DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection FY 2014

N341725222

FACILITY: LYMTAL INTERNATIONAL, INC.	**SRN / ID:** N3417
LOCATION: 4150 S. LAPEER RD., LAKE ORION	**DISTRICT:** Southeast Michigan
CITY: LAKE ORION	**COUNTY:** OAKLAND
CONTACT: Mr. Imad Janineh Janineh	**ACTIVITY DATE:** 05/19/2014
STAFF: Iranna Konanahalli **COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: FY 2014 scheduled level-2 annual inspection of Lymtal International, Inc.	
RESOLVED COMPLAINTS:	

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Lymtal International, Inc. (N3417)
Fka Harry S. Peterson Company (until May 1994)
4150 S. Lapeer Road
4150 Cross @ S Lapeer Road, just south of W. Silver Bell Road, near exit 81 off I75)
Orion, Michigan 48359-1865

Phone: 248-373-8100; Fax: 248-373-3480

ROP opt-out PTI No. 1306-91C dated October 5, 2010.

Voids: PTI Nos. 1306-91 (6/26/02), 1306-91A (5/20/04) & 1306-91B (10/05/10)

PTI Mods: PTI No. 1306-91 → PTI No. 1306-91A (ROPopt-out for failing 208a registration) → PTI No. 1306-91B (increase hours of operation to 3,000 hrs./yr. from 2,000) → PTI No. 1306-91C (add 3 reactors [Reactor Nos. 8, 9, 10] and increase hours of operation to 5,000 hrs./yr. from 3,000).

Not Subject to: NESHAP for Area Sources (Page38864 / Federal Register / Vol. 72, No. 135 / Monday, July 16, 2007 / Rules and Regulations / Final Rule) because LymTal is in Polyurethane Coatings and Sealants Industry and not in Polyurethane Foam Production Industry. Both use Polyols (resins).

Not Subject to: Boiler NSPS Dc, New Source Performance Standards (NSPS), 40 CFR, Part 60, Subpart Dc.

On May 14 & 19 (with AQD staff Sam Liveson – plant tour), 2014, I conducted a scheduled level-2 annual inspection of Lymtal International, Inc. ("LymTal") located at 4150 South Lapeer Road, Lake Orion, Michigan. The inspection was conducted to determine compliance with the Federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994, PA 451; Michigan Department of Environmental Quality, Air Quality Division (MDEQ-AQD) administrative rules; and ROP opt-out PTI No. 1306-91C.

During the inspection, Mr. Imad Janineh (Phone: 248-373-8100; Fax: 248-373-3480; E-mail: imad@LymTal.com), Technical Manager, assisted me. Mr. Francis Lymburner, president and owner, was present. Mr. Magdy Talaat (Phone: 248-373-8100; Fax: 248-373-3480; E-mail: magdy@LymTal.com), vice president & owner of the company also assisted us (Sam Liveson and I) on May 19, 2014, with plant tour and operations.

In 1994, Mr. Magdy Talaat and Mr. Francis Lymburner bought Harry S. Peterson Company

with an assistance of low interest loan from Oakland County. They named new company after themselves as LymTal. Harry S. Peterson built the plant in 1929. Sandez and Master Builder purchased the plant in 1988.

In 2004, US EPA assessed an administrative penalty of $53,000.00 for failure to comply with federal regulations for architectural coatings. However, LymTal settled for $47,000.00

Ten reactors (Reactor Nos. 1 thru 10) 5,000-gallon TDI and 3,000-gallon IPDI storage tanks are part of the permit. The emissions from all reactor emissions are controlled by a couple of knock-out drums (55-gallon) and couple of carbon canisters (activated carbon adsorption units) arranged in series. The knock-out drums take out easily condensable high molecular weight compounds such as mineral spirits so that longevity of carbon canisters can be increased.

