

Report to:

SHERWIN WILLIAMS CANADA INC.

**Rexdale Plant Toxic Substance
Reduction Plan – Phase I & II**

Document No. 1496950300-REP-V0001-00



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Report to:

SHERWIN WILLIAMS CANADA INC.

REXDALE PLANT TOXIC SUBSTANCE REDUCTION PLAN PHASE I & II

December 2014

Prepared by  Date December 15th, 2014
Douglas McLaren, P.Eng.

Reviewed by _____ Date _____
John Muller, P.Eng.

Authorized by _____ Date _____
Tanya Sagermann,



6835A Century Avenue, Mississauga, Ontario, L5N 2L2, Canada
Phone: 905.369.3000 Fax: 905.369.3200

REVISION HISTORY

REV. NO	ISSUE DATE	PREPARED BY AND DATE	REVIEWED BY AND DATE	APPROVED BY AND DATE	DESCRIPTION OF REVISION
1	Nov.-27-14	DM Nov.-20-14	JM Dec. 14.14		Original Draft

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ATTACHMENT 1: PROCESS FLOW DIAGRAM

ATTACHMENT 2: CD WITH NPRI & TRA QUANTIFICATION SPREADSHEET

1.0 BASIC FACILITY INFORMATION

The Basic Facility information required under the Toxic Reduction Act is presented in the following section.

This Toxic Substance Reduction Plan covers the following substance:

Table 1-1: Substance Covered in Plan

Substance Name	Chemical Abstracts Service (CAS) Number
Nonylphenol and its ethoxylates	1A-10

National Pollutant Release Inventory (NPRI) ID: 20001

MOE ID under Regulation 127/01 (Airborne Contaminant Discharge Monitoring and Reporting): N/A

The legal and trade names of the owner and the operator of the Facility (the "Facility"):

Owner: The Sherwin Williams Company

Operator: The Sherwin Williams Company

The street address of the Facility:

172 Belfield Road,
Rexdale, Ontario, M9W 1H1

The mailing address of the Facility:

Sherwin Williams Canada Inc.
172 Belfield Road,
Rexdale, Ontario, M9W 1H1

The number of full-time employee equivalents at the Facility:

36 full-time employee equivalents

The two- and four-digit North American Industry Classification System (NAICS) codes:

32 Manufacturing, Part 2
3255 Coatings, Coatings and Adhesives

The six-digit NAICS Canada code:

325510 - Paint and Coating Manufacturing

The name, position and telephone number and mailing addresses for the following individuals:

- Public contact:
Gary Meenink, Plant Manager
172 Belfield Road,
Rexdale, Ontario, M9W 1H1
T: 416-246-7506
- Technical contact:
Mike Capacci
224 Catherine Street,
Fort Erie, Ontario, L2A 2J7
T: 519-761-8961
- The person responsible for coordinating the plan preparation:
Mike Pankiw, Sr. Environmental Project Manager
101 Prospect Ave.
Cleveland, OH (USA) 44115
T: (216) 566-2234; Fax: (216) 263-8607
- The person who prepared the plan, if different from coordinator:
Douglas McLaren, P.Eng.; Senior Air Quality Engineer; Tetra Tech Inc.
6835A Century Avenue
Mississauga, Ontario, L5N 2L2, Canada
T: (416) 219-2793 Fax: (905) 369-3200; doug.mclaren@ttemi.com;
- Highest Ranking Employee at the Facility who has management responsibilities relating to the Facility and who is responsible for making the certification:
Gary Meenink, Plant Manager;
172 Belfield Road,
Rexdale, Ontario, M9W 1H1
T: 416-246-7506

The license number of the Toxic Reduction Planner who made recommendations:
TSRP0191

The license number of the planner who certified the plan:
TSRP0191

The spatial coordinates of the Facility in Universal Transverse Mercator (UTM) within a North American Datum 83 (NAD83) datum:
Zone 17; UTM Easting 614,481; UTM Northing 4,839,723

