N6577
FY 2018 Insp-SM CMS

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

N657745585

FACILITY: ND Industries, Inc.		**SRN / ID:** N6577
LOCATION: 1000 N. Crooks Road, CLAWSON		**DISTRICT:** Southeast Michigan
CITY: CLAWSON		**COUNTY:** OAKLAND
CONTACT:		**ACTIVITY DATE:** 07/19/2018
STAFF: Iranna Konanahalli	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** SM OPT OUT
SUBJECT: initiated FY2017 SM CMS inspection of ND Industries		
RESOLVED COMPLAINTS:		

ND Industries, Inc. (N6577)
1000 North Crooks Road
Clawson, Michigan 48017-1003
Phone: (248) 288-0000

www.ndindustries.com

PTI: NESHAP / MACT MMMM (4M), ROP & Rule 336.1621 VOC limits (pounds per gallon via Rule 336.1621(10)) Opt-Out (ROP & MACT Synthetic Minor) PTI No. 72-99C dated September 5, 2008. Besides, Rule 336.1287(2)(c) coating lines are not part of the FG-COATING; however, VOC & HAP emissions are to be accounted for and included for FG-FACILITY limits.

VNs: AQD issued Violation Notices dated March 28, 2002 (for failure to keep records per PTI No. 72-99, obtain ROP per Rule 336.1210, meet VOC limits per 336.1621 [pounds of VOC per gallon of coating] & PTI No. 72-99 [SC 2]; settled with CO No. 11-2004 [$25,900] and PTI Mod [PTI No. 72-99 → PTI No. 72-99A] that allowed ROP, MACT, Rule 621 opt-out), February 28, 2006 (for failure to keep records and perform calculations per PTI No. 72-99A [SC 1.2, 1.10 & 2.3]; settled with $15,000 stipulated penalty), February 23, 2007 (for failure to meet HAP [toluene] limit of PTI No. 72-99A [SC 2.1], comply with January 02, 2004, NESHAP / MACT MMMM (4M) with attendant once-in-always-in policy; settled with CO No. 19-2008 [$49,280] and PTI Mod [PTI No. 72-99A → PTI No. 72-99B] that removed Rule 287(2)(c) coating processes from the PTI and also removed TACs [PTI No. 72-99A, SC 1.1a thru 1.1f] and attendant TAC recordkeeping [PTI No. 72-99A, SC 1.1 thru 1.5]) and December 2, 2013 (for failure to perform US EPA Method 24 analysis per PTI No. 72-99C, SC FG-COATING, 1.6 Testing).

Voids: PTI Nos. 72-99 (02/03/04), 72-99A (03/28/08), 72-99B (09/05/08).

Application void: PTI Application No. 345-98 (11/03/00)

PTI No. 72-99B dated March 28, 2008, was revised to PTI No. 72-99C dated September 5, 2008: FG-FACILITY, SC 2.4 was revised to allow use of diluent solvents in coatings. Furthermore, AQD allowed use of HAP diluent solvents (Toluene and Xylene) via May 11, 2010, letter (Seidel).

Consent Order AQD Nos.: 11-2004 [$25,900] was executed on April 7, 2004 and 19-2008 [$49,280] was executed on July 17, 2008, by G. Vinson Hellwig, AQD Chief. Consent Orders 11-2004 and 19-2008 were terminated by G. Vinson Hellwig, AQD Chief, effective

November 29, 2012, based upon July 15, 2012, written request by D. K. Bungee, EHS Manager, ND Industries.

Not subject to (due to Consent Order AQD No. 19-2008 settlement in spite of once-in-always-in policy was not repealed at the time of signing): NESHAP/MACT MMMM (4M) standards for Surface Coating of Miscellaneous Metal Parts and Products (40 CFR, Part 63, Subpart MMMM —National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products, Page 130, Federal Register / Vol. 69, No. 1 / Friday, January 2, 2004 / Rules and Regulations / Final Rule).

Once-in-Always-in [OIAI] Policy: According to May 16, 1995, EPA memorandum entitled "Potential to Emit for MACT Standards – Guidance on Timing Issues" from John Seitz, Director of OAQPS, Major Sources of HAPs on the "first compliance date" are required to comply permanently with the applicable MACT standard to ensure that maximum achievable reductions in toxic emissions are achieved and maintained. In other words, in order not to be a major source, the company should have obtained federally enforceable permit limiting its potential-to-emit (PTE) below major source threshold for HAPs before the first compliance date (timeliness). In addition, Clean Air Act (CAA), as amended, requires all major sources to obtain a Title V (RO) permit

Once-in-Always-in [OIAI] Policy Repeal: On January 3, 2007, US EPA has proposed (Page 69, Federal Register / Vol. 72, No. 1 / Wednesday, January 3, 2007 / Proposed Rules) to replace this policy (May 16, 1995, EPA memorandum entitled "Potential to Emit for MACT Standards – Guidance on Timing Issues" from John Seitz) so that a major MACT source may become an area source any time.

