

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

B364425226

FACILITY: S.C. Johnson Home Storage LLC		SRN / ID: B3644
LOCATION: 4868 E WILDER RD, BAY CITY		DISTRICT: Saginaw Bay
CITY: BAY CITY		COUNTY: BAY
CONTACT: Dan Sugar		ACTIVITY DATE: 05/22/2014
STAFF: Kathy Brewer	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Verify RULE 290 compliance, Confirm PTI #202-98 can be voided per permittee's request.		
RESOLVED COMPLAINTS:		

I (KLB) conducted a site inspection to verify that the flexographic printing operation is no longer used, the equipment has been removed, and, the facility is in compliance with air regulations, including Rule 290. The facility manufactures a variety of sizes of plastic bags under the name Ziploc. The facility prints the plastic bags using a variety of inks. Emissions from the facility include ozone, ammonium hydroxide, and VOCs. There is a 14.7 MMBTU steam generating unit subject to 40 CFR Part 60 Subpart Dc, and two emergency generators on site. The facility is an Area Source for HAPs.

Dan Sugar, Dale Cousineau, Jason LaPratt, and Andy Cammenga, provided information and accompanied me during my inspection. The site visit included the production area where the flexographic printing equipment was previously operated, an overview of the production activities at the site, and a review of onsite records. Additional information was provided after the inspection by email. No violations of air regulations were found during the inspection.

PTI No. 202-98: Compliance

The flexographic printing line consisted of a treater system, a flexographic printing press, a dryer, and cleanup and purge solvents. PTI #202-98 limited VOC emissions from the flexographic printing line to 9.7 pounds per hour and 20.9 tons per year on a 12 month rolling average. The facility is required to maintain records for the flexographic printing line including amount of each ink or coating material used, the material VOC content and the daily hours of operation. MSDS provide material constituent information. The MSDS are updated if formulation changes occur and at a minimum of once every three years.

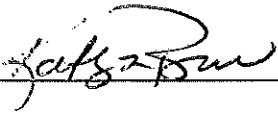
The flexographic process allowed for over 40 colors of ink to be applied. The site now uses mostly white ink and emissions are tracked per Rule 290 requirements. Per SC Johnson staff the flexographic equipment was last used on July 13, 2011. The equipment was removed on November 26, 2013. PTI No. 202-98 can be voided

Rule 290 emission units: Compliance

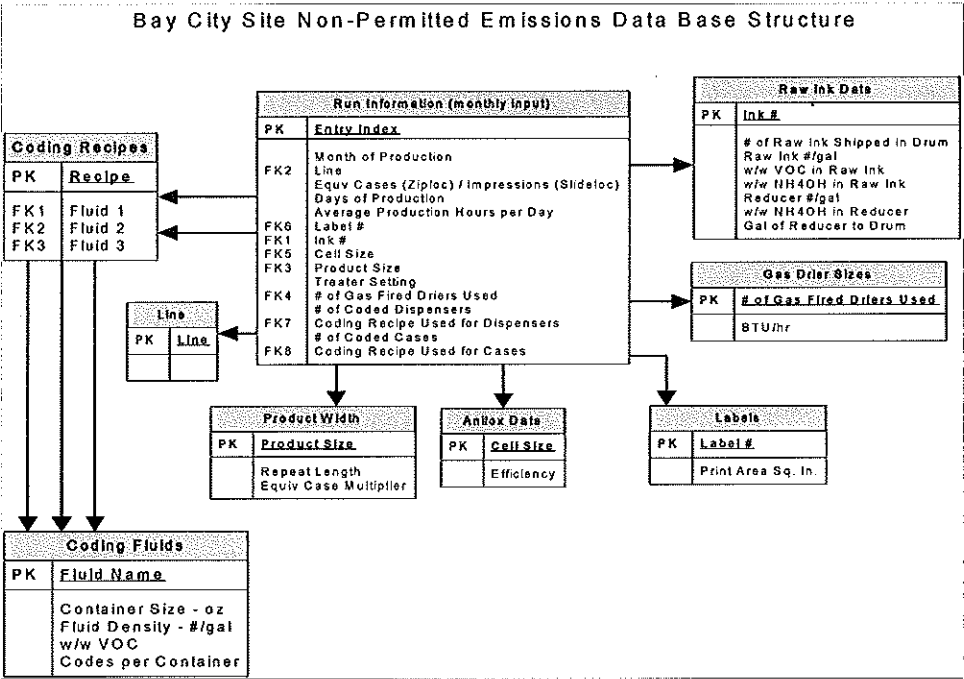
There are bag production lines for various size bags. The ink applied to create labels is water based, low VOC ink, containing up to 4% ammonium hydroxide and a maximum 9.3% VOC. White ink is used as a base coat and accounts for the majority of ink used. Colored ink may be applied over the white ink.

The process uses a high voltage electric discharge to increase the surface tension of the plastic film as an aid in ink adhesion. The high voltage arc passing through the air gap above the film generates ozone.

NESHAP, or greenhouse gas regulations. An initial notification form for the applicability of NSPS Dc for the 14.7 MMBtu natural gas boiler was submitted in October 2010.