Latitude: 43.70170° North
Longitude: 79.5792° West

Canadian parent company:

- The legal name of the parent company:
Sherwin Williams Canada Inc.
- Street and mailing address of the company:
170 Brunel Road, Unit A
Mississauga, Ontario, L4Z 1T5
- What percentage of the Facility is owned by the parent company:
100%
- the business number assigned by Canada Customs and Revenue Agency:
104835277

2.0 STATEMENT OF INTENT

It is the intention of the Company to quantify and assess the creation, use, release and disposal of all toxic substance from the Facility, thereby gaining a more detailed understanding of the environmental footprint of its operations. Monitoring environmental performance through vigorous testing and identifying areas for improvement

The Company intends to systematically initiate programs/actions outlined in the plan to reduce the use of toxic substance where possible, systematically working from the recommendations of the hired Toxic Substance Reduction Planner and other specialists.

2.1 OBJECTIVES

The following Objectives have been developed to support specific items in the Statement of Intent.

1. Pursue opportunities to replace toxic substance in product formulations with less hazardous materials.
2. Pursue process improvements that will result in reductions in the quantity of toxic substance used, released, transferred or disposed of from the facility.
3. Evaluate potential options for the reduction in the use and/or releases to the environment of toxic chemicals currently used at the facility and implement technically feasible/cost effective options where appropriate.
4. Document how the facility has complied with the applicable requirements under the TRA and O. Reg. 455/09 with respect to the Toxic Substance.

3.0 PROCESS DESCRIPTION

The facility is a latex paint manufacturing facility that currently produces approximately 20 million litres per year of coatings.

The main process involved in Sherwin Williams Rexdale's production are:

1. Receiving bulk raw materials to storage tanks
 - a. Bulk chemical transfer from tanker trucks
2. Manufacturing
 - a. Product Mixing in Milling Tanks
 - b. Product letdown tanks
 - c. Product fill lines / packaging
3. Warehousing and storage of finished goods
 - a. Finished goods transported from production lines to shipping warehouse for storage.
4. Shipping of final product
 - a. Material is shipped direct to the customer using outside transport company.

The toxic substance identified in and covered under this plan is present as bulk raw materials and is used to manufacture latex based coatings which are transferred off-site as a product. The substance moves through the product mixing processes and their subsequent derivatives including process wastes.

- **Use of Substance:** Raw Materials
 - The toxic substance is used in the manufacture of latex based coatings. These materials are stored on site in barrels and totes in the raw material warehouse.
- **Release of Substance:** Milling and Letdown Tanks
 - The toxic substance is pumped from barrels, or totes to one of the milling tanks where other ingredients including emulsions and various pigments to produce latex based products. Once mixed the products are transferred to the Letdown tanks for packaging. Emissions of the toxic substance are expected to be released during the mixing and transfer to the Letdown Tanks operations. These emissions are captured by the dust collection system and released to the atmosphere via the primary baghouse exhaust.
- **Disposal of Substance:** Waste material disposals

- Waste paint, old Quality Control samples, paint contaminated rags and sludge generated on site which contain the toxic substance are disposed of off-site to one of a number of waste recycling and disposal facilities.
- **Transfer of Substance: Shipping Product**
 - The toxic substance contained in the finished products is shipped from the facility to customers via outside transport companies.

4.0 TOXIC SUBSTANCE ACCOUNTING

The following sections describe the stages of the operations that use, transfer, or release toxic substance from the site.

4.1 RECEIVING BULK RAW MATERIALS

Raw materials containing the toxic substance are received in barrels and totes from trucks, as well as in small quantities in buckets and other small quantity packaging on a regular basis.

4.1.1 STORAGE AREA

The facility stores raw materials including the toxic substance in question in barrels and totes closed on racking in the warehouse.