OIAI policy repeal: Effective on February 8, 2018, US EPA Issuance ("Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act')' and withdrawal ("Potential to Emit for MACT Standards—Guidance on Timing Issues.") of guidance memorandums, Page 5543, Federal Register /Vol. 83, No. 27 /Thursday, February 8, 2018 / Rules and Regulations.

As is explained in the memorandum, the plain language of the definitions of "major source" in CAA section 112(a)(1) and of "area source" in CAA section 112(a)(2) compels the conclusion that a major source becomes an area source at such time that the source takes an enforceable limit on its potential to emit (PTE) hazardous air pollutants (HAP) below the major source thresholds (i.e., 10 tons per year (tpy) of any single HAP or 25 tpy of any combination of HAP). In such circumstances, a source that was previously classified as major, and which so limits its PTE, will no longer be subject either to the major source MACT or other major source requirements that were applicable to it as a major source under CAA section 112. The guidance signed on January 25, 2018, supersedes that which was contained in the May 1995 Seitz Memorandum.

ND Industries opted out of NESHAP/MACT MMMM (4M) as a result of Consent Order AQD No 19-2008 ($49,280) settlement.

Not subject to: Rule 336.1621 pounds of VOC per gallon of coatings emission limits pursuant to Rule 336.1621(10); 2,000 pounds per month per line, 10 (single line) & 30 (entire facility) tons per year VOC emission limits in PTI No. 72-99C (FG-COATING 1.1a

[10 tpy per line] and 1.1b [2000 ppm per line] and FG-FACILITY 2.1a [30 tpy entire facility]).

HAP limits: PTI No. 72-99C, FG-FACILITY, SC2.1b limit: 9 tpy each individual HAP, SC2.1c limit: 22.5 tpy for entire facility aggregate HAP.

On June 19 & July 19, 2018, I conducted a level-2 self-initiated **FY2017 SM CMS inspection** of ND Industries located at 1000 North Crooks Road, Clawson, 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 MACT 4M & ROP Opt-Out PTI No. 72-99C.

Owner is Mr. Richard Wallace, President and owner, ND Industries.

During the inspection, Mr. Rob Chraska (Phone: 248-288-0000-ext. 1228 / 248-655-2557, Cell: 248-535-9840, Fax: 248-649-7730, rChraska@ndindustries.com), CSP, Environmental, Health and Safety Manager, and Mr. John G. Sundstrom (Phone: 248-288-0000 or 248-655-2566; Cell: 248-607-4084; E-mail: jSundstrom@ndindustries.com), General Manager, assisted me.

Mr. Rob Chraska joined the company about November 2012. As a General Manager of Clawson plant, about January 16, Mr. Counts replaced Mr. Tohlman. Again, about April 2018, Mr. John G. Sundstrom replaced Mr. James W. Counts (Phone: 248-288-0000 or 248-655-2503; Cell: 248-561-8903; E-mail: jCounts@ndindustries.com), General Manager. Mr. Counts separated from ND Industries about January 2018.

About 2012, Mr. Jim Bar (Phone: 246-655-2567), former R & D Division Manager, joined the corporate office. Soon after the consent order (AQD No. 19-2008), Mr. Bar certified the chemical composition of the coatings. Mr. Scot Wickham (Phone; 248-655-2588; Cell: 248-321-1822; E-mail: sWickham@ndindustries.com), VP, Applications and Chemical Engineering, about 2012, replaced Mr. Bar and was responsible for R & D and chemical composition of the coatings. Mr. Richard Faukes (Phone; 248-655-2721; Cell: NA; E-mail: rFoukes@ndindustries.com), VP, Applications and Chemical Engineering, about 2017, replaced Mr. Wickham. Mr. Foukes certifies, on a monthly basis, regarding VOC and HAP contents of the coating materials (PTI No. 72-99C, SC FG-FACILITY, 2.4).

About November 2012, Mr. Rob Chraska replaced D. K. Bungee, EHS Manager, who in turn replaced Ms. Kim Frazier for a brief period (September thru October 2012).

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 from the company in June 2012.

Mr. Michael H. Tohlman (Phone: 248-288-0000 / 248-655-2526, Cell: 248-321-8655, Fax: 248 -655-2562, mTohlman@ndindustries.com), General Manager, separated about January 2016. Mr. Counts replaced Mr. Tohlman, who separated about January 2016.

As Mr. James W. Counts (Phone: 248-288-0000 or 248-655-2503; Cell: 248-561-8903; E-mail: jcounts@ndindustries.com), former Cost Analyst / Inside Sales Manager and GM, separated Mr. Sundstrom performs data entry for the spreadsheet calculations.

Ms. Brannon S. Wickham, who performed chemical analysis (US EPA Reference Method 24) separated from the company. Ms. Susanna Tong, as of March 5, 2008, transferred EHS duties to Ms. Frazier. Mr. Greg Touchette, former general manager, separated from the company about 2007; and Mr. Tohlman replaced him.

Replacing Ms. Wickham, Mr. Cavin Ciaciuch (Phone: 248-655-2586; Cell: NA; E-mail: cCiaciuch@ndindustries.com), a chemist, performs Karl-Fisher and US EPA RM 24 analysis.

