

FY 2015 Insp

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Self Initiated Inspection

N244028836

FACILITY: ND Industries, Inc.	SRN / ID: N2440
LOCATION: 1893 Barrett Rd, TROY	DISTRICT: Southeast Michigan
CITY: TROY	COUNTY: OAKLAND
CONTACT:	ACTIVITY DATE: 03/06/2015
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance
SUBJECT: FY 2015 inspection of ND Industries located at 1893 Barrett Road, Troy	SOURCE CLASS: MINOR
RESOLVED COMPLAINTS:	

N 2440 - SAR - 2015 03 06

ND Industries (N2440)
1893 Barrett Road
Troy, Michigan 48084

www.ndindustries.com
E-mail: kfrazier@ndindustries.com

Permit Install No. 601-95B dated July 24, 2006 - Active
Voided on July 25, 2006: Permit Install No. 601-95A dated April 23, 2004.
Voided on April 23, 2004: Permit Install No. 601-95
Voided on January 12, 2006: PTI #585-89 dated November 5, 1990.
Voided on September 03, 1996: PTI #602-95 application

On and February 18 and March 06, 2015, I conducted a level 2 self-initiated annual inspection of ND Industries located at 1893 Barrett Road, Troy, 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) rules; and PTI No. 601-95B dated July 24, 2006.

Mr. Rob Chraska (pronounced Kraska) (Phone: 248-288-0000-ext. 1228 / 248-655-2557-Direct, Cell: 248-535-9480, Fax: 248-649-7730, RChraska@ndindustries.com), GSP, Environmental, Health and Safety Manager, and Mr. Mike Vettraino (Cell: 586-524-8762, Chemical Blender and Microcap Specialist, assisted me during the inspection.

Mr. Michael H. Tohlman (Phone: 248-288-0000 / 248-655-2526, Cell: 248-321-8655, Fax: 248-655-2562, mtohlman@ndindustries.com), General Manager, was not present.

Ms. Kim Frazier (Phone: 248-288-0000-ext. 1228 / 248-655-2557, Cell: 248-321-9690, Fax: 248-655-2581, kfrazier@ndindustries.com), CSP, Environmental, Health and Safety Manager, separated (retired) from the company about June 2012.

Ms. Susanna Tong (Phone: 248-655-2587; E-mail: stong@ndindustries.com), Supervisor of Compliance and Safety, separated in 2008. Ms. Kristina Berger (Phone: 248-288-0000, Fax: 248-288-0022, kberger@ndindustries.com), Jr. VP of Corporate Operations and Sales, does not handle Environmental and Safety issues any more.

Mr. Jim Bar (246-655-2567), Chemical Blending Plant Director, former R & D Division Manager, was not present.

Mr. Frank Nachtman (Phone: 248-655-2590), Production Division Manager, quit the company after burnt fish odor incident of September 2006. The Troy Fire Dept. investigated the incident. MDEQ-AQD did not receive any complaint regarding the burnt fish odor incident. Mr. Mitch Symonds replaced Nachtman.

ND Industries makes chemicals for fastener locking, bonding and sealing applications for threaded fasteners. At Chemical Blending Plant (adjacent to Barrett Rd), ND Patch System is not applied anymore; about CY 2000, the operations were moved to other plants such as Clawson plant at Crooks Road. Equipment that involved applying a proprietary powder coating (dry and hot fusion of powdered product – ND Patch -- to fasteners) to threaded fasteners of all sizes and configurations, male or female threads, self-locking and self-sealing, while leaving them fully adjustable, is removed.

PTI #585-89 dated November 5, 1990 has been voided January 12, 2006. Based upon March 27, 2002 inspection, PTI No, 585-89, which AQD voided on January 12, 2006, epoxy coating is not done since 2000.

The Chemical Blending consists of two areas: Chemical Blending and Chemical Reaction.

Chemical Reaction (PTI No. 601-95B)

Emission Unit ID	Emission Unit Description	Stack Identification
EU-MICROCAP	<p>Process equipment includes three (3) heated process kettles with mixers, one (1) heated prepolymer reaction vessel (55 gal drum with mixer), two (2) batch fluidized bed dryers with corresponding fabric filters, and one (1) continuous fluidized bed dryer with corresponding fabric filter.</p> <p>The controls include a Dual air filter with medium efficiency rigid air filters for TSP emissions from process kettles and reaction vessel, while TSP emissions from dryers are controlled by individual fabric filters.</p>	SV-DRYER1, SV-DRYER2, SV-MIXER
Changes to the equipment described in this table are subject to the requirements of R336.1201, except as allowed by R336.1278 to R336.1290.		

Emission Limits

	Pollutant	Equipment	Limit	Time Period	Testing/ Monitoring Method	Applicable Requirements
1.1a	VOCs	EU-MICROCAP	4.0 tpy	12-month rolling time period as determined at the end of each calendar month.	SC 1.9	R336.1702(a)
1.1b	Acetone	EU-MICROCAP	10.4 tpy	12-month rolling time period as determined at the end of each calendar month.	SC 1.9	R336.1224
1.1c	Formaldehyde (CAS No. 50-00-0)	EU-MICROCAP	1,203 pounds per year	12-month rolling time period as determined at the end of each calendar month.	SC 1.10	R336.1225

