos). Two rubber hoses each about 1.5" in diameter were feeding into the top of the open tote. The liquid in the tote was discolored. Per PM, this was part of the changes made when the absorber became blocked last August. (See attached photos of absorber.) The methanol that use to be sent to the absorber was instead sent to the tote. A trace of the 2 lines showed that one of them was coming directly from the VP301 vacuum pump listed in the original permit application. (See attached photos of vacuum pump setup.) A check of the name plate showed that the capacity of the pump was 90 CFM as opposed to the originally described 15 CFM in the permit application. PM and RS noted that the pump runs all the time the plant is in operation as opposed to the 10% of the time described in the permit application. The permit application listed this pump as the most significance source of process emissions from the facility and used the 15 CFM to calculate emissions. The 2nd line was purportedly coming from other locations in the plant were methanol vapor were generated but was difficult to fully trace.

PM noted that they had ordered new packing material for the absorber tower and it should arrive in 2 to 3 weeks.

(2) 150-HP natural gas fired boilers were observed. One is used all the time while they other is held in stand-by. See attached photos.

We observed the 2 enzymatic reactors. They were both converted feedstock tanks so were really not designed to be used as reactor vessels. Small vents could be seen at the top of the reactors going out through the roof. Both PM and RS indicated that they were having numerous process problems with the reactor vessels but the enzymatic process was a more desirable process than the original production line as it was cheaper to run and the feedstock material was cheaper.

There is a front dry skid pump that sends water/methanol emissions out the side of the building from the dryer used in the enzymatic process. It was thought that methanol emissions were minimal.

Post-Inspection Meeting Day 2

We meet with both PM and RS to discuss the results of the inspection. One important thing to note, RS indicated that he does regularly calculate material balances for methanol for the facility but would like to have a consultant review it before submitting it to us. He estimated that he can account for about 99.5% of the methanol with the 0.5% considered lost to the atmosphere. This equates to about 12.86 tons of methanol emissions unaccounted for over the last 12 months ending December 31st.

We summarized our findings and noted the various compliance issues and outlined where we go from here. I explained that a VN would be drafted shortly and they would have 21 days to respond to it. I further explained we would give their consultant the necessary time to prepare a permit to install application and to investigate and install new controls as necessary. Based on reviewing other biodiesel production plants, an absorber that uses water to control methanol emissions was a viable option as long as it is properly sized and all the process methanol emissions are vented to it with water into the absorber coming from a new distillation column to separate the methanol from the water for recovery. The column could be heated using the excess boiler capacity they currently have. The final vent emission rate are the methanol concentration in the circulating water of the water absorber, the recirculation rate, temperature, and the mass air flow through the system that results from the vacuum system in-leakage. I noted that using vegetable oil in the absorber would not be an acceptable control strategy. I further indicated that biodiesel production facilities of this size typically would have a Title V permit but it is possible they would be able to Opt-out of it after new controls are installed and production restrictions placed in a new future PTI permit. I further noted however, that MACT standards follow a once in always in regarding applicability. We thanked PM and RS for their time and cooperation and departed the facility around 12:15 PM.

Recordkeeping Review Day 2

I looked at the original permit application and using information given to me by the Company, I attempted to estimate both potential and actual emissions for methanol.

The original permit application was based on an actual methanol feed rate of 2.5 gallons/minute. For December, 2016 the Company estimated the actual feed rate at 4.05 gallon/minutes and potentially 5 gallons/minute at maximum production. Using the lower feed rate number and applying a 62% scaling factor and assuming no control(absorber disabled, enzymatic reactors not controlled), this works out to a PTE from process emissions of 56.8 tons per year. Including fugitives(10% of process emissions as outlined in permit application), this works out to 62.51 tons per year of potential methanol emissions which is well in excess of the 10 ton per year regulatory threshold for HAPS. I was unable to do a mass balance on the process due to lack of information from the Company.

Compliance Summary

Based upon the facility inspection, review of the records, and review of applicable requirements, the Company is out of compliance with the following:

1) Rule 210. The Company does not have a Renewable Operating Permit (ROP) despite both potential and actual hazardous air pollutant(methanol) emissions in excess of 10 tons.

2) Rule 201. Catalyzed esterification of vegetable oils process has no PTI permit.

3) Rule 201. Both enzymatic batch reactors have no PTI permit despite generating potentially excessive methanol emissions.

4) Rule 910. The absorber was not being operated properly.

5) Rule 225. The State Air Toxics rule is likely being violated due to excessive/uncontrolled methanol emissions.

6) 40 CFR 60 Subpart VVa. The Company is not complying with the requirements of federal leak detection regulations of Subpart VVa and other similar federal regulations.