Ms. Susanna Tong (Phone: 248-655-2587; E-mail: stong@ndindustries.com), former Compliance and Safety Manager, separated from the company in November 2008 and Ms. Kristina Berger (Phone: 248-288-0000, Fax: 248-288-0022, kberger@ndindustries.com), Jr. VP of Corporate Operations and Sales, is not responsible for environmental duties anymore; she transferred those duties in CY2008 to Jim Bar, who supervised Ms. Frazier. Ms. Kristina Berger separated from the company in December 2012.

ND Industries makes chemicals for locking and sealing applications for threaded fasteners. ND Patch System (Nylon), which involved applying a proprietary powder coating to threaded fasteners of all sizes and configurations, male or female threads, self-locking and self-sealing, while leaving them fully adjustable, has been removed.

ND Patch (Nylon) powder coating, which was completely dry (powder) and fused to the hot fastener, was not done since May 2007; but I observed powder coating reintroduced during FY 2010 inspection. Again, about 2015, powder coating lines were completely removed.

During FY 2018 inspection, again, I observed powder coating using about 5 lines. ND Patch (Nylon) powder coating is sprayed on hot male parts. Overspray powder is captured and reused. A vacuum system captures overspray powder and delivers it to a bag filter (3 ft. Diameter * 5 ft. Height). The bag is shaken to collect captured materials for reuse. All exhaust is discharged to in-plant environment.

Anyway, the powder coating system was not included in the original PTI and has always been operating under 336.1287(2)(d)) exemption.

There are many coating processes, consisting of twenty-two (22) flow-coating lines (male and female parts), at this plant:

1. Nylon (ND Patch) powder coating on hot metal surfaces (threaded fasteners) has not been done since May 2007; but I observed powder coating reintroduced during FY 2010 inspection. Again, powder coating was removed about 2015. Again, during FY 2018 inspection it reintroduced. The powder process that was removed and reintroduced and removed again was never a part of original or revised PTI.

2. Epoxy lock coating. This is a two-component coating with no VOC. The coatings are cured using Ultraviolet (UV) light.

3. Wax coating. No VOC in these coatings. The coatings are applied to preheated metallic threaded parts and the parts are not cured.

4. Water-based Teflon coating. There are five lines. The threaded parts are baked in gas fired oven. Teflon coating is hardly done.

5. Solvent-based Microsperes coating. The threaded parts cured at 70 degrees Celsius.

6. Solvent-based Vibratite coating. The parts are cured. Usage is about 5 gallons of coatings per month.

7. Water-based sealant coating. The parts are cured.

8. Miscellaneous solvents for purge and clean-up. Toluene, a predominant HAP solvent, has been eliminated as a part of a Consent Order settlement to resolve NESHAP / MACT MMMM violation cited in the letter of violation (LOV) dated January 23, 2007. The violation is resolved via CO AQD No. 19-2008. Toluene and Xylene were approved on May 11, 2010 (Seidel), to be included in a coating formulation; but neither should be used for clean-up. Again, on July 26, 2018, AQD (Zhu) approved use of Toluene and Xylene as diluent solvents in the plant provided they are accounted for properly to determine compliance. Acetone and not toluene is used as clean-up solvent. Toluene is not used for clean-up (use of Toluene for clean-up requires AQD's approval per PTI No. 72-99C, FG-FACILITY, 2.4); instead acetone is used. Acetone (CAS # 67-64-1, C3H6O = CH3-CO-CH3) is not VOC pursuant to 336.1122 (V-definitions) (f)(xiii). However, acetone has high potential for fire and explosion due to low boiling point (BP = 133 °F), low flash point (FP = - 4 (negative) °F) and wide flammability range (Flammability range = 2.5 %v (LEL) – 12.8%v (UEL)).

9. Plastisol coatings (highly viscous liquids), which are based on PVC. These coatings contain little or no VOC. The coatings are applied on preheated parts. Liquid plastisol coatings, which are not powder coatings, are highly viscous and, therefore, heated during the applications. Plastisol coatings use Rule 287(2)(c) exemption.

Acetone (CAS # 67-64-1, C3H6O = CH3-CO-CH3) is not VOC pursuant to 336.1122 (V-definitions) (f)(xiii). However, acetone has high potential for fire and explosion due to low boiling point (BP = 133 °F), low flash point (FP = - 4 (negative) °F) and wide flammability range (flammability range = 2.5 %v (LEL) – 12.8%v (UEL)). Per Rule 336.1122 Definitions (V). (f) (xiii), Acetone is NOT "Volatile organic compound (VOC)"

While Teflon coatings are always water based, Microsperes are either solvent-based or water-based.

Rule 287(2)(c) (8 male parts flow coating lines and 3 female parts drip coating lines; 11 Rule 287 lines in all) coating VOC emissions are low for MIOSHA and are released to in-plant environment upon filtration. All Rule 287 lines' (5)emissions are captured and ducted to a common manifold and filtered using five (5) filter systems.