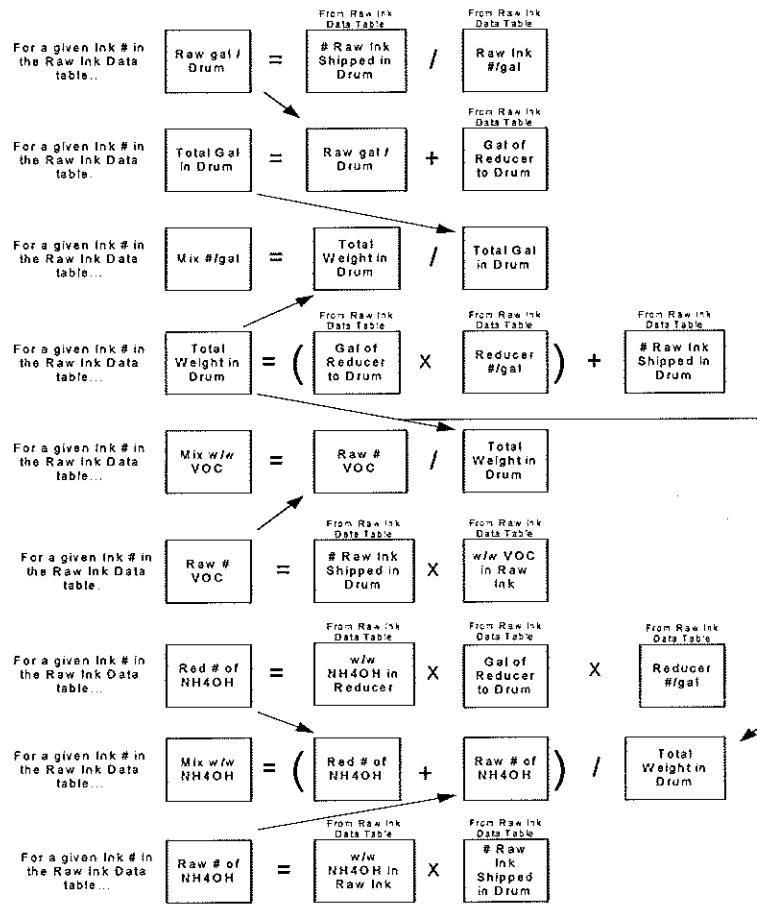
NAME DATE 6/10/14SUPERVISOR 

Database Documentation



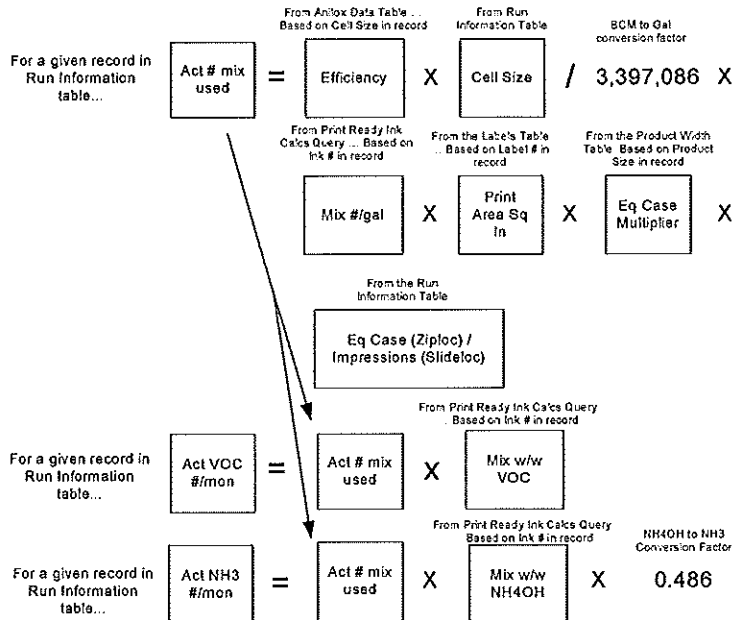
Database Documentation

Query: Print Ready Ink Calcs

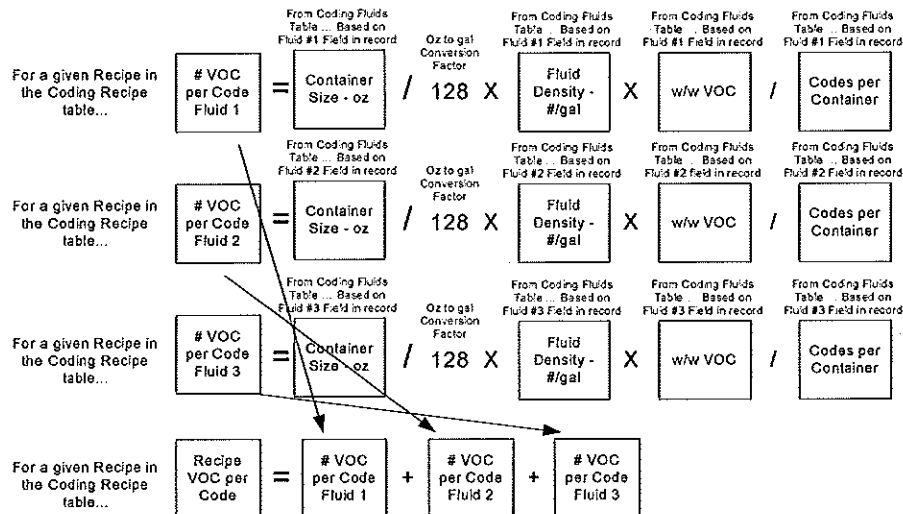


Database Documentation

Query: VOC & NH3 Calcs (White Ink Printing)



Query: VOC per Recipe Calcs



Database Documentation

Query: O3 Emissions Calcs

$$\text{For a given record in Run Information table...} \quad \boxed{\text{Act O3 \#/mon}} = \boxed{\text{Treater Setting}} \times 0.073 \times \boxed{\text{Average Production Hours per Day}} \times \boxed{\text{Days of Production}}$$

From Run Information Table

From Run Information Table

From Run Information Table

Query: Burner Emissions Calcs

$$\text{For a given record in Run Information table...} \quad \boxed{\text{Act Burner \#/mon Emissions}} = \boxed{\text{BTU/hr}} \div 1049 \times \frac{152.2}{1,000,000} \times \boxed{\text{Average Production Hours per Day}} \times \boxed{\text{Days of Production}}$$