LymTal International, Inc. ("LymTal") manufactures polyurethane-based products, concrete coatings and sealants; and some adhesives and sealers. The major part of manufacturing at this time is coatings and sealants for water proofing concrete floors. In general, the company uses a base polymer (variety of Polyols, about 11), either Toluene Diisocyanate (TDI) or Isoprophorone isocyanate (IPDI) and reacts a proprietary mixture of these materials in a batch reactor vessel with other components to produce the finished product. TDI (aromatic) and IPDI (aliphatic) are stored at 100-120 degrees Fahrenheit to prevent crystallization. TDI and IPDI are stored in a separate and isolated room with safety alarm system to protect worker health and safety. Before chemical reaction, Polyols are dehydrated. The dehydration is accomplished by adding mineral sprits to Polyols, heating and drawing vacuum (26 inches Hg) on Polyol tank / reactor. The company uses Polyols as raw materials. Other raw materials used are solvents, fillers, catalysts, surfactants, and plasticizers, additives. During the last several years MEK consumption has been gradually reduced to nil; LymTal has accomplished its goal of eliminating MEK altogether in the products so as to minimize fire, safety and environmental hazard. In addition, MEK is hygroscopic and, as a result, there were product problems. Mineral spirits completely replaced MEK.

Consumption of mineral spirits, methyl ethyl ketone (MEK), methyl acetate has consistently reduced since 2005. The solvents are used to reduce viscosity of the products.

Elimination of methyl ethyl ketone (MEK, Butanone), an explosive material, reduced insurance rates. About 2005, US EPA removed MEK from CAA Sec. 112 HAP list although it is VOC.

Products, both one-component and two-component, are a result of chemical reactions and blending between polymers, fillers (pigments, calcium carbonate, etc.), solvents (NMP, DPMA, DPM, TS100 or aromatic solvents, NPA, N-Butanol, etc.) and additives (UV protectors, antioxidants, wetting agents, dispersion agents, etc.)

There are ten reactors (Reactor Nos. 1 thru 10) and three mixers. Reactor Nos. 7, 8 and 9 were added with PTI No. 1306-91B → PTI No. 1306-91C modification (October 5, 2010). During the inspection, I noticed that the reactors and mixers did not have permanent exhaust stacks attached to each one. There is a flexible detachable duct that is connected to an exhaust stack that the company utilizes as standby duct for any emergency cases when the company may need to exhaust any emissions directly to the outside air. There were no visible emissions observed during the plant tour. Mr. Janineh and Mr. Talat confirmed that reactions occur in a closed vessel so that the only possible source of emissions is fugitive emissions. Since there were no stacks attached directly to the vessels, Janineh indicated that any potential emissions are discharged in the general in-plant environment. All reactors have

vacuum applied to them through a vacuum pump. Between the batches, reactors are cleaned using mineral spirits (TS100, aka aromatic solvents); and MEK use has been terminated since CY2007. The vacuum emissions are controlled by carbon canisters.

Due to new Dow Automotives Project, LymTal added one more reactor (eighth) and one more mixer (fourth); PTI was NOT be amended. However, eighth reactor and fourth mixer are idled because Dow project got cancelled due to the 2008 economic crisis in the automotive industry. On July 20, 2010, I asked Mr. Talat to modify PTI No. 1306-91B to include new equipment and to increase hours of operation. Lymtal modified the permit (PTI No. 1306-91B → PTI No. 1306-91C (add 3 Reactor Nos. 8, 9, 10 and increase hours of operation to 5,000 hrs./yr. from 3,000)) in October 2010.

Reactants (Polyols, TDI, IPDI) are mixed to homogeneous mixture in ten (10) stirred tank reactors at 180 degrees Fahrenheit for 4-5 hours when the reaction is complete. Then the products are allowed to cool to 100 degrees Fahrenheit and the additives such as UV-protectors, bubble releasers, viscosity adjusters, etc. are added. The products are packaged at 80-90 degrees Fahrenheit

Pilot Plant

LymTal also has one 55-gallon pilot reactor to test new products developed on a test-tube scale before going to production scale. The pilot reactor operates 2-3 times per month. One 2-gallon reactor is added.

One more 175-gallon pilot reactor is bought but idled and never used.

Storage tanks (21)

See the attached storage tank list and locations.

The company has one 5,000-gallon storage tank for TDI, one 3,000-gallon storage tank for IPDI upstairs in a locked room. TDI and IPDI are extremely hazardous and are continuously monitored with a leak detection alarm system.

There are four storage tanks for Polyols in the production area (one 2,000-gallon, two 3,000-gallon and one 5,000-gallon tanks). There is no MDI tank anymore because MDI is bought in 55-gallon drums. Two 2,500-gallon tanks for caster oil are installed in the production area.