Flow coating (male parts) has almost 100 percent transfer efficiency because excess coating is captured, recycled and reused. Drip (female parts) coating does not result in excess (overspray) coatings because precise amount of coating is sprayed on female threads using infra-red eyes (100% transfer efficiency). A coating is precisely sprayed on two sides of female threads using infra-red eye to detect precise location of female part.

FG-COATING's coating lines (excluding Rule 287(2)(2) lines) consist of 8 male parts flow coating lines and 3 female parts drip coating lines; 11 lines in all. While male parts bake ovens operate at 140-170 °F, female parts bake ovens operate at 400 °F. Rule 287 lines' coatings are not cured using traditional thermal oven but cured using UV light. The oven VOC emissions are ducted to outside ambient air via stacks.

Male parts (using 8 flow coating lines) are processed through flow coaters. This process involves picking the parts up on a rotating magnetic dial that carries them under the coating applicator where liquid coating simply flows out from a tube on to the male part's threads. The part then passes under a wire brush (s) that wipes any excess coating from the part. The application takes place over a sink, which serves to collect excess coating that is recycled via flow tube.

Female parts (using 3 drip coating lines) are processed on the conveyor belt metered drip coating lines. During this process, the female parts are carried by a conveyor belt past an infrared sensor and measured amount of coating is applied with no overspray. Coating is dripped when an infrared eye notices the part; only requisite amount is dripped precisely on the passing part.

While all male parts use flow coating, all female parts involve drip coating with an infrared eye.

Highly viscous plastisol (Rule 287(2)(c)) lines use similar technology as the conveyor belt metered flow coating process to put small amount of coating on the underside of a head on a male fastener. There are five (5) Plastisol lines, none of which exceed Rule 287(2)(c) coating limits (<< 200 gallons per month). Therefore, Plastisol lines are not included in PTI No. 72-99C (voided PTI No. 72-99B as well). I asked Ms. Frazier to maintain Rule 287(2)(c) records (gallons of coatings per month) separately for each coating line. Ms. Frazier stated that all coating lines put together use less than 200 gallons per month. In March 2009, I asked Ms. Frazier report all Rule 287 VOC under a reporting group of MAERS. Mr. Chraska is following the same procedure per FY 2018 inspection.

Total 11 Rule 287(2)(c) coating lines (not part of the permit; however the emissions must be accounted for FG-FACLITY) are present: 3 female and 8 male parts lines. However, there are additional 8 male parts lines and 3 female parts lines that are part of the permit.

ND Industries' Clawson plant used to operate two shifts per day, 8 hours per shift and 6 days per week; only one shift on Saturday. As a result of 2009 economic turbulence in automobile industry, the production levels had fallen off drastically. Towards the end of CY2008, 80 percent of 300 employees were laid off. By June 2010, few workers were recalled and some temps were also added. However, in CY 2013, business picked up and ND operated 12 hours per day and 5 days per week. This 12 hour / shift and 5 days per week continued in 2017-18.

Rule 336.1621 and NESHAP / MACT MMMM (4M) opt-out

ND Industries opted out of Rule 336.1621 pounds of VOC per gallon of coatings emission limits pursuant to Rule 336.1621(10) via PTI No. 72-99C, Special Condition Nos. 1.1a, 1.1b and 2.1a, by limiting VOC emissions to 2,000 pounds per month per line and 10 tons per year per line (not to exceed 30 tpy at this geographic site). This permit lets ND Industries opt-out of ROP and NESHAP / MACT MMMM programs as well via PTI No. 72.99C, Special Condition Nos. 2.1b (9 tpy single HAP) and 2.1c (22.5 tpy aggregate HAP). Therefore, the emission limit violations of PTI No. 72.99A as cited in January 23, 2007, were serious; Consent Order No. 19-2008 was finalized and executed on July 17, 2008, to resolve the violations. Consent Order is terminated effective November 29, 2012.

February 2006 Violation Notice – PTI No. 72-99A and Consent Order No. 11-2004

Based upon the FY 2006 inspection of the Clawson facility's records, the company was NOT in compliance with recordkeeping requirements of PTI No. 72-99A dated February 3, 2004. The letter of violation (LOV) dated February 28, 2006 was sent for recordkeeping violations of the ROP opt-out Permit to Install No. 72-99A and Consent Order No. 11-2004. The violations are described in the February 2006 letter of violation. Consequently, stipulated penalty of $15,000.00 (Check No. 00208733 dated 05/11/2006) was paid to resolve record-keeping violations.