From Gas Driv Sizes Table ... Based on "# of Gas Fired Drivrs Used" in record

BTU/sq (Nat. Gas)

Tot # of Emissions / MWsq

From Run Information Table

From Run Information Table

Query: Coding Emissions Calcs

$$\text{For a given record in Run Information table...} \quad \boxed{\text{Act VOC \#/mon Disp Coding}} = \boxed{\text{Recipe VOC per Code}} \times \boxed{\text{\# of Coded Dispensers}}$$

From VOC per Recipe Query ... Based on "Coding Recipe Used for Dispensers" from Record in Run Information Table

From Record in Run Information Table

$$\text{For a given record in Run Information table...} \quad \boxed{\text{Act VOC \#/mon Case Coding}} = \boxed{\text{Recipe VOC per Code}} \times \boxed{\text{\# of Coded Cases}}$$

From VOC per Recipe Query ... Based on "Coding Recipe Used for Cases" from Record in Run Information Table

From Record in Run Information Table

Query: Total Emissions

$$\text{For a given record in Run Information table...} \quad \boxed{\text{Tot Act VOC \#/mon}} = \boxed{\text{Act VOC \#/mon}} + \boxed{\text{Act VOC \#/mon Disp Coding}} + \boxed{\text{Act VOC \#/mon Case Coding}}$$

From VOC & NH3 Emissions Calcs Query

From Coding Emissions Calcs Query

From Coding Emissions Calcs Query

$$\text{For a given record in Run Information table...} \quad \boxed{\text{Act Total \#/mon Emissions}} = \boxed{\text{Tot Act VOC \#/mon}} + \boxed{\text{Act NH3 \#/mon}} + \boxed{\text{Act O3 \#/mon}} + \boxed{\text{Act Burner \#/mon Emissions}}$$

From VOC & NH3 Emissions Calcs Query

From O3 Emissions Calcs Query

From Burner Emissions Calcs Query

Se Johnson

5/22/14

Entry Index
Month of Production
Line
Equiv Cases (Ziploc) / Impressions (Slideloc)
Product Size
Days of Production
Average Production Hours per Day
Label #
Ink #
Cell Size
Treater Setting
of Gas Fired Driers Used
Dispensers Coded
Code Recipe for Dispensers
Cases Coded
Code Recipe Used for Cases

Anilox Data Used in the Emission Calculations

<i>Cell Size (BCM)</i>	<i>Efficiency</i>
3.0	30.0%
3.5	30.0%
4.0	30.0%
4.5	30.0%
5.0	30.0%
5.5	30.0%
6.0	30.0%
6.5	30.0%
7.0	30.0%
7.5	30.0%

Notes:

BCM = Billion Cubic Microns

The Efficiency is the percentage of ink actually transfered from the anilox cell to the substrate. Industry standard is 40% - 50%. However, due to the media being used, this may be lower.

Coding Recipes Used in the Emissions Calculations

<i>Recipe Name</i>	Laser Coding
<i>Coding Fluid #1</i>	None
<i>Coding Fluid #2</i>	None
<i>Coding Fluid #3</i>	None

<i>Recipe Name</i>	Marsh NP
<i>Coding Fluid #1</i>	Marsh Non-Porous Black Ink 20144
<i>Coding Fluid #2</i>	Marsh Cleaning Fluid (IJ-NP-SQ4)
<i>Coding Fluid #3</i>	None

<i>Recipe Name</i>	No Coding
<i>Coding Fluid #1</i>	None
<i>Coding Fluid #2</i>	None
<i>Coding Fluid #3</i>	None

<i>Recipe Name</i>	Videojet #1
<i>Coding Fluid #1</i>	Video Jet Ink 16-8700Q
<i>Coding Fluid #2</i>	Video Jet Makeup Fluid 16-8705F
<i>Coding Fluid #3</i>	Video Jet Cleaning Fluid (16-8705Q)

Coding Fluids Data Used in the Emissions Calculations

<i>Fluid Name</i>	<i>Container Size fl. oz.</i>	<i>Fluid Density #/gal</i>	<i>w/w VOC</i>	<i>Codes per Container</i>
Marsh Cleaning Fluid (IJ-NP-SQ4)	32.0	6.92	0.7900	8,020,000
Marsh Non-Porous Black Ink 20144	640.0	6.83	0.9300	520,923
None	0.0	0.00	0.0000	1
Video Jet Cleaning Fluid (16-8705Q)	32.0	6.58	0.9900	8,020,000
Video Jet Ink 16-8700Q	32.0	7.33	0.7700	4,300,000
Video Jet Makeup Fluid 16-8705F	640.0	6.58	0.9900	81,800,000

Gas Drier Data Used in the Emissions Calculations

<i># of Driers Used</i>	<i>BTU/hr</i>
0	0
1	800,000
2	1,200,000

Notes:

The BTU/hr value is the heat output of the driers. If a second drier is used, it is a smaller between color drier. That is why the heat output is not doubled.

Product Width Data Used in the Emissions Calculations

<i>Product</i>	<i>Width [in.]</i>	<i>Multiplier</i>
Saran Cling Plus	1.000	1.000
Saran Premium	1.000	1.000
Slideloc Gallon	10.813	1.000
Slideloc Quart	8.250	1.000
Ziploc Gallon	10.875	183.908
Ziploc Quart	7.250	275.862
Ziploc Sandwich	6.750	296.296

Note:

Slideloc (EZ Zipper) production is reported in impressions (images) and the Ziploc production is reported in equivalent cases. The "Multiplier" is used to convert all the production numbers into impressions for ease of calculation.