4.2 MANUFACTURING

4.2.1 PRODUCTION AREA MEZZANINE MIXING TANKS:

Raw materials including the toxic substance are either pumped from totes, or manually added from small containers (barrels, buckets, etc...) to the Milling tanks where other ingredients are added and mixed to specifications to manufacture coatings to customer specifications.

4.2.2 PRODUCT LETDOWN TANKS:

Finished products containing the toxic substance are transferred to the letdown tanks.

4.2.3 PRODUCT FILL LINES / PACKAGING:

Finished products containing the toxic substance are packaged from the product let down tanks.

4.3 WAREHOUSING AND STORAGE OF FINISHED GOODS AND SHIPPING

Finished goods containing the toxic substance are transported from the production filling lines to Shipping Warehouse for storage.

4.3.1 SHIPPING OF FINAL PRODUCT:

Products containing the toxic substance are shipped directly to the customer using outside Transport Company.

4.4 DISPOSAL OF WASTE MATERIALS

Waste materials containing the toxic substance generated on site are disposed of off-site to one of a number of waste recycling and disposal facilities.

5.0 QUANTIFICATION METHODS

Table 5-1: Quantification Methodology Reference is provided below for reference and includes the common acronyms used to simplify the descriptions of the quantification methodologies employed on-site. These acronyms are used throughout this document where necessary.

Table 5-1: Quantification Methodology Reference

Reference	Description
EPAEFA	US EPA AP-42 Emission Factors with a Quality Rating of "A"
EPAEFB	US EPA AP-42 Emission Factors with a Quality Rating of "B"
EPAEFC	US EPA AP-42 Emission Factors with a Quality Rating of "C"
EPAEFD	US EPA AP-42 Emission Factors with a Quality Rating of "D"
EPAEFE	US EPA AP-42 Emission Factors with a Quality Rating of "E"
SECEF	Manufacturer Supplier Maximum Emission Rate Guarantee
ENGCAL	Engineering Calculation
MASS	Mass Balance based on materials input and output to and from the system in question
MV	Measured Value or combination of measured value and measured activity (e.g. measured concentration and flow data)

5.1 PROCESS SPECIFIC QUANTIFICATIONS

The following sections describe the quantification methodology, or combination of methodologies employed by the company in estimating the quantities of toxic substance from the use, creation or destruction of them on the Facility site and from releases, transfers and disposals of them off-site.

5.1.1 RECEIVING BULK RAW MATERIALS

The total Use of the toxic substance is estimated based on a mass balance around the quantity of raw materials containing toxic substance received during the year as well as the consumption of existing inventory. The mass of raw materials consumed is multiplied by the concentration of the toxic substance in the raw material.

Use of Toxic Substance: $\sum_x [\text{Mass of Raw Material}_x \times \text{Mass Fraction (\%)} \text{ of Toxic Substance in Raw Material}_x]$

Methodology: MASS

5.1.2 MANUFACTURING

The release of the toxic substance from manufacturing operations is estimated based on an Engineering Calculation using the total quantity of materials used in the manufacturing processes and a fractional (3%) Yield Loss which is estimated to be proportional to the Relative Evaporation Rate (relative to n-butyl acetate =1) of the substance in question.

Release of Toxic Substance: $\text{Mass of Raw Material}_x \times \text{Mass Fraction (\%)} \text{ of Toxic Substance in Raw Material}_x \times \text{Yield Loss (\%)} \times \text{Relative evaporation rate (nbut=1)}$

Methodology: ENG CAL

5.1.3 WASTE MATERIALS DISPOSAL

The transfer of toxic substance from the facility for disposal is estimated using an engineering calculation based on the quantity of material transferred off site for disposal relative to the total mass of raw materials purchased and the assumption that the toxic substance will be found in the waste materials in relatively the same fractional quantity as it is found in the raw materials.