March 2002 Violation Notice – PTI No. 72-99

It may be noted that Consent Order No. 11-2004 was a result of recordkeeping violations (Permit to Install No. 72-99; LOV dated March 28, 2002). On or about July 20, 2002, these violations were referred for an escalated enforcement action. On or about August 19, 2002, US Environmental Protection Agency added the violations to High Priority Violation (HPV) list. These actions and negotiated settlements culminated in Consent Order No. 11-2004. Settlement amount is $25,900.00

January 2007 Violation Notice – PTI No. 72-99A

FY 2007 inspection resulted in January 23, 2007 letter of violation. The letter of violation is for exceeding VOC emission limit (Opt-out Permit to Install No. 72-99A, Special Condition No. 2.1b {limit: 9.0 tons per year based upon 12-month rolling time [tpy]}). The LOV is also for violation of NESHAP / MACT MMMM because the actual, and potential-to-emit, toluene (a Sec. 112 hazardous air pollutant or HAP) emissions exceeded 10 tons per year. The cited Special Condition No. 2.1b of Permit to Install No. 72-99A was enforceable as paragraphs 10 & 17 of Consent Order, AQD No. 11-2004. The violation of the Consent Order subjects the company to stipulated penalty provisions. See the January 23, 2007 letter of violation for additional details. Consent Order No. 19-2008 was finalized and executed on July 17, 2008, to resolve the violations cited in January 23, 2007, LOV. Settlement amount was $49,280. Consent Order has been terminated effective November 2012.

December 2013 Violation Notice – PTI No. 72-99C

On December 2, 2013, AQD issued Violation Notice for failure to perform US EPA RM 24 coating analysis for VOC by December 2012 per PTI No. 72-99C (SC FG-COATING, 1.6 Testing). Although ND Industries was not able to produce US EPA RM 24 analysis report, it was able to produce e-mail activities associated with it. Hence, VN is considered resolved.

EB-Butyl Cellosolve (CAS No. 111-76-2)

Purge and clean-up toluene emissions were included in 12-month rolling time emissions. Toluene emissions were down to about 6 tpy from about 11 tpy, based upon 12-rolling time period (April 2007 data). Toluene emissions were substantially reduced by eliminating Toluene as a clean-up solvent. EB-Butyl Cellosolve (CAS No. 111-76-2) replaced toluene as miscellaneous cleaning solvent. ND's R&D is making continuous efforts to replace toluene in coating formulations as well. Due to higher Cellosove costs ($/gal), Butyl Cellosolve usage was discontinued in September 2009. Toluene replaced, as approved by AQD via May11, 2010, letter (Seidel) according to FG-FACILITY, SC 2.4, PTI No. 72-99C, Butyl Cellosolve as thinning solvent. Acetone replaced Butyl Cellosolve as clean-up solvent; prior to the Consent Order 19-2008, Toluene was used as a clean-up solvent. Per Apr. 2010 VOC Report, toluene emissions increased to 8.85 tons per 12-month before subtraction of credits due to off-site disposal (1,069 pounds of toluene) and material returns to Chemical Blending on Barrett Road (214 pounds of toluene). Via letter dated May 11, 2010 (Seidel), AQD approved use of toluene as coating diluent solvent (PTI No. 72-99C, FG-FACILITY, SC 2.4); however, toluene may not be used as clean-up solvent. Again in 2018, AQD (Zhu letter dated July 26, 2018) approved use of toluene as coating diluent solvent (PTI No. 72-99C, FG-FACILITY, SC 2.4). Acetone replaced EB-Butyl Cellosolve as clean-up solvent due to costs.

NESHAP / MACT MMMM (4M)

On January 2, 2004, the US Environmental Protection Agency (EPA) promulgated federal NESHAP/MACT 4M standards for Surface Coating of Miscellaneous Metal Parts and Products (40 CFR, Part 63, Subpart MMMM (4M) —National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products, Page 130, Federal Register / Vol. 69, No. 1 / Friday, January 2, 2004 / Rules and Regulations / Final Rule).The MACT standard applies only to a Miscellaneous Metal Parts Surface Coating facility located at a plant site that is a major source (40 CFR, Part 63, Subpart MMMM, §63.3881); a non-major or area HAP source, i.e., actual and potential annual emissions are less than 10 tons of any single HAP and less than 25 tons of all HAP combined, is not subject to the MACT MMMM standards. Major MACT sources are defined as those that emit or have the potential to emit at least 10 tons per year of any single HAP or 25 tons per year of any combination of HAP. Current *once-in-always-in policy* of US EPA precludes ND Industries from opting out of the requirements of the NESHAP/MACT MMMM. However, as I discussed on January 9, 2007, with Ms. Susana Tong, on January 3, 2007, US EPA has proposed (Page 69, Federal Register / Vol. 72, No. 1 / Wednesday, January 3, 2007 / Proposed Rules) to replace this policy (May 16, 1995, EPA memorandum entitled "Potential to Emit for MACT Standards – Guidance on Timing Issues" from John Seitz) so that a major MACT source may become an area source any time. See Consent Order 19-2008 settlement.

For an existing MACT MMMM (4M) source, the compliance must be achieved by January 2, 2007. An affected MACT MMMM source is new source for which construction commenced after August 13, 2002; an affected source is an existing source if it is not new or reconstructed.