Brewer, Kathy (DEQ)

From: Brewer, Kathy (DEQ)
Sent: Friday, May 23, 2014 4:24 PM
To: 'Cammenga, Andy G.'
Subject: RE: Ozone & Rule 290
Attachments: 278.doc

In addition to Rule 290 there are several exemptions for emission units based on an activity or an equipment type (Rule 281 includes some dryers, Rule 282 covers furnaces, ovens, & heaters, 285 (g) is for internal combustion engines <10MMBtu). I don't have a record of the exemption claimed for each emission unit using natural gas at SC Johnson. Here's a link to AQD Part 2 Rules http://www7.dleg.state.mi.us/orr/Files/AdminCode/1114_2012-107EQ_AdminCode.pdf

If the combustion sources don't meet a specific exemption but have emissions low enough to qualify for an exemption under Rule 290, then keeping all the Rule 290 exempt units reporting together makes sense. Again, just make sure the combustion source emissions are not large enough to impact the status for the exemption under Rule 278 (attached).

So the answer is ..maybe. It depends on the exemption being used for a particular emission unit.

All emission units meeting an exemption should be included in any evaluation for the entire site's emissions for Title 5/Rule 210 & Rule 211 Major determination. If I understand the records you showed me while I was on site, they can be used to make the demonstration that the site is not Major under Title 5.

Hope this is clarifying, not muddying.

Kathy L. Brewer
(989) 894-6214

From: Cammenga, Andy G. [<mailto:AGCammen@scj.com>]
Sent: Friday, May 23, 2014 2:51 PM
To: Brewer, Kathy (DEQ)
Cc: Sugar, Dan B.
Subject: RE: Ozone & Rule 290

Hi Kathy,

So if I understand correctly, the ozone is OK to leave in but if we get near the limit, we would probably want to keep track of it separately. Is that correct?

Is that also true of the products of Nat. Gas combustion? Or should they stay in?

Andy

From: Brewer, Kathy (DEQ) [<mailto:BREWERK@michigan.gov>]
Sent: Friday, May 23, 2014 12:39 PM
To: Cammenga, Andy G.
Subject: FW: Ozone & Rule 290

Hi Andy,

The site should record ozone emissions & VOCs but it is not necessary to include your ozone values in the records kept for RU 290 purposes. It is not a problem either. If an emission unit approaches the RULE 290 emission limits &/or the site approaches 50% of the limits for a single HAP(10 tons/year) or VOCs(25 tons/year) or Major for ozone the specific pollutants should be tracked separately.

Please contact me if you have any questions.

Kathy L. Brewer
(989) 894-6214

From: Sills, Robert (DEQ)
Sent: Friday, May 23, 2014 11:43 AM
To: Brewer, Kathy (DEQ)
Subject: RE: Ozone & Rule 290

Hi Kathy,

Since ozone is one of the 6 criteria pollutants, with NAAQS, it is not on EPA's HAP list and is exempt from our State definition of Toxic Air Contaminant (TAC list). Therefore, we don't regulate it with our air toxics rules. Since R 290 is for exemption from the air toxics rules, it doesn't apply for non-TACs like ozone.

From: Brewer, Kathy (DEQ)
Sent: Friday, May 23, 2014 10:56 AM
To: Sills, Robert (DEQ)
Subject: Ozone & Rule 290

Hi Bob,

Would you or someone in the toxics unit be able to help me determine if/how ozone emissions generated from an anti-static device at a plastic bag manufacturer should be regulated under RULE 290? I did not see an ITSL for ozone & it is not listed as a HAP. Thanks -

Kathy L. Brewer (989) 894-6214
Environmental Quality Analyst
Jinaw Bay District Office, Air Quality Division, Michigan DEQ



RULE 290 PERMIT TO INSTALL EXEMPTION: SOURCES WITH LIMITED EMISSIONS RECORD

This record is provided as a courtesy for businesses by the Michigan Department of Environmental Quality (MDEQ), Environmental Science and Services Division, Clean Air Assistance Program, and is not required to be returned or submitted to the MDEQ.

Applicable Rule: Rule 290 of the Michigan Air Pollution Control Rules

NOTE:

- Rule 290 of the Michigan Air Pollution Control Rules exempts an emission unit with limited emissions from having to apply for Permit to Install. Rule 201 requires sources to obtain a Permit to Install prior to the installation, construction, reconstruction, relocation, or modification of an emission unit. Sources using this exemption must not meet any of the criteria in Rule 278 and must be able to demonstrate compliance with the various emission limits contained in Rule 290.
- Utilization of this form is not the sole method of demonstrating compliance with the requirements of Rule 290, unless required by a permit such as a Renewable Operating Permit (ROP). For example, an alternative method of demonstrating compliance could be determining the emissions of air contaminants from a single unit of production and recording the number of production units generated per month.
- ROP subject sources – This document must be used to track emissions unless an alternate format has been approved by the District Supervisor or alternate format is cited in the ROP.
- An emission unit that emits an air contaminant, excluding noncarcinogenic Volatile Organic Compounds (VOCs) and noncarcinogenic, non-ozone forming materials listed in Rule 122(f), which has an Initial Threshold Screening Level (ITSL) or Initial Risk Screening Level (IRSL) less than 0.04 micrograms per cubic meter (ug/m³) cannot use Rule 290.
- For all emission units exempt pursuant to Rule 290 that emit particulate emissions which have an ITSL equal to or less than 2.0 ug/m³ and greater than or equal 0.04 ug/m³, the particulate emissions must be included in Section 2.
- For all emission units exempt pursuant to Rule 290 that emit particulate emissions which have an IRSL equal to or greater than 0.04 ug/m³, the particulate emissions must be included in Section 3.
- Perchloroethylene is the only non-ozone forming material listed in Rule 122(f) that is a carcinogen. Two of the stabilizers in Rule 122(f) Table 11, tertiary butyl alcohol and 1,2-butylene oxide, are carcinogenic and are ozone forming materials.
- 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.
- Monthly emission records are required to be maintained on file for the most recent two-year period and made available to the MDEQ, Air Quality Division upon request. (ROP subject sources must keep records for the most recent five year period.)