Transfer of Toxic Substance: $\text{Mass of Wet Waste Transferred} \div \text{Mass of Raw Materials Purchased} \times \text{Mass of Toxic Substance in the Raw Materials}$

Methodology: ENG CAL

5.1.4 FINAL PRODUCT SHIPPING

The quantity of toxic substance transfer off site as final products is estimated based on a mass balance around the quantity of the toxic substance used, the amount that is released to air and the amounts transferred off site for disposal.

Transfer of Toxic Substance: $\text{Mass of Substance Used} - \text{Total Mass of Substance Released to Air} - \text{Mass of Substance Transferred for Disposal}$

Methodology: MASS

5.2 RECORD OF METHODS

The ***Rexdale NPRI & TRA Summary Spreadsheet*** is used to track and calculate the quantifications used in this plan. The methodologies employed in estimating the use, release and transfers of toxic substance from the Facility are laid out in the NPRI & Toxic Reduction Act (TRA) Quantifications Spreadsheet.

This spreadsheet is to be updated and archived each year as required by the NPRI and TRA. Upon completion of each year's update, a copy of the final spreadsheet is to be stored on a solid state electronic storage or other electronic media in an archived form to prevent further changes.

See **Attachment 2** for a copy of the most recent ***Rexdale NPRI & TRA Summary Spreadsheet***.

5.3 NO APPROXIMATE BALANCE

Due to the use of a mass balance calculation to estimate the transfer of final products for sale, there are no instances of No Approximate Balance of inputs and outputs of toxic substance quantified in this plan.

See **Attachment 2** for a copy of the most recent ***Rexdale NPRI & TRA Summary Spreadsheet***.

6.0 DIRECT AND INDIRECT ANNUAL COST

The following direct and indirect annual costs associated with the use, release and transfer of toxic substance from the Facility have been identified. Based on the available accounting data, the typical annual costs associated with the Toxic Substance covered under this plan are approximately **\$96,000** (based on 2013 data).

Creation and Destruction of Toxic Substance:

The Facility does not create or destroy toxic substance, and therefore do not have any related costs under this category.

Use of Toxic Substance:

The annual costs associated with the use of the toxic substance have been estimated based on the facility accounting data available. The total annual cost associated with the use of toxic substance is approximately **\$96,000** based on the purchase of raw materials containing these substance. Table 6-1: Cost of Toxic Substance Use below provides the breakdown of cost by toxic substance.

Table 6-1: Cost of Toxic Substance Use

Substance Name	Annual Cost of Use (CAD \$)
Nonylphenol and its ethoxylates	\$95,000

Releases of Toxic Substance:

The annual cost associated with the releases of toxic substance is currently unknown as this data is currently not tracked.

Disposals of Toxic Substance:

The annual costs associated with the disposal of the toxic substance has been estimated based on the approximate concentrations of each substance in the materials disposed of and the total cost of disposals. Table 6-2: Cost of Toxic Substance Disposal below provides the estimated costs associated with the disposal of the toxic substance.

Table 6-2: Cost of Toxic Substance Disposal

Substance Name	Annual Cost of Disposals (CAD \$)
Nonylphenol and its ethoxylates	\$1,000

Transfer of Toxic Substance:

There are no costs associated with the off-site transfer of Final for sale to customers. The toxic substance contained in these materials are sold as formulated ingredients and have no negative costs associated with them.

7.0 TOXIC REDUCTION OPTIONS

The Toxic Reduction Act requires facilities to consider at least seven (7) toxic reduction categories or provide an explanation of why no option could be identified. Options identified under each of these seven (7) toxic reduction categories are examined below.

7.1 MATERIALS OR FEEDSTOCK SUBSTITUTIONS

- Substituting Toxic Substance currently used with another comparable chemical that is less toxic and will not compromise the quality or manufacturing cost of the finished product it is used in.
 - The plant will investigate the potential to substitute NPE with a less hazardous material in all formulations (e.g. as per U.S. EPA Design for the Environment, Alternatives Assessment for Nonyl Phenol Ethoxylates.)