On February 16, 2007, AQD received January 23, 2007, LOV response letter dated February 12, 2007. The letter states that accurate and timely calculations will be performed, toluene (HAP) has been replaced by a non-HAP solvent (butyl cellulosive) and the coatings and

diluent solvent are being reformulated to exclude toluene. The letter also states that use of toluene as thinning and cleaning solvent was eliminated as of January 1, 2007. Per the letter, these actions should bring toluene emissions below 5 tons per year from current 11 tons per year. However, via letter dated May11, 2010 (Seidel), and July 26, 2018 (Zhu), AQD approved use of toluene as coating diluent solvent (PTI No. 72-99C, FG-FACILITY, SC 2.4); however, toluene may not be used as clean-up solvent.

NESHAP / MACT 4M : Trailing Vs Projected HAPs

Based upon **trailing** 12-month toluene emissions, ND was a NESHAP / MACT major source; actual about 11 tpy HAP. However, per the January 23, 2007, letter toluene was eliminated before January 1, 2007 (MACT compliance date January 2, 2007). Since the actions were taken before compliance date, **projected** 12-month toluene emissions must be considered according to Mr. S. Lee Johnson (Honigman-Miller-Schwartz-Cohn LLP), an attorney representing ND. AQD agreed with the argument and Consent Order No. 19-2008 was finalized and executed on July 17, 2008, to represent this agreement. As a matter of fact, the emissions were about 4.98 tons of HAP per year as of January 2009. Since then Toluene emissions increased to 8.85 tons per 12-month (April 2010 VOC Report). Per the VOC report, Sep 2013 emissions were 8.57 tons of HAPs per year and 9.10 tons of VOC per year based upon 12-month period. Based upon recent VOC reports HAPs (toluene is main HAP) emissions are close to 10 tons per year.

Semi-annual (Jan-Jun and Jul-Dec) Audit Reports

AQD required the semi-annual audit to ensure compliance via self-monitoring.

On Aug 28, 2008, AQD received Jan-June 2008 audit report. The report stated that employee retraining would be done to correctly record VOC / HAP. Toluene, total HAP, total VOC emissions have reduced from 6.53, 6.59, 10.39 (Dec07) to 4.58, 4.66, 8.54 (Jul08), respectively.

On February 18, 2009, AQD received July-December 2008 audit report. One clip-board was installed for each emission unit (72-99C) and one for Butyl Cellosolve (non-HAP substitute solvent for toluene). Since waste materials are insignificant, no credit is taken for reclaimed HAP / VOC. Total of 6,376 gal /yr coating materials were purchased in CY2008 by the Clawson Plant. 3,190 gallons were purchased during July-Dec 08. Only 1,290 gallons were accounted for; rest was not logged. The audit report contains corrective actions. Similarly, 48 gallons of butyl cellusolve were not accounted for. 48 gallons were added to the VOC / HAP calculactions spreadsheet.

On March 3, 2010, AQD received July-December 2009 audit report. Toluene is used only as diluent solvent adjust coating viscosity. Water-based coatings continue to have quality issues. Butyl Cellosolve has not been used since September 2009.

Based upon June 2010 production, water-based coatings quality results are encouraging.

On August 23, 2010, AQD received Jan-June 2010 audit report. The report stated US EPA RM 24 tests were done.

On August 26, 2011, AQD received Jan-June 2011 audit report. The report stated US EPA RM 24 tests were done.

On February 28, 2012, AQD received July-Dec 2011 audit report. The report stated US EPA RM 24 tests were done.

On August 30, 2012, AQD received Jan-June 2012 audit report.

As Consent Order is terminated effective November 29, 2012, these audit reports are not required anymore.

Past inaccurate VOC / HAP records

I advised Ms. Frazier that AQD was aware past VOC records, as kept by Ms. Stacy Kacarka , former Supervisor of Compliance and Safety, who was let go, were not accurate and that it was not necessary to go back and correct those records and that future records should be accurate.

Permit-to-Install Revisions

AQD issued a letter of violation dated March 28, 2002, for failure to keep records (PTI No. 72-99), failure to obtain ROP (Rule 336.1210) and failure to meet VOC limits (Rule 336.1621, PTI No. 72-99 SC2). ND revised PTI No. 72-99 to PTI No. 72-99A to resolve the violations. PTI No. 72-99A allowed the company to opt out of Rule 621 VOC limits (pounds of VOC / gallon of coating), NESHAP/ MACT standards and ROP. ND entered into Consent Order No. 11-2004 to resolve violations. During Consent Order No. 19-2008 negations, the company applied for General Permit-to-Install (GPTI) for the coating operations. AQD denied the GPTI application because of ongoing enforcement action. AQD agreed to simplify recordkeeping requirements. Hence, AQD revised PTI No. 72-99A to PTI No. 72-99B and eliminated all Rule 336.1287(c) (since 2017, Rule 336.1287(2)(c)) paint spray booths from the PTI. AQD also removed individual toxic air contaminants (TAC) of PTI No. 72-99A, SC 1.1a through 1.1f. In addition, the revision (PTI No. 72-99A to PTI No. 72-99B) removed SC 1.2 through 1.5 (PTI No. 72-99A), which required recordkeeping of these TACs, e.g., N, N-Dimethyl-O-Toluidine, N, N-Diethyl-P-Toluidine, Hydroxymethyl Amino Ethanol.