RULE 290 PERMIT TO INSTALL EXEMPTION: SOURCES WITH LIMITED EMISSIONS RECORD (continued)

Please print or type all information.

1. COMPLETE FOR EACH EMISSION UNIT USING THE EXEMPTION IN RULE 290.			
SOURCE NAME:			
MONTH/YEAR:			
DESCRIPTION OF EMISSION UNIT (including control devices):			

2. RECORD EMISSIONS OF NONCARCINOGENIC AIR CONTAMINANTS (EXCLUDING NONCARCINOGENIC VOCs AND NONCARCINOGENIC, NON-OZONE FORMING MATERIALS LISTED IN RULE 122(f)) (see Appendix A)			
ITSL ≥ 2.0 ug/m3			
(The emissions of noncarcinogenic particulate air contaminants with an ITSL > 2.0 ug/m3 do not have to be recorded in this table as long as the emission unit is in compliance with the requirements in Section 6.)			
CAS #	Chemical Name	Uncontrolled Emissions (lbs/month)	Controlled Emissions (lbs/month)
Monthly Total		①	②
2.0 ug/m3 > ITSL ≥ 0.04 ug/m3			
CAS #	Chemical Name	Uncontrolled Emissions (lbs/month)	Controlled Emissions (lbs/month)
Monthly Total		③	④
Compliance Criteria:			
<ul style="list-style-type: none"> The total in Box ① must be ≤ 1,000 pounds or the total in Box ② must be ≤ 500 pounds. If the total in Box ① or in Box ② is greater than the respective emission limitations, contact your local district office. The total in Box ③ must be ≤ 20 pounds or the total in Box ④ must be ≤ 10 pounds. If the total in Box ③ or in Box ④ is greater than the respective emission limitations, contact your local district office. 			

RULE 290 PERMIT TO INSTALL EXEMPTION: SOURCES WITH LIMITED EMISSIONS RECORD (continued)

3. RECORD EMISSIONS OF CARCINOGENIC AIR CONTAMINANTS

IRSL ≥ 0.04 ug/m³

(The emissions of carcinogenic particulate air contaminants with an IRSL ≥ 0.04 ug/m³ must be recorded in this table even though it is also exempt under Section 6.)

CAS #	Chemical Name	Uncontrolled Emissions (lbs/month)	Controlled Emissions (lbs/month)
Monthly Total		⑤	⑥

⑥

Compliance Criteria:

- The total in Box ⑤ must be ≤ 20 pounds or the total in Box ⑥ must be ≤ 10 pounds. If the total in Box ⑤ or in Box ⑥ is greater than the respective emission limitations, contact your local district office.

4. RECORD EMISSIONS OF ALL NONCARCINOGENIC VOCS AND NONCARCINOGENIC, NON-OZONE FORMING MATERIALS LISTED IN RULE 122(f) (see Appendix A)

CAS #	Chemical Name	Uncontrolled Emissions (lbs/month)	Controlled Emissions (lbs/month)
Monthly Total		⑦	⑧

7

⑧

Compliance Criteria:

- The total in Box ⑦ must be $\leq 1,000$ pounds or the total in Box ⑧ must be ≤ 500 pounds. If the total in Box ⑦ or in Box ⑧ is greater than the respective emission limitations, contact your local district office.

5. RECORD TOTAL MONTHLY EMISSIONS

	lbs/month
Total uncontrolled emissions (Box ① + Box ③ + Box ⑤ + Box ⑦)	
Total controlled emissions (Box ② + Box ④ + Box ⑥ + Box ⑧)	

Compliance Criteria:

- The total uncontrolled emissions (Box ① + Box ③ + Box ⑤ + Box ⑦) must be $\leq 1,000$ pounds. If the total uncontrolled emissions are greater than 1,000 pounds, contact your local district office; or
- The total controlled emissions (Box ② + Box ④ + Box ⑥ + Box ⑧) must be ≤ 500 pounds. If the total controlled emissions are greater than 500 pounds, contact your local district office.

RULE 290 PERMIT TO INSTALL EXEMPTION: SOURCES WITH LIMITED EMISSIONS RECORD (continued)

6. NONCARCINOGENIC PARTICULATE AIR CONTAMINANTS

The emission unit may emit noncarcinogenic particulate air contaminants provided that the emission unit is in compliance with the following:

Y N

- ☐ ☐ Are the particulate emissions controlled by an appropriately designed and operated fabric filter collector or an equivalent control system which is designed to control particulate matter to a concentration of less than or equal to 0.01 pounds of particulate per 1,000 pounds of exhaust gases and which do not have an exhaust gas flow rate of more than 30,000 actual cubic feet per minute?
- ☐ ☐ Are the visible emissions from the emission unit not more than 5% opacity in accordance with the methods contained in Rule 303?
- ☐ ☐ Is the Initial Threshold Screening Level (ITSL) for each particulate air contaminant, excluding nuisance particulate > 2.0 ug/m³?

Notes:

- Quantities of particulates being emitted from an emission unit complying with the requirements in this Section should not be included in Section 2.
- Quantities of noncarcinogenic particulates with an ITSL ≤ 2.0 ug/m³ and ≥ 0.04 ug/m³ must be included in Section 2.
- Quantities of carcinogenic particulates ≥ 0.04 ug/m³ must be included in Section 3.

Compliance Criteria:

- If any of the preceding questions concerning noncarcinogenic particulate air contaminants are answered "No", contact your local district office.

7. OTHER REQUIREMENTS

- Attach emission calculations to demonstrate compliance with the emission limits identified in Sections 2, 3, 4, and 5.
- Keep this record on file for a minimum of 2 years, if not required for a longer period from other requirements, i.e. ROP.