Chemical Blending manufactures ND Microspheres, which are 50 micron spherical particles. The manufacturing plant consists of two areas: Chemical Blending and Chemical Reaction. While an individual particle is called Microcap, the formulation liquid is called Microsphere. It is accomplished by one Microencapsulated Epoxy Resin Manufacturing process. Of three reactor kettles, one is not used although usable. The reactor kettle is used

to make the Microspheres. The reactants are weighed and pumped into Kettle No. 1 or 2; No. 3 is not used; i.e. one of three kettles is not used. All reactor kettles are spherical in shape. The reactants used are formaldehyde, resin, urea, epoxy, acetone, surfactants, water. Epoxy resin is emulsified in water base (Kettle). Add three compound polymer mixture (formaldehyde, urea, melamine) to the kettle and allow the reaction to take place at 115 degrees Fahrenheit. pH is adjusted to 4 using HCl and allowed to react overnight (Kettle). Then the mixture is base catalyzed to pH of 12 using liquid caustic (NaOH) and allowed to react for four hours (Kettle). The product is brought back to neutral using HCl (Kettle). The product suspended in a liquid and is rinsed for three hours using DI water. It is vacuum dried (one vacuum dryer) or rather dewatered in the container. Then the product is transferred to one fluid bed dryer operating at 140-150 degrees Fahrenheit (Fitz Aire Fluid Bed Dryer FA500 (big) is removed only Fitz Aire Fluid Bed Dryer FA250 (small) is present). Exhaust from two operating reactors goes to roof top (16' feet tall building) via Dual Air Filter and discharged vertically upwards. Fluid bed dryer (Fitz Mill fluid bed dryer) is equipped with a filter system (pleated filters) which is vibrated to recover product. A fluid bed dryer exhaust is discharged vertically upwards at roof top.

Continuous feed dryer

While Fitz Aire Fluid Bed Dryer Fitz-FA-500 (big) is removed upon starting operation of continuous dryer about 2013, Fitz Aire Fluid Bed Dryer FA250 (small) is still present.

PTI No. 601-95B, in addition to increasing the production to 300 batches per year from 150 batches per year, allowed the installation of a continuous feed fluidized bed dryer. The continuous dryer is now operational (operating since 2013). When the installation of continuous dryer was complete one (big but not small) of two original dryers was removed.

The continuous feed dryer has a cyclone to reuse / recycle usable product. Following the cyclone recovery, a cartridge filter system filters the air. When pressure drop across the filters increases to a set-point (1 inches H₂O), the cartridge filters are automatically shaken to drop the accumulated material, which is disposed of as waste according to RCRA.

While Fitz-FA-250 (small) has no alarm, Fitz-FA-500 (big) had an alarm system. Fitz-FA-250 is cleaned when pressure drop reading is high. Fitz-FA-500 (removed) was cleaned when drying capacity goes down.

Testing of continuous feed dryer restarting in CY 2011 and operation started in 2013.

Chemical Blending Plant

The finished product is packaged according to particle size of cut-off (Taylor No. 200). There is one Dust Hog Cartridge Filter (4 cartridges with pulse-jet cleaning) , which is exhausted outside, for chemical blending area. Chemical Blending area has 55-gallon drum mixers (about 7). The finished product is stored as a dry material, which is formulated to a liquid using solvents on as needed basis. The mixing of the product into a formulation takes place in chemical blending area.

Based upon CY 2014 records, VOC, Acetone, Formaldehyde emissions are 2.4 tons per year (PTI No. 601-95B, EU-MICROCAP, SC1.1a limit: 4 tpy VOC), 7 tons per year (PTI No. 601-95B, EU-MICROCAP, SC1.1b limit: 10.4 tpy Acetone) and 591 pounds per year (PTI No. 601-95B, EU-MICROCAP, SC1.1c limit: 1,203 ppy Formaldehyde). The emissions correspond to 200 batches per year (PTI No. 601-95B, EU-MICROCAP, SC 1.2 limit: 300 batches per year;

maximum 420 pounds per batch).

The records of number of batches are kept on file (PTI No. 601-95B, EU-MICROCAP, SC1.2). The capsules are made in a batch reactor through the polymerization process. When the batch is complete, the capsules (powder) are poured into Fitz Mill fluid bed dryer, which is a source of particulate emissions. The filter systems (one of two batch systems removed and one continuous system,) are present to prevent loss of product and to control particulate emissions (PTI No. 601-95B, EU-MICROCAP, SC1.5).

Audible alarm system (PTI No. 601-95B, EU-MICROCAP, SC 1.6) is present and working properly.

150 batches per 12-month rolling period (CY 2011) were made (PTI No. 601-95B, SC 1.2 limit: 300 batches per year). 300 batches per year limit of PTI No. 601-65B was revised from 150 batches per year limit of PTI No. 601-65A due to January 26, 2006, letter of violation. PTI No. 601-95 (limit: 65 batches/year) was also revised to PTI No. 601-65A (limit: 150 batches/year) due to compliance problems.

Research and Development Laboratories moved across the street. In that building now (since 2012), where R & D Labs were formerly located, bottling for the Chemical Blending is handled.

History of non-compliance and PTI modifications

This facility was not in compliance with PTI No. 601-95A as CY 2005 production of 158 batches per year exceeded the limit of 150 batches per year (SC1.2 of 601-95A). 601-95A → 601-95B modification increased the limit to 300 (SC1.2 of 601-95B) batches per year from 150 (SC1.2 of 601-95A). ND did not comply with production limit 65 batches / year of PTI 601-95 either; non-compliance was discovered during May 2003 inspection. Hence, the modification 601-95 → 601-95A increased the production limit from 65 to 150 batches per year.

AQD issued January 26, 2006, Violation Notice for exceeding 150 batches per year limit (601-95A, SC1.2) and for failure to keep records and perform the required emission calculations (601-95A, SC1.6, 1.8, 1.9)

Conclusion

Due to history of non-compliance, follow-up inspections will be conducted to ensure compliance with the permit.

NAME

Stenard

DATE

03/17/2015

SUPERVISOR

CJE