Again, PTI No. 72-99B was revised to PTI No. 72-99C to revise FG-FACILITY, SC 2.4 because ND used non-HAP solvents to adjust viscosities of the coatings. PTI No. 72-99B (SC 2.4) prohibited coatings content alteration by dilution with solvents; this was not so per the plant manager. This revision made FG-FACILITY, SC 2.4 (72-99C) consistent with paragraphs 13 and 15 of Consent Order AQD No. 19-2008.

In addition, according to FG-FACILITY SC 2.4, PTI No. 72-99C, via May 11, 2010, letter (Seidel), AQD approved use of Toluene and Xylene as diluent / thinning solvent to adjust coating viscosity. Furthermore, SC 2.4, with AQD's prior approval, allows use of HAP solvents for clean-up / thinning; AQD has never issued such approval for clean-up.

Rule 336.1287(2)(c) Coating Lines

During permit modification from PTI No. 72-99A to PTI No. 72-99B, all Rule 287(c) (since 2017, Rule 287(2)(c)) coating lines with potentially less than 200 gallons per month were removed from the permit. I informed Ms. Kim Frazier that the emissions from these lines must be counted for 30 tpy VOC limit (PTI No. 72-99C, FG-FACILITY, SC 2.1a). I advised Ms.

Frazier in March 2009 to include Rule 287(2)(c) VOC as a reporting group in MAERS. Mr. Chraska is following my advice.

PTI No. 72-99A to 72-99B Revision

Per AQD SEMI District request, all emission unit descriptions have been corrected with assistance from Mr. Tohlman, General Manager. All Rule 287(c) (since 2017, Rule 287(2)(c)) coating lines were removed. Individual toxic air contaminants (TAC) limits of PTI No. 72-99A, SC 1.1a through 1.1f are removed. Per March 2008 data, facility-wide VOC emissions are 9.08 tpy (SC 1.1a limt: 10 tpy per line, SC2.1a limit: 30 tpy for entire facility). . Per Sep 2013 data, facility-wide VOC emissions are 9.10 tpy (SC 1.1a limt: 10 tpy per line, SC2.1a limit: 30 tpy for entire facility).

PTI No. 72-99C Emissions and compliacce

I observed that all coating and solvent materials containers were covered with lids (PTI No. 72 -99C, FG-COATING, SC1.2-1.4); this is done for safety and OSHA reasons as well. Only drip (female) and flow (male) coating technologies are used (PTI No. 72-99C, FG-COATING SC1.5). Pursuant to Consent Order 19-2008 (now terminated) and PTI No. 72-99C, the VOC / HAP calculations are done using formulation coating information (PTI No. 72-99C, FG-COATING SC1.7-1.9). Facility-wide HAP and VOC emissions are **8.73** tpy (PTI No. 72-99C, FG-FACILITY, SC2.1b limit: 9 tpy each individual HAP, SC2.1c limit: 22.5 tpy for entire facility aggregate HAP) and **9.69** (PTI No. 72-99C, FG-FACILITY, SC2.1a limit: 30 tpy VOC), respectively, for CY 2017. VOC and HAP records are kept; and calculations are done using MS Excel Spreadsheets (PTI No. 72-99C, FG-FACILITY, SC2.3-2.6).

Rule 287(2)(c) coating usage records (3 female and 8 male, 11 total parts lines) are kept separately because these usages are not part of the permit. In December 2017, **1,416.2** pounds of **toluene** per month, **1,416.5** pounds of **HAPs** per month and **1,449** pounds of VOC per month were emitted **from permitted coating lines.** In addition, in December 2017, **0** pounds of **toluene** per month, **0.2** pounds of **HAPs** per month and **15.4** pounds of **VOC** per month were emitted **from Rule 287(2)(c) coating lines**. Hence, **total emissions** are (December 2017): **1,416.4** pounds of **toluene** per month, **1,416.7** pounds of **HAPs** per month and **1,464.4** pounds of **VOC** per month.

All coating and solvent usage logs are kept properly using one log sheet near chemical room.

All emission information is according to CY 2017 data. SC2.4 (72-99B to 72-99C) is revised to allow non-HAP dilution of coatings to adjust viscosity.

According to SC 2.4, PTI No. 72-99C, via May 11, 2010 (Seidel) and July 26, 2018(Zhu), letters, AQD approved use of Toluene and Xylene as diluent / thinning solvent to adjust coating viscosity. However, ND is prohibited from using these solvents for cleanup; ND uses acetone for cleanup.

Clean-up solvent usage is reduced by using mechanical scrapping and reducing frequency of color changes. Acetone replaced Toluene as clean-up solvent. Butyl Cellosolve usage as thinning as well as clean up solvent discontinued since Sept 2009 due to cost considerations.