APPENDIX A

R 336.1122 Definitions; V.

Rule 122. As used in these rules:

(f) "**Volatile organic compound**" means any compound of carbon or mixture of compounds of carbon that participates in photochemical reactions, excluding the following materials, all of which have been determined by the United States environmental protection agency to have negligible photochemical reactivity:

- (i) Carbon monoxide.
- (ii) Carbon dioxide.
- (iii) Carbonic acid.
- (iv) Metallic carbides or carbonates.
- (v) Boron carbide.
- (vi) Silicon carbide.
- (vii) Ammonium carbonate.
- (viii) Ammonium bicarbonate.
- (ix) Methane.
- (x) Ethane.

(xi) The methyl chloroform portion of commercial grades of methyl chloroform, if all of the following provisions are complied with:

(A) The commercial grade of methyl chloroform is used only in a surface coating or coating line that is subject to the requirements of part 6 or 7 of these rules.

(B) The commercial grade of methyl chloroform contains no stabilizers other than those listed in table 11.

(C) Compliance with the applicable limits specified in part 6 or 7 of these rules is otherwise not technically or economically reasonable.

(D) All measures to reduce the levels of all organic solvents, including the commercial grade of methyl chloroform, from the surface coating or coating line to the lowest reasonable level will be implemented.

(E) The emissions of the commercial grade of methyl chloroform do not result in a maximum ambient air concentration exceeding any of the allowable ambient air concentrations listed in table 11.

(F) The use of the commercial grade of methyl chloroform is specifically identified and allowed by a permit to install, permit to operate, or order of the department.

(G) Table 11 reads as follows:

RULE 290 PERMIT TO INSTALL EXEMPTION: SOURCES WITH LIMITED EMISSIONS RECORD (continued)

TABLE 11

Commercial grade of methyl chloroform --
allowable ambient air concentrations

Compound	ppm ¹	Time ²
Methyl chloroform	3.5	1 hour
Tertiary butyl alcohol ³	1.0	1 hour
Secondary butyl alcohol ³	1.0	1 hour
Methylal ³	10.0	1 hour
1,2-butylene oxide ³	0.028 and 0.00041	1 hour annual

1. Parts per million, by volume
2. Averaging time period
3. This compound is a stabilizer

(xii) The methyl chloroform portion of commercial grades of methyl chloroform that contain any other stabilizer not listed in table 11 of this rule, if all of the following provisions are complied with:

(A) The commercial grade of methyl chloroform is used only in a surface coating or coating line that is subject to the requirements of part 6 or 7 of these rules.

(B) Compliance with the applicable limits specified in part 6 or 7 of these rules is otherwise not technically or economically reasonable.

(C) All measures to reduce the levels of all organic solvents, including the commercial grade of methyl chloroform, from the surface coating or coating line to the lowest reasonable level will be implemented.

(D) The emissions of any compound in the commercial grade of methyl chloroform that is listed in table 11 of this rule do not result in a maximum ambient air concentration exceeding any of the allowable ambient air concentrations listed in table 11.

(E) The emission of all compounds in the commercial grade of methyl chloroform that are not listed in table 11 is demonstrated to comply with R 336.1901.

(F) The use of the commercial grade of methyl chloroform is specifically identified and allowed by a permit to install, permit to operate, or order of the department.

(xiii) Acetone.

(xiv) Cyclic, branched, or linear completely methylated siloxanes.

(xv) Parachlorobenzotrifluoride.

(xvi) Perchloroethylene.

(xvii) Trichlorofluoromethane (CFC-11).

(xviii) Dichlorodifluoromethane (CFC-12).

(xix) 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113).

(xx) 1,2-dichloro 1,1,2,2-tetrafluoroethane (CFC-114).

(xxi) Chloropentafluoroethane (CFC-115).

(xxii) 1,1-dichloro 1-fluoroethane (HCFC-141b).

(xxiii) 1,1-chloro 1,1-difluoroethane (HCFC-142b).

(xxiv) Chlorodifluoromethane (HCFC-22).

(xxv) 1,1,1-trifluoro 2,2-dichloroethane (HCFC-123).

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY, ENVIRONMENTAL SCIENCE AND SERVICES DIVISION
RULE 290 PERMIT TO INSTALL EXEMPTION: SOURCES WITH LIMITED EMISSIONS RECORD (continued)

- (xxvi) 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124).
- (xxvii) Trifluoromethane (HFC-23).
- (xxviii) Pentafluoroethane (HFC-125).
- (xxix) 1,1,2,2-tetrafluoroethane (HFC-134).
- (xxx) 1,1,1,2-tetrafluoroethane (HFC-134a).
- (xxxi) 1,1,1-trifluoroethane (HFC-143a).
- (xxxii) 1,1-difluoroethane (HFC-152a).
- (xxxiii) 3,3-dichloro-1, 1,1,2,2-pentafluoropropane (HCFC-225ca).
- (xxxiv) 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb).
- (xxxv) 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee).
- (xxxvi) Difluoromethane (HFC-32).
- (xxxvii) Ethyl fluoride (HFC-161).
- (xxxviii) 1,1,1,3,3,3-hexafluoropropane (HFC-236fa).
- (xxxix) 1,1,2,2,3-pentafluoropropane (HFC-245ca).
- (xl) 1,1,2,3,3- pentafluoropropane (HFC-245ea).
- (xli) 1,1,1,2,3- pentafluoropropane (HFC-245eb).
- (xlii) 1,1,1,3,3- pentafluoropropane (HFC-245fa).
- (xliii) 1,1,1,2,3,3-hexafluoropropane (HFC-236ea).
- (xliv) 1,1,1,3,3-pentafluorobutane (HFC365mfc).
- (xlv) Chlorofluoromethane (HCFC-31).
- (xlii) 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a).
- (xlvii) 1-chlor-1-fluoroethane (HCFC-151a).
- (xlviii) 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxybutane.
- (xlix) 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane.
- (i) 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane.
- (ii) 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane.
- (iii) Methyl acetate.
- (lii) Perfluorocarbon compounds that fall into the following classes:
 - (A) Cyclic, branched, or linear, completely fluorinated alkanes.
 - (B) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations.
 - (C) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations.
 - (D) Sulfur-containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.
- (liv) Methylene chloride.