At the backyard, one 2000-gallon and one 1100-gallon tanks store mineral spirits. One 2000-gallon MEK storage tank is currently empty. One 5000-gallon tank stores caster oil. In all, there are three caster oil tanks including two in production area. Caster oil is imported from India.

About July 2010, I asked Mr. Janineh to revise PTI No. 1306-91B to increase the hours of operation limit. This amendment may as well include addition of new reactors and one new mixer. By October 2010, the reactors (8, 9, & 10) were added to the permit (PTI No. 1306-91B→ PTI No. 1306-91C).

After 10-reactor and 4-mixer process, 25-gallon carbon canister, vacuum pump, two knockout drums (to remove liquids, if any) and 55-gallon carbon canister (two activated carbon canisters first 55-gallon canister and second 25-gallon canister) are connected in series to control emission of volatile organic compounds (VOC) (PTI No. 1306-91C, SC IV.1 & 2 SC V.1). 55-gallon canister is brought down from the roof for easy of maintenance. A portable

instrument (single point monitor made by MDA Scientific with various keys for each chemical such as MDI, IPDI, TDI, etc) is used to monitor breakthrough for both canisters (PTI No. 1306-91C, SC V.1). A hose is connected to a sample tap on the 55-gallon canister. Few years ago (Feb 2010), 55-gallon canister moved from the roof to a location near small 25-gallon canister, which is located near the vacuum pump. Obviously, Tedlar bags are not used. Instead, the portable instrument is directly connected. Breakthrough is determined separately for MDI, TDI and IPDI. The records of breakthrough monitoring are maintained (PTI No. 1306-91C, SC V.3). MDI, IPDI, TDI breakthrough is monitored once a week.

While 25-gallon secondary carbon canister was always located near the vacuum pump, 55-gallon primary carbon canister was relocated from the roof to near the other canister. The 55-gallon canister was replaced in February 2010 and again on March 22, 2012.

VOC control equipment arranged series:

55-gallon knock-out drum ➔ 55-gallon primary carbon canister (new carbon placed in service 03/22/2012) ➔ 55-gallon knock-out drum ➔ Vacuum pump ➔ 25-gallon secondary carbon canister for polishing operation

PTI No. 1306-91C

Monthly hours of operation, VOC and HAP, the required calculations, carbon canister break-through monitoring records are kept. As I asked Mr. Janineh in CY 2004 to calculate emissions at the end of each calendar month based on 12-month rolling period, this is now done (PTI No. 1306-91C, SC VI.1, 2 & 3). Lymtal Operated 2,675 hours per year in 2013 (PTI No. 1306-91C, SC III.1, VI.2). LymTal emitted 971 pounds (0.49 tons) of VOC per year for CY 2013 (PTI No. 1306-91C, SC I.1 limit: 5 tpy VOC and SC I.2 limit: 3 tpy HAP).

Boilers

One steam boiler of capacity 0.5 million BTU per hour and one hot water boiler of capacity 1 million BTU per hour are present. These boilers are **not** subject to federal NSPS for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc) because boiler design capacity is less than 10 million BTU per hour. In addition, pursuant to Rule 336.1282(b), the boilers burning sweet natural gas (up to 50 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install).

Dow Automotive Contract Manufacturing Business

Dow Project got cancelled due to economic crisis and General Motors bankruptcy.

PTI Modifications

As of April 3, 2002, LymTal was not in compliance with 208a registration requirements. AQD issued the letter of violation (LOV) dated April 3, 2002. In response to the letter of violation (LOV) dated April 3, 2002, LymTal obtained the ROP Opt-out Permit No. 1306-91A dated June 26, 2002 (revised PTI No. 1306-91 → PTI No. 1306-91A). Previously issued PTI No. 1306-91A was amended as PTI No. 1306-91B dated May 20, 2004, to increase hours of operation from 2,000 hours per year to 3,000 (revised PTI No. 1306-91A → PTI No. 1306-91B). In October 2010, PTI No. 1306-91B is revised to include Nos. 8, 9 & 10 reactors and to increase hours of operation from 3,000 to 5,000 hours per year (PTI No. 1306-91B → PTI No. 1306-91C).

Conclusion

LymTal is in compliance with the permit (ROP opt-out PTI No. 1306-91C).

NAME J Allen Hamahall DATE 05/22/2014 SUPERVISOR CTE