7) 40 CFR 60 Subpart RRR. The Company is not complying with the requirements of this federal regulation including a general 98% air emission control standard.

8) 40 CFR 63 Subpart FFFF. The Company is not complying with this federal NESHAP for their biodiesel facility.

9) 40 CFR Part 63 Subpart DDDDD. The Company is not complying with this federal NESHAP for their 2 boilers.

A VN that outlines the above compliance summary bullet items will be sent to the Company on February 6, 2017. The Company will be given 21 days to make a written response to the compliance allegations.

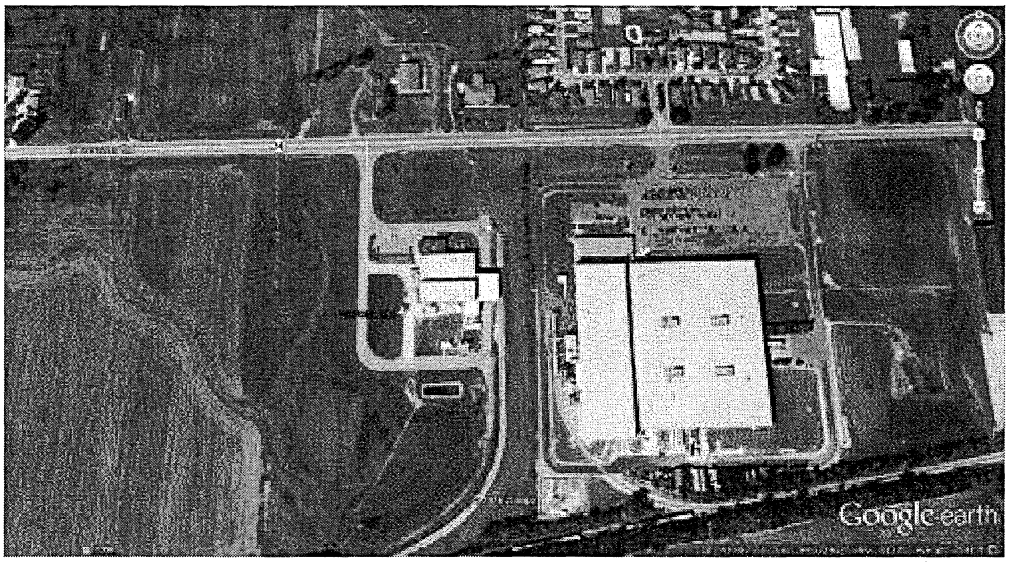

Image 1(aerial photo) : Aerial photo of W2Fuels LLC. Residential area about 600 feet to the NE.

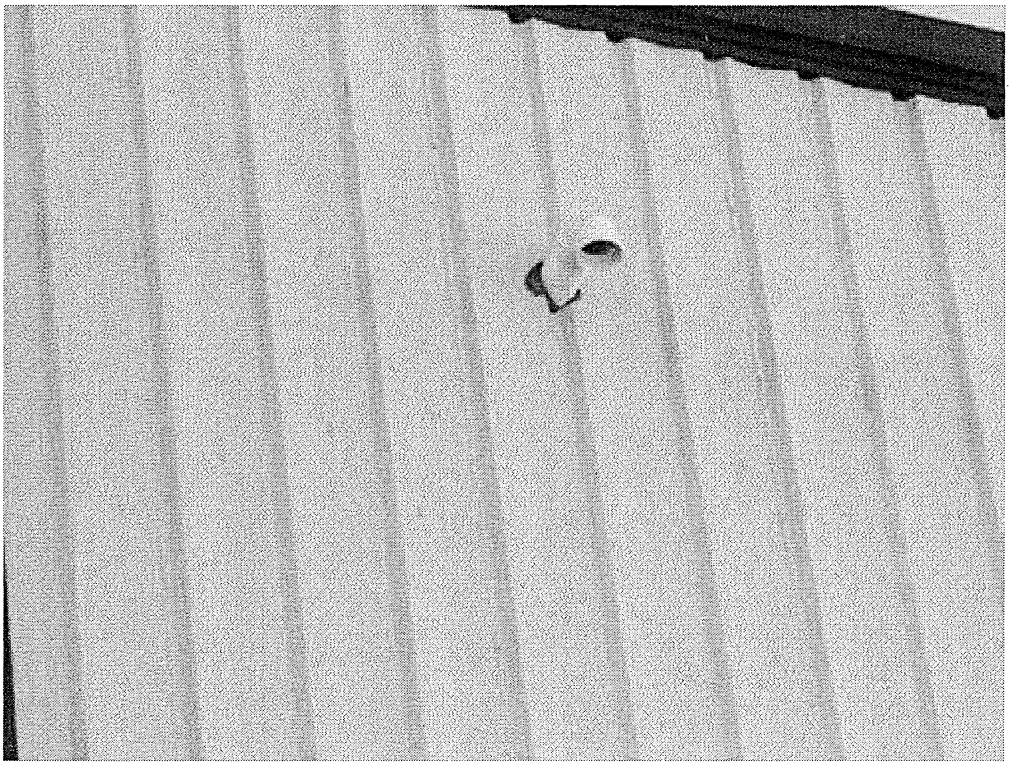

Image 2(Small exhaust) : Small exhaust going out side of building on the West side. It contains water vapor and methanol from the front dryer skid pump that is part of the enzymatic process flow