Reference Method 24

On March 31, 2009, AQD approved use of formulation data provided 5 frequently used and 5 random coatings are analyzed on an annual basis according to SC 1.6 PTI #72C and the March 31, 2009, letter. In CY 2009, VOC coatings analysis was done in-house. Water-based coatings analysis was done by NSL of Cleveland using Karl-Fisher Method. NSL's analysis showed negative 7.7% water. Therefore, NDI bought its own Karl-Fisher machine:

V2O Volumetric Karl Fisher Titrator
Metler Toledo
Mat Eby, Instrument Sales Specialist
1-800-METLER-ext 7004
614-519-0882
E-mail: Mathew.eby@mt.com
www.mt.com

According to Ms. Gaile Hanning (248-655-2597)of NDI, colorimetry should not be used for higher water content in coatings. Volumetric method must be used for water based coatings. Ms. Hanning claimed she was getting good results with less than 1% error. Ms. Hanning separated from the company about Dec 2012.

On December 6, 2017, AQD (Joyce Zhu) renewed (the RM24 approval expires on December 31, 2025) RM24 alternative that ND Industries must analyze on annual basis: five (5) *frequently* used coatings, five (5) additional *random* coatings, twelve (12) additional *frequently used water-based (6) and solvent-based (6) coatings.*

In CY2016 twenty (20) coatings were analyzed using Karl Fisher Method. Both water-based and solvent-based coatings were analyzed using Karl Fisher Method. Analysis shows good results compared with formulation VOC content. I asked the company to analyze solvent based coatings using US EPA Method 24 as well.

In CY2017 sixteen (16) coatings were analyzed using Karl Fisher Method. Both water-based and solvent-based coatings were analyzed using Karl Fisher Method. Analysis shows good results compared with formulation VOC content. The results are tabulated per my request to compare with formulation values.

Karl Fisher Method gives water content. ASTM D2369 test method gives volatile content (water plus solvent). The coating is baked at 110 °C for 1 hour to obtain solids content. By subtraction, VOC content is determined.

Consent Order Termination (November 2012)

Consent Order AQD Nos. 11-2004 and 19-2008 were executed on April 7, 2004 and July 17, 2008 by G. Vinson Hellwig, AQD Chief. Consent Orders 11-2004 and 19-2008 are terminated by G. Vinson Hellwig, AQD Chief, effective November 29, 2012, based upon July 15, 2012, written request by D. K. Bungee, EHS Manager, ND Industries.

Based upon my request, Mr. Chraska provided copies of cancelled checks:

1. $24,640.00; Comerica Check No. 234780 dated 08/05/08

2. $24,640.00; Comerica Check No. 238401 dated 12/19/08

Total $49,280.00 (Paragraph 17, AQD No. 19-2008).

In addition, ND Industries paid $25,900.00 (Paragraph 16, AQD No. 11-2004) $15,000.00 (stipulated penalty for failure to keep records, Check No. 00208733 dated 05/11/2006).

Parts Washer

One aqueous parts washer with boric acid, rust inhibitor, etc. are added.

Conclusion

ND is compliance with its Synthetic Minor permit.

FYI: VNs (December 2, 2013, January 23, 2007 and February 28, 2006)

NAME D Illenmahalli DATE 08/13/2018 SUPERVISOR Joyce Z

N 6577

VOC Content Testing Results - Calendar Year 2017

Product	% VOC (Fromulation)	Desity of Coating	%Soilds (EPA Method 24 Solids)	% Water (Karl Fisher method)	% Water (KF) + %Solids (EPA Solids)	%VOC (100% - [%water (kf) + %Solids (EPA method 24)]	Difference in %VOC
VC Bulk	60.2	0.9	40.05	0.893	40.943	59.057	-1.14
TA800	42.44	1.22	64.41	0.565	64.975	35.025	-7.41
TA850	42.2	1.08	65.03	0.565	65.595	34.405	-7.80
TA850T15	28.76	1.08	77.58	0.7	78.28	21.72	-7.04
* 593SB, SY, SP	41.92	1.02	53.53	0.965	54.495	45.505	3.58
* 1193S	41.94	1.04	51.94	0.803	52.743	47.257	5.32
* 593SA	0	1.02	47.09	48.354	95.444	4.556	4.56
* ST-3-L5	0	1.2	38.2	61.202	99.402	0.598	0.60
* ST-3-L6/L7	0	1.2	39.64	59.61	99.25	0.75	0.75
* ST-3-L11	0.8	1.42	48.15	49.864	98.014	1.986	1.19
* ST3-W	1.88	1.3	57.61	39.951	97.561	2.439	0.56
AA0796	4.58	1.05	47.95	49.978	97.928	2.072	-2.51
Expand-A-Lock	40.61	1.06	60.09	0.936	61.026	38.974	-1.64
* AA1196	0.01	1.05	42.28	57.36	99.64	0.36	0.35
LMAV5GF	11.99	1.08	31.39	58.73	90.12	9.88	-2.11
LMAV6	12.63	1.12	44.12	46.135	90.255	9.745	-2.89

Sections Highlighted in yellow show that fromulation %VOC is higher than EPA method 24 %VOC

*Difference in VOC Content is attributed to the volatilization of a non-HAP component.