7.2 PRODUCT DESIGN OR REFORMULATION

- Formulate all new products without TRA listed chemicals or reduce amounts used where possible.

7.3 EQUIPMENT OR PROCESS MODIFICATION

- Investigate returning unused quality samples to the mix instead of disposing in lab.

7.4 SPILL AND LEAK PREVENTION

- Review material handling operations to reduce product loss and spills of finished goods.
- Conduct hose and transfer site inspections.

7.5 ON-SITE REUSE AND RECYCLING

- Sell overstock, out-of-date stock, mis-tints where possible.

7.6 INVENTORY MANAGEMENT

- Conduct monthly audits of shelf life of finished goods. Rework product that is close to the end of its shelf life into new batches.

- Reduce the amount of inventory stocked to eliminate product expiration

7.7 TRAINING

- The plant should review the following general training items which could be expected to have an impact on the use, release, transfers and disposals of toxic substances at the plant, and update them where possible :
 - Spill Response
 - Management of Regulated Waste
 - Daily inspections
 - Emergency and Evacuation Contingency Policy
 - Shipping & Receiving
 - Purchasing of Raw Materials
 - Batch making including mixing, milling and filling

8.0 IDENTIFICATION OF TECHNICALLY FEASIBLE OPTIONS

Below are the Toxic Substance Reduction Options that have been identified as being Technically Feasible.

8.1 MATERIALS OR FEEDSTOCK SUBSTITUTIONS

- Substituting the Toxic Substance currently used with another comparable chemical that is less toxic and will not compromise the quality or manufacturing cost of the finished product it is used in.
 - The plant will investigate the potential to substitute NPE with a less hazardous material in formulations. (e.g. as per U.S. EPA Design for the Environment, Alternatives Assessment for Nonyl Phenol Ethoxylates.)

8.2 PRODUCT DESIGN OR REFORMULATION:

- Formulation of products is a function of the corporate research and development group, and is outside of the plants control.

8.3 EQUIPMENT OR PROCESS MODIFICATION

- Investigate returning unused quality samples to the mix instead of disposing in lab.

8.4 SPILL AND LEAK PREVENTION

- Review material handling operations to reduce product loss and spills of finished goods.
- Conduct hose and transfer site inspections.

8.5 ON-SITE REUSE AND RECYCLING

- Sell overstock, out-of-date stock, mis-tints to Recycler

8.6 INVENTORY MANAGEMENT

- Conduct monthly audits of shelf life of finished goods. Rework product that his close to the end of its shelf life into new batches.
- Reduce the amount of inventory stocked to eliminate product expiration

8.7 TRAINING

- The plant should review the following general training items which could be expected to have an impact on the use, release, transfers and disposals of toxic substances at the plant, and update them where possible :
 - Spill Response
 - Management of Regulated Waste
 - Daily inspections
 - Emergency and Evacuation Contingency Policy
 - Shipping & Receiving
 - Purchasing of Raw Materials
 - Batch making including mixing, milling and filling

9.0 IDENTIFICATION OF ECONOMICALLY FEASIBLE OPTIONS

Below are the Toxic Substance Reduction Options that have been identified as being Economically Feasible.

9.1 MATERIALS OR FEEDSTOCK SUBSTITUTIONS

- Substituting Toxic Substance currently used with another comparable chemical that is less toxic and will not compromise the quality or manufacturing cost of the finished product it is used in.
 - The plant will investigate the potential to substitute NPE with a less hazardous material in all formulations. (e.g. as per U.S. EPA Design for the Environment, Alternatives Assessment for Nonyl Phenol Ethoxylates.)

9.2 PRODUCT DESIGN OR REFORMULATION:

- Formulation of products is a function of the corporate research and development group, and is outside of the plants control.

9.3 EQUIPMENT OR PROCESS MODIFICATION

- Investigate returning unused quality samples to the mix instead of disposing in lab.

9.4 SPILL AND LEAK PREVENTION

- Negligible quantities of the toxic substance are lost as a result of spills and leaks, resulting in no economically feasible options being applicable.