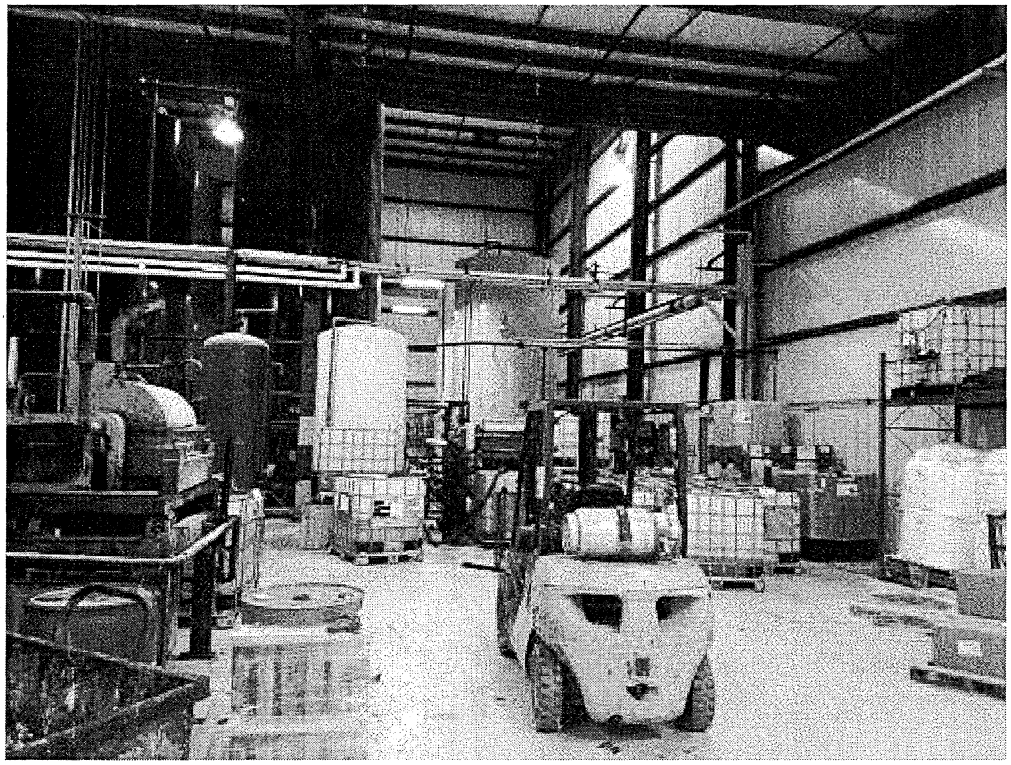

Image 3(2 Glycerin tanks) : 2 yellow glycerin tanks that contain about 33 weight % methanol. They exhaust as one vent out the South side of the building

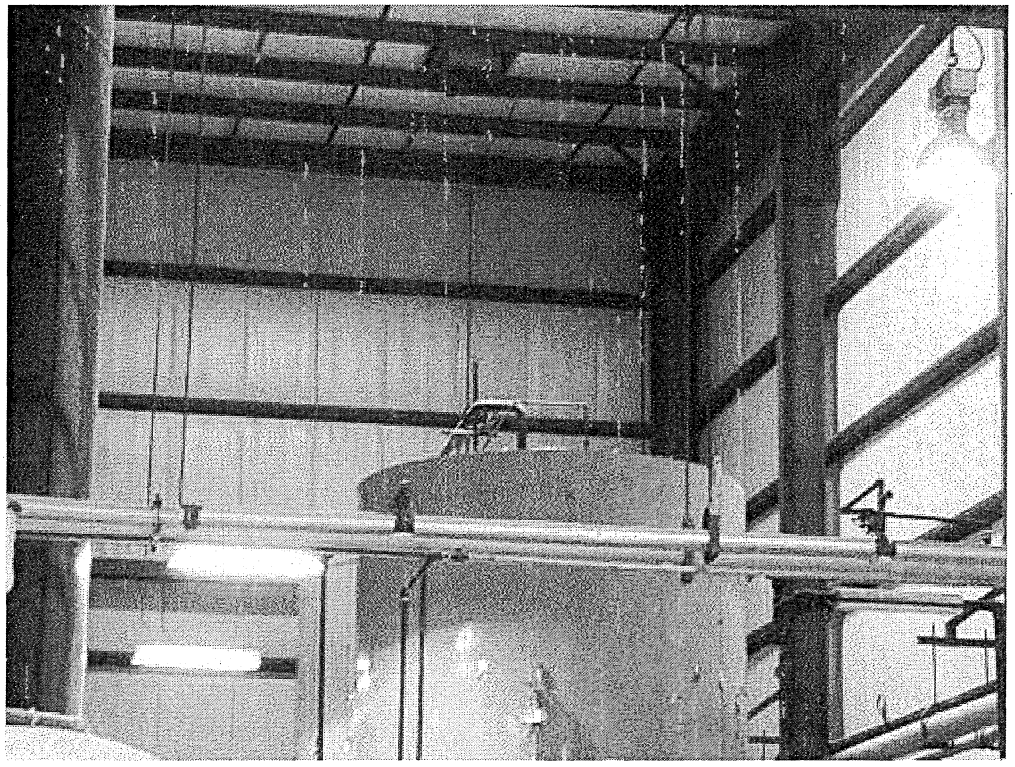

Image 4(Top of glycerin tank) : 2 glycerin tanks. They exhaust outside on the South side of the building near the wet methanol tank.

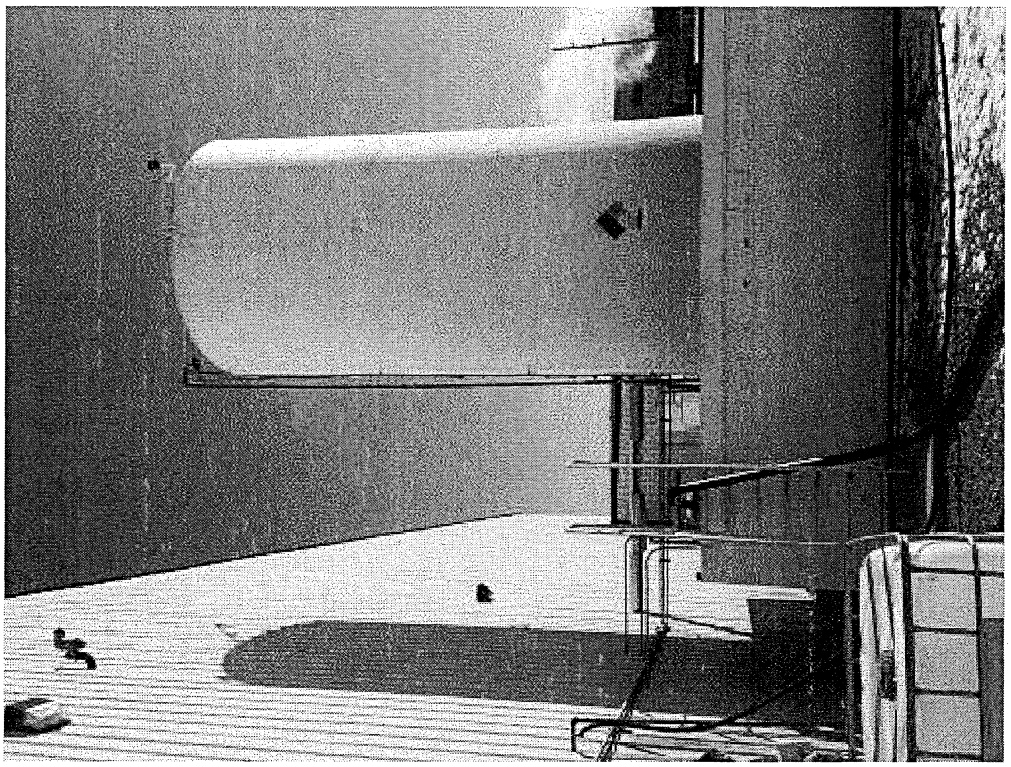

Image 5(Wet Methonal Tank) : Wet Methonal Tank that is labeled glycerin tank. See exhaust at top of tank. Note also exhaust point on side of building coming from enzymatic process.

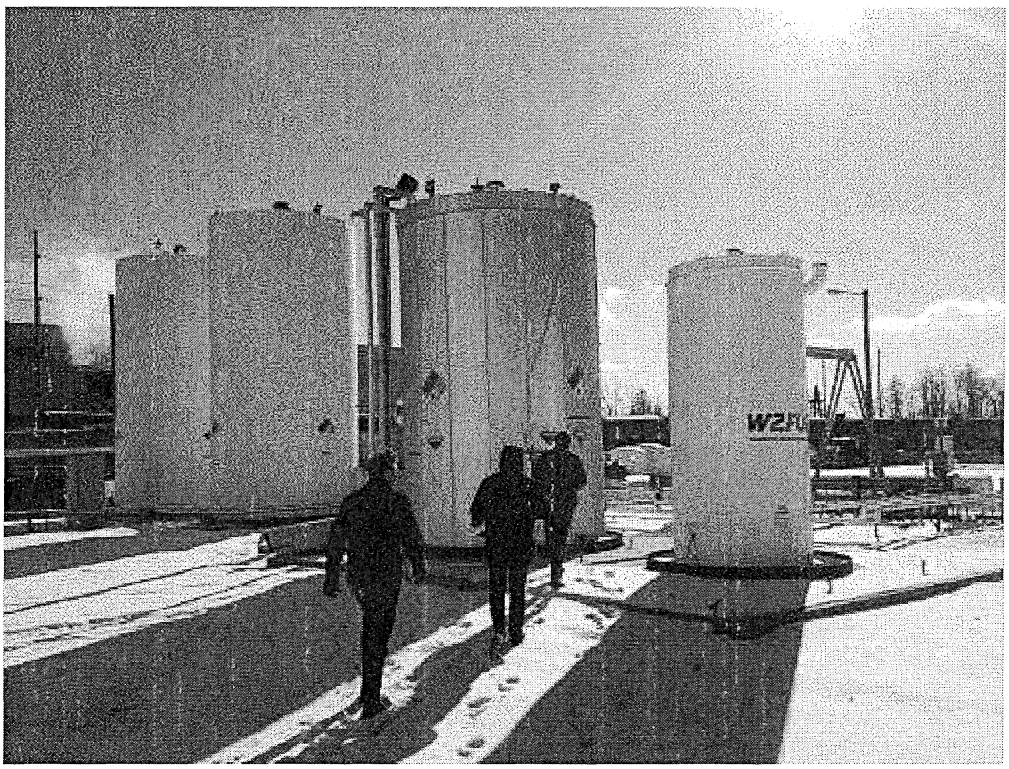

Image 6(Tank farm) : Tank farm

Image 7(Loading area) : Loading area. Vegetable feedstock being unloaded. Biodiesel is shipped via truck and railcar.

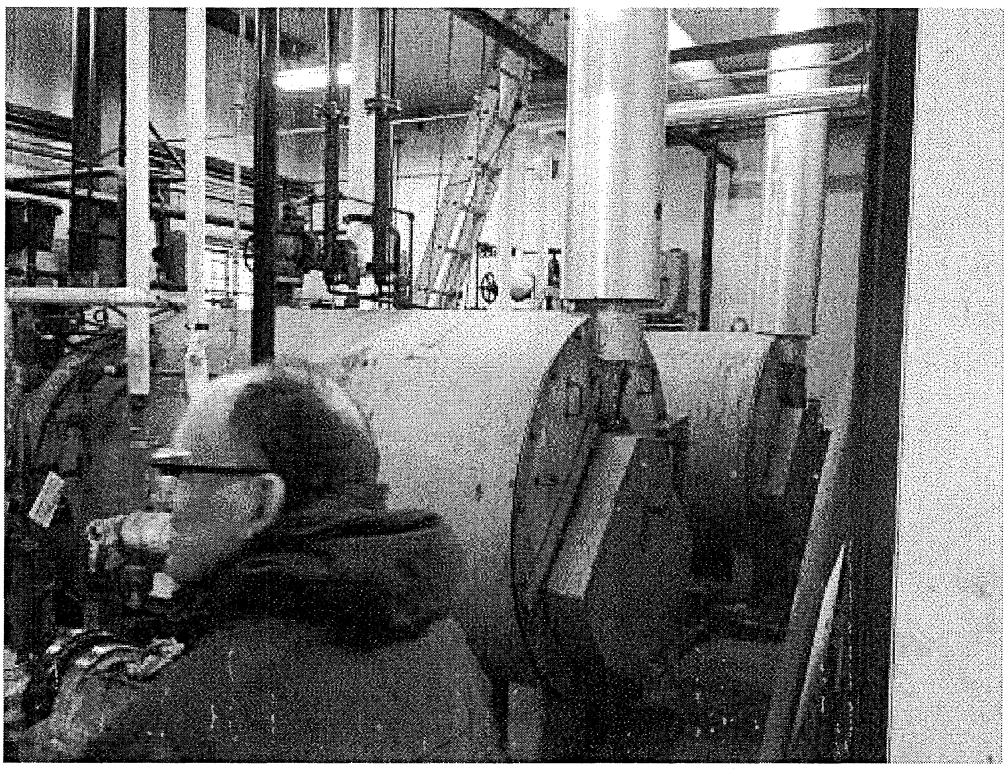

Image 8(2 Boilers) : 2 natural gas fired boilers.

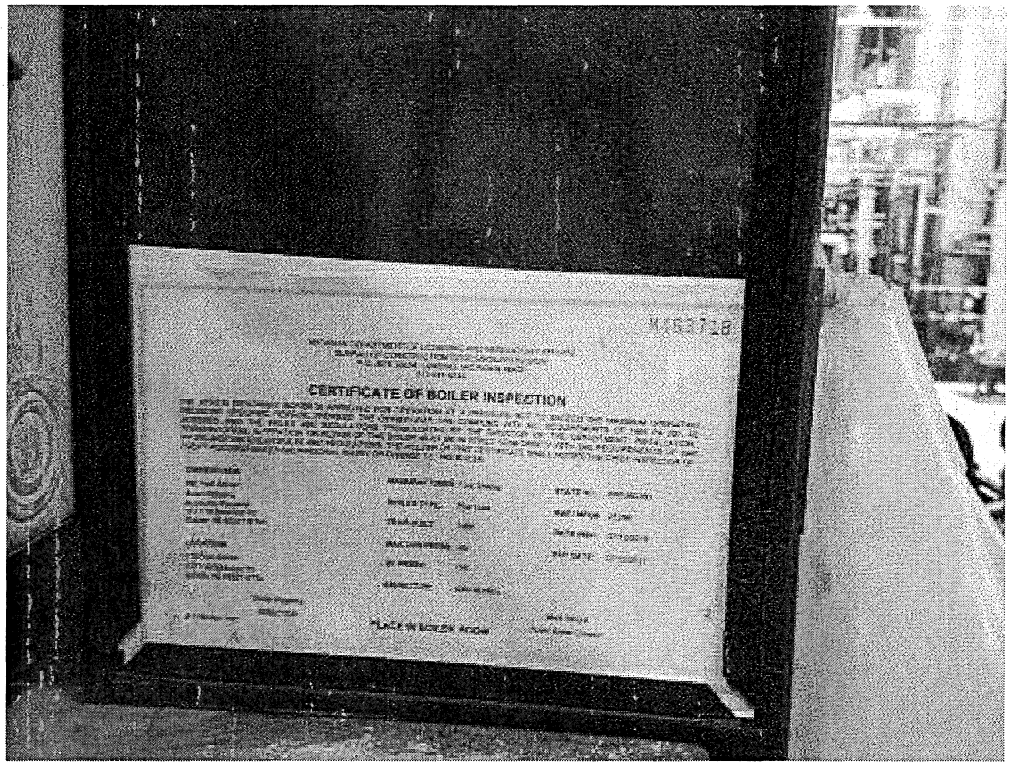

Image 9(Boiler Inspection) : Boiler Inspection Form

Image 10(Water Tote) : 300 gallon water tote. Note the 2 rubber hoses on the right entering the top of the tote. They contained methanol vapor.

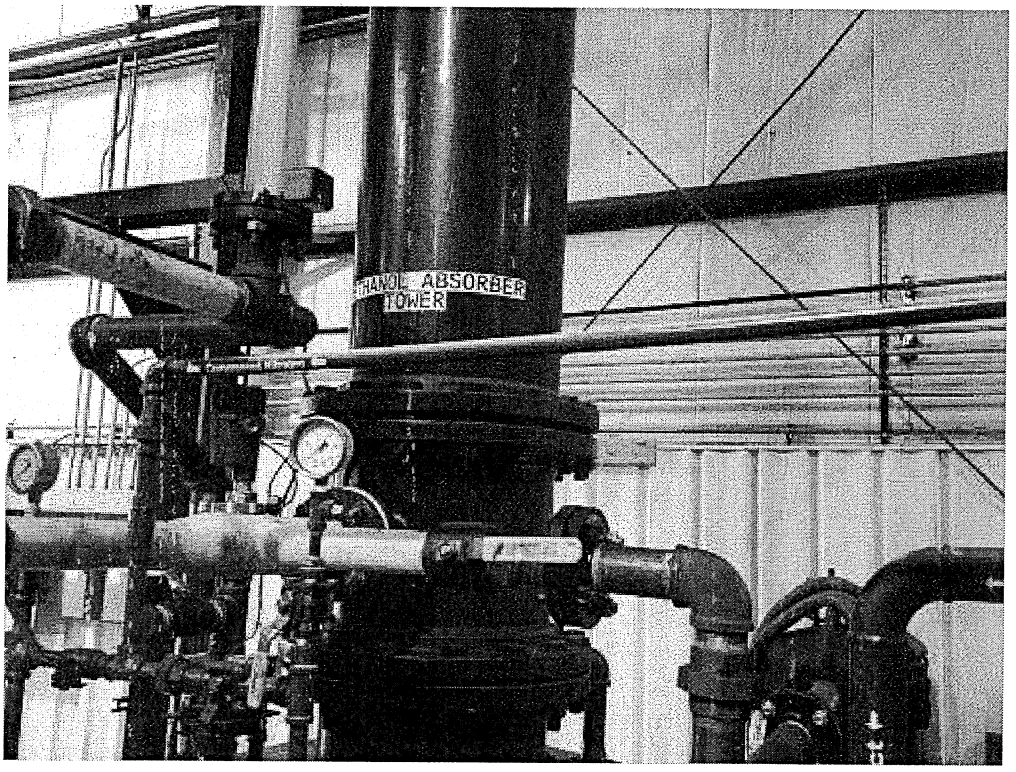

Image 11(absorber) : Disabled absorber that was used to control methanol emissions.

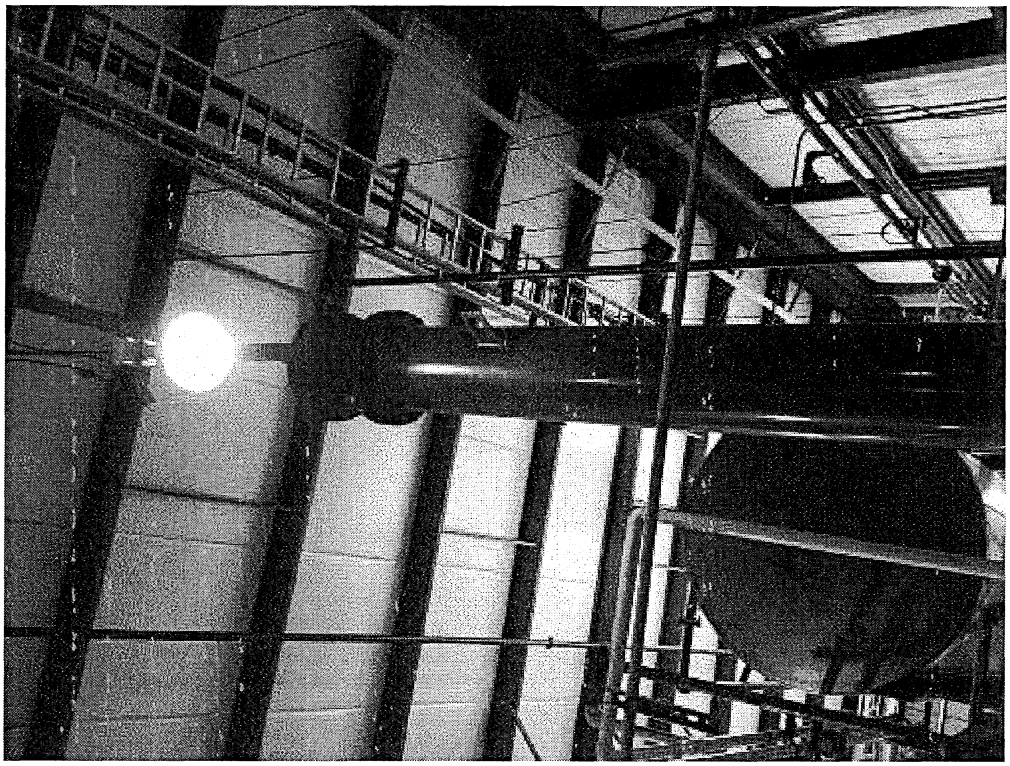

Image 12(Top of absorber) : Top of absorber where it vents to the roof.

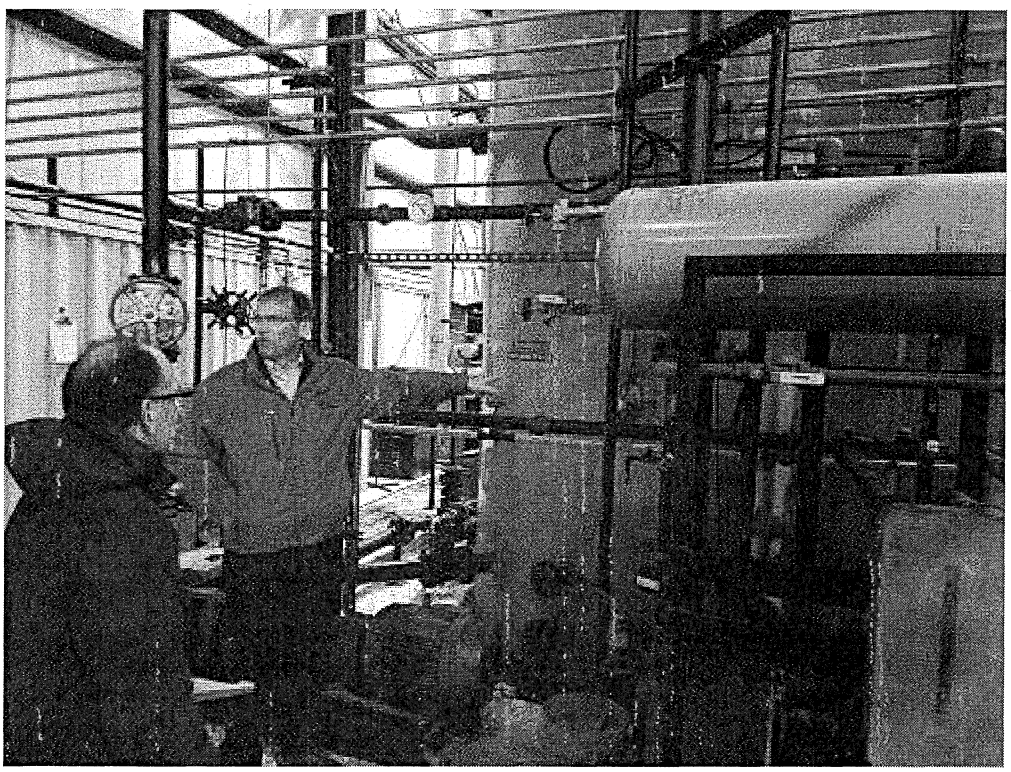

Image 13(vaccum pump) : vaccum pump used to pump methanol vapor into the absorber

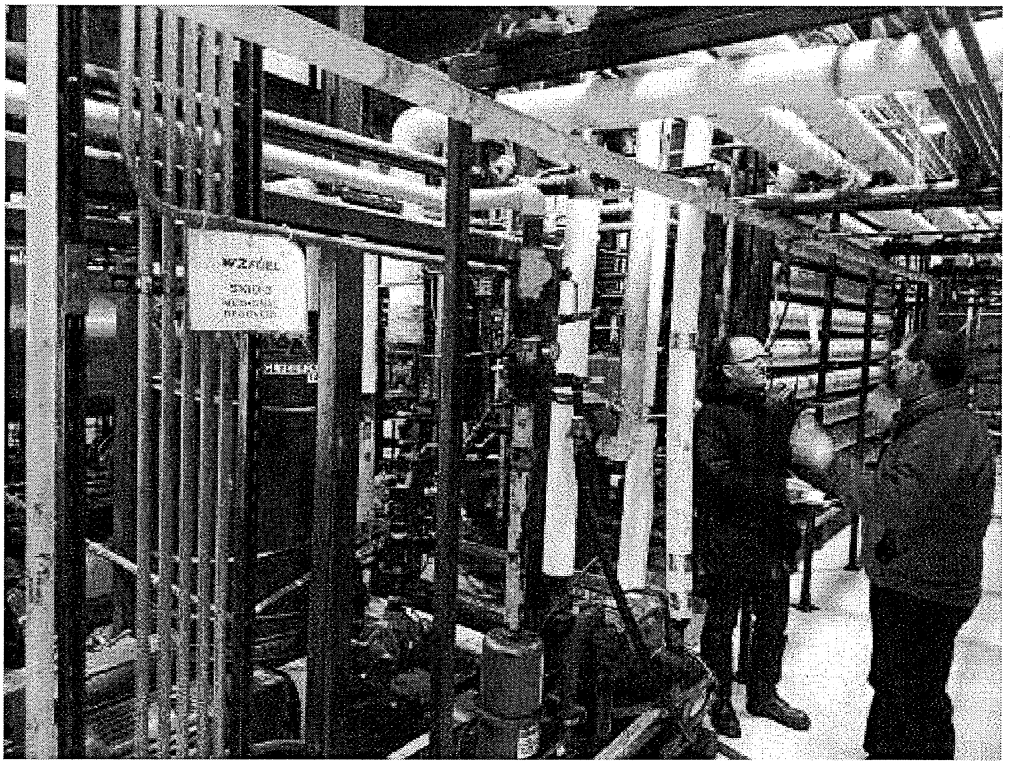

Image 14(vacuum pump) : vacuum pump used to pump methanol vapor through the absorber

NAME M. Kovalchick DATE 2/7/2017 SUPERVISOR