The methods described in R 336.2004 and R 336.2040 shall be used for measuring volatile organic compounds for purposes of determining compliance with emission limits. Where such a method also measures compounds with negligible photochemical reactivity, these negligibly-photochemical reactive compounds may be excluded as volatile organic compounds if the amount of such compounds is accurately quantified and such exclusion is approved by the department.

History: 1979 ACS 1, Eff. Jan. 19, 1980; 1985 MR 2, Eff. Feb. 22, 1985; 1988 MR 5, Eff. May 20, 1988; 1989 MR 4, Eff. Apr. 19, 1989; 1993 MR 4, Eff. Apr. 28, 1993; 1997 MR 5, Eff. June 15, 1997; 2000 MR 18, Eff. November 30, 2000; 2003 MR 5, Eff. March 13, 2003.

Printed Image Data Used in the Emissions Calculations

<i>Image Description</i>	<i>Print Area sq in</i>
EZ Gal & Qrt / Triangle (812419)	3.8
EZ Gal / White (835042/835318)	9.9
EZ Gal / Asahi (455761)	22.7
EZ Gal / Fr Shld (708846)	13.9
EZ Gal / Hldy - Flakes - update- (792148)	28.1
EZ Gal / Hldy - Flakes (781398)	28.1
EZ Gal / Hldy (483054)	20.1
EZ Gal / Hldy (762309)	17.8
EZ Gal / Pg Trn (503108 / 503110)	14.4
EZ Gal / Pltd (708844)	20.1
EZ Gal / Pltd / Fr Shld (708871)	13.9
EZ Gal / Pltd / Fr Shld SmtZip (900593)	15.6
EZ Gal / SmtZip - (765450)	10.0
EZ Gal / SmtZip (728048)	15.4
EZ Gal / Sto Hldy - Tags (734549)	17.8
EZ Gal International (735164)	13.2
EZ Gal Smart Zip Seal (900594)	15.6
EZ Gal. / Cofresco Fr.	13.8
EZ Half Gal / Fr Shld (105908)	7.3
EZ Jumbo (732830)	30.6
EZ Qrt / Asahi (455762)	8.4
EZ Qrt / Fr Shld (708845)	5.3
EZ Qrt / Hldy - Flakes (781396)	6.7
EZ Qrt / Hldy (482500)	11.9
EZ Qrt / Pg Trn (503107 / 503109)	6.1
EZ Qrt / Pltd (708843)	7.3
EZ Qrt / Pltd / Fr Shld (708872)	5.3
EZ Qrt / Pltd / Fr Shld SmtZip (900591)	6.3

<i>Image Description</i>	<i>Print Area sq in</i>
EZ Qrt / SmtZip - (765451)	6.4
EZ Qrt / SmtZip (728050)	6.3
EZ Qrt / Sto Hldy - Tags (734562)	7.1
EZ Qrt / White (835041)	7.4
EZ Qrt International (735177)	5.4
EZ Qrt Smart Zip Seal (900592)	6.3
EZ Qrt. / Cofresco	6.5
No Label (no treat)	0.0
No Label (treat only)	0.0
Unknown	1.0
Ziploc Gal & Qrt / SmtZip - Evolve (763496)	5.5
Ziploc Gal & Qrt / SmtZip - NoRecyc (763497)	5.9
Ziploc Gal & Qrt / Smtzip - Recycle (763544)	6.7
Ziploc Gal & Qrt / Triangle (809626)	4.8
Ziploc Gal / Asahi Hgal Rectangle (814412)	10.0
Ziploc Gal / Back to School - Apple (758056)	7.6
Ziploc Gal / DG / Pg Trn (503688)	12.6
Ziploc Gal / Evolve (713172)	7.5
Ziploc Gal / Fr Shld (710522)	7.5
Ziploc Gal / Hldy (509338)	22.3
Ziploc Gal / Hldy (734690)	7.7
Ziploc Gal / Hldy Pngn -186C Red (900712)	2.0
Ziploc Gal / Hldy Pngn -Blk (900713)	1.5
Ziploc Gal / Hldy Snwmn - 570C Grn (900714)	4.9
Ziploc Gal / Hldy Snwmn - Wht (900716)	5.5
Ziploc Gal / Hldy Tags (734563)	7.7
Ziploc Gal / Jap Frz (712140)	8.2
Ziploc Gal / Jap Sto (712173)	5.1
Ziploc Gal / Pg Trn (503690)	10.4
Ziploc Gal / SmtZip - Produce (763495)	8.9

