

ARLANXEO

Performance Elastomers

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2017 TOXIC REDUCTION ACT

Report on Toxic Substance Accounting Requirements

ARLANXEO WEST
1265 Vidal St. South
Sarnia, Ontario
N7T 7M2

June 12, 2018

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3015 TOXIC REDUCTION ACT

Report on Toxic Substance
Accounting Requirements

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1.0 INTRODUCTION

ARLANXEO Canada Inc. West Site is a petrochemical processing facility where 1,3-Butadiene is extracted from a mixed stream of C4s. The ARLANXEO West Site also contains a Bio-oxidation wastewater treatment facility.

Protection of the environment is a fundamental ARLANXEO value. It is our responsibility to determine and manage the impacts of our business through programs like the Toxic Reduction Act.

This annual toxic substance accounting report has been prepared to meet the regulatory obligations specified in Section 10 of the Act and has been prepared in accordance with the requirements of Section 27(1) of Ontario Regulation 455/09, as amended from time to time. It summarizes the relevant reporting requirements and will be updated, as required by the Act and O. Reg. 455/09.

For more information on the Toxic Reduction Act and O. Reg. 455/09 visit:
<http://www.ontario.ca/environment-and-energy/toxic-substance-reduction-planner-licence>

2.0 RESPONSIBLE CARE® COMMITMENT

ARLANXEO Canada Inc. is a member of the Chemistry Industry Association of Canada (<http://www.canadianchemistry.ca/>) and as such follows the association's Responsible Care® initiative. Responsible Care was developed in Canada in 1988 as a program to collectively improve the environmental, health and safety performance of member companies. Responsible Care has been very successful in this regard and has expanded into a global movement, now practiced in more than 60 countries around the world, and overseen by the International Council of Chemical Associations (<https://www.icca-chem.org>).

Responsible Care® is the chemistry industry's commitment to sustainability – the betterment of society, the environment, and the economy. Through Responsible Care®, CIAC member-companies strive to “do the right thing and be seen to do the right thing.”

Responsible Care® covers all aspects of our company's business, over the entire life cycle of our products. In addition, ARLANXEO Canada Inc. and its Management Team must annually reaffirm their commitment to the Ethic and Principles for Sustainability, and the Codes of Practice, and undergo a regular third-party verification process that allows independent experts and members of the public to verify that they're living up to the standards set by Responsible Care®.

ARLANXEO Canada Inc was successfully re verified in 2016 by outside community and industry verifiers for the 2nd time since 2013. To view the latest report, visit www.arlanxéo.com/na. ARLANXEO Canada Inc will be re verified again in 2019.

A key component of Responsible Care is to innovate for safer products and processes that conserve resources, reduce risk and enhance value. This is accomplished through a regular review of products and processes.

At ARLANXEO Canada Inc we have addressed this through improvements to reduce energy usage and associated greenhouse gases, the installation of a regenerative thermal oxidizer to reduce VOC emissions, and through innovative approaches to waste management, diverting former waste streams to either recycle or reuse.

ARLANXEO Canada Inc has embraced the goals of the chemistry industry's Responsible Care initiative and applied them throughout our processes and facilities. We dedicate ourselves, our technology and our business practices to sustainability - the betterment of society, the environment and the economy.

The principles of Responsible Care® are key to our business