9.5 ON-SITE REUSE AND RECYCLING

- Sell overstock, out-of-date stock, mis-tints to Recycler

9.6 INVENTORY MANAGEMENT

- Negligible quantities of the toxic substance are lost as a result of inventory management practices, resulting in no economically feasible options being applicable.

9.7 TRAINING

- The plant should review the following general training items which could be expected to have an impact on the use, release, transfers and disposals of toxic substances at the plant, and update them where possible :
 - Spill Response
 - Management of Regulated Waste
 - Daily inspections
 - Emergency and Evacuation Contingency Policy
 - Shipping & Receiving
 - Purchasing of Raw Materials
 - Batch making including mixing, milling and filling

10.0 OPTION(S) TO BE IMPLEMENTED

The following Toxic Substance Reduction Options which have been identified as being both technically and economically feasible are to be implemented. It is expected that the implementation of these options will result in a reduction in the quantities of Toxic Substance used, released, and disposed of from the facility.

10.1 ON-SITE REUSE AND RECYCLING

- Sell overstock, out-of-date stock, mis-tints to recycling.
 - **To be implemented by December 31st, 2015**
 - **Toxic Reduction Estimate:** Implementation of this option will reduce the quantity of Toxic Substance transferred off-site for disposal. It is estimated that the up to 90% of the materials currently disposed of off-site for recycling could be sold as product to a recycler.

11.0 RECOMMENDATIONS

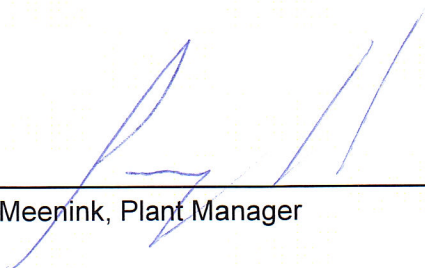
The following recommendations have been developed to help improve the quality of data the accuracy of the emission estimates used in preparing the plan.

1. Additional accounting data on the costs associated with disposal and transfers of toxic substance from the facility should be collected / tracked in order to further inform the facility as to the full costs of using these substance. The current estimates are based on a simple prorating of total disposal costs by the estimated concentration of toxic substance in the waste streams.
2. The facility should consider developing an updated methodology for estimating the transfer of toxic substance contained in products leaving the site. The current methodology relies on a simplified mass balance. An updated methodology employing an accounting of the quantity of toxic substance in the final product transferred from the facility should be developed to eliminate the lack of “No Approximate Balance” caused by the use of the existing mass balance.
3. The facility should further investigate the use of alternative chemicals as per the recent literature on the subject of NPE alternatives. (e.g. as per U.S. EPA Design for the Environment, Alternatives Assessment for Nonyl Phenol Ethoxylates.)

12.0 CERTIFICATIONS

This Toxic Substance Reduction Plan Summary accurately reflects the current version of the Toxic Substance Reduction Plan.

As of DEC 15/14 (Date), I Gary Meenink, certify that I have read the Toxic Substance Reduction Plan for the toxic substance(s) referred to below and am familiar with its contents, and to my knowledge the plan is factually accurate and complies with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

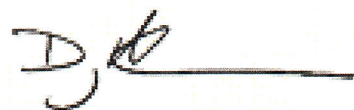


 Gary Meenink, Plant Manager

DEC 16/14

 Date

As of December 31st, 2014, I Douglas McLaren, certify that I am familiar with the processes at the Sherwin Williams Rexdale Facility that use or create the toxic substance referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4(1) of the Toxics Reduction Act, 2009 that are set out in the plan dated December 15th, 2014 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.



Douglas McLaren, P.Eng. Toxic Substance
 Reduction Planner

December 15th, 2014

 Date

Substance Name	Chemical Abstracts Service (CAS) Number
Nonylphenol and its ethoxylates	1A-10