<i>Image Description</i>	<i>Print Area sq in</i>
Ziploc Gal / SmtZip (728020)	8.9
Ziploc Gal / SmtZip Seal (900595)	8.7
Ziploc Gal Fr / Hldy Flakes - 286 Blue (79400)	1.3
Ziploc Gal Fr / Hldy Flakes - White (794092)	3.3
Ziploc Gal Fr / Hldy SnwMn - Wht (764389)	13.9
Ziploc Gal Fr / Hldy SnwMn- 355 Grn (76439)	3.8
Ziploc Gal Fr / Ssnl Pngn - 186 Red (77956)	8.7
Ziploc Gal Fr / Ssnl Pngn - 274 DK Blue (7795)	8.2
Ziploc Gal Frz / Hldy CA Flakes - White (8329)	9.8
Ziploc Gal Frz / Hldy Flakes - Blue (730147)	0.7
Ziploc Gal Frz / Hldy Flakes - Green (73014)	1.5
Ziploc Gal Frz / Hldy Flakes - White (82025)	9.8
Ziploc Gal Frz / Hldy Flakes - White (82051)	9.8
Ziploc Gal Frz / Hldy Flakes - White (84604)	4.1
Ziploc Gal Frz/ Hldy - Blue (794011)	1.3
Ziploc Gal Frz/ Hldy - White (794099)	3.3
Ziploc Gal St / Hldy Swirls - 355 Green (7940)	0.6
Ziploc Gal St / Hldy Swirls - White (794086)	1.5
Ziploc Gal St / Hldy Swirls - White (794097)	1.5
Ziploc Gal St / Hldy Swirls- 355 Green (7940)	0.6
Ziploc Gal Sto / Asahi (712173)	3.8
Ziploc Gal Sto / Hdly Pngn- 186 Red (76439)	9.6
Ziploc Gal Sto / Hdly Pngn- Wht (764391)	15.0
Ziploc Gal Sto / Hldy Cane - Green (730148)	3.2
Ziploc Gal Sto / Hldy Cane - Red (730149)	3.1
Ziploc Gal Sto / Hldy Gbread - 186C Red (779)	1.0
Ziploc Gal Sto / Hldy Gbread - 462C Brn (779)	5.1
Ziploc Gal Sto / Hldy Ornaments - White (846)	5.1
Ziploc Gal Str / Hldy Gbread - 462C Brn (8254)	4.8
Ziploc Gal Str / Hldy Gbread - White (82543)	6.4

<i>Image Description</i>	<i>Print Area sq in</i>
iploc Gal Str / Hldy Spirals - White (820925)	4.8
Ziploc Half Gal / Pg Trn (518903)	5.0
Ziploc Hlf Gal & Pnt / SmtZip (763494)	4.1
Ziploc Qrt & Pnt / Evolve (713171)	5.0
Ziploc Qrt & Pnt / Fr Shld (710521)	5.0
Ziploc Qrt / Hldy (509335)	14.4
Ziploc Qrt / Hldy Tag CN (734689)	12.3
Ziploc Qrt / Hldy Tags (734564)	12.3
Ziploc Qrt / Jap Frz (712172)	4.0
Ziploc Qrt / Jap Sto (712174)	2.5
Ziploc Qrt / Pg Trn (503689)	6.8
Ziploc Qrt / SmtZip (728021)	5.9
Ziploc Qrt / SmtZip Seal (900596)	5.6
iploc Qrt Frz / Hldy Flakes - White (797255)	7.5
iploc Qrt Frz / Hldy Flakes - White (846012)	7.2
loc Qrt Frz / Hldy Flks/strps - White (78139C)	7.5
loc Qrt Frz / Hldy Minnie Mse - White(8345)	6.6
oc Qrt Sto / Hldy Ornaments - White (8460)	8.4
iploc Qrt Str / Hldy Spirals - White (78139C)	4.3

using white + blue
 "Process Colors" colors still on list

Raw Ink / Reducer Data Used in the Emissions Calculations

<i>Ink Used</i>	<i>Raw Ink Shipped in a Drum [#]</i>	<i>Raw Ink Density [#/gal.]</i>	<i>w/w VOC in Raw Ink</i>	<i>w/w NH4OH in Raw Ink</i>	<i>Reducer Density [#/gal.]</i>	<i>w/w NH4OH in Reducer</i>	<i>Amount of Reducer Added to Drum [gal.]</i>
EH28673 (286 Blue FR)	45	9.0	5.21%	4.04%	8.3	4.25%	0.7
EH28715 (2755C Purple Fr)	45	9.0	5.11%	3.06%	8.3	4.25%	0.7
EH28798 (274 Dk. Blue)	45	9.0	5.69%	1.87%	8.3	4.25%	0.7
EH28799 (659 Blue FR)	45	9.0	5.12%	4.02%	8.3	4.25%	0.7
EH28800 (298 Blue FR)	45	9.0	6.88%	3.86%	8.3	4.25%	0.7
EH28801 (2905 Blue OP FR)	45	9.0	8.60%	2.99%	8.3	4.25%	0.7
EH29345 (Blk)	45	9.0	6.44%	4.02%	8.3	4.25%	0.7
EH34044 (142 Yellow FR)	45	9.0	2.20%	3.50%	8.3	4.25%	0.7
EH34075 (165 Orange FR)	45	9.0	4.58%	2.87%	8.3	4.25%	0.7
EH34762 (143 Orange)	45	9.0	5.43%	3.10%	8.3	4.25%	0.7
EH57123 (Proc. Red FR)	45	9.0	1.85%	2.82%	8.3	4.25%	0.7
EH57126 (204 Pink FR)	45	9.0	2.74%	3.61%	8.3	4.25%	0.7
EH57171 (220 Red)	45	9.0	4.27%	2.51%	8.3	4.25%	0.7
EH58071 (186C Red (exp))	45	9.0	7.12%	3.62%	8.3	4.25%	0.7
EH58084 (Rubine Red)	45	9.0	5.42%	3.00%	8.3	4.25%	0.7

Line	Period	Total emissions	Comment	
All	Calendar 2013	22,733 #	24 lines	
All	January 2014	2,282 #	24 lines	
All	September 2013	2,076 #	24 lines	
1195 Line 1	July 2013	173.5 #	Quart bag labels only, High speed line	
1175 Line 1	February 2013	89.5 #	Gallon bag labels only	

S.C. Johnson Site VOC totals
including ozone

revised
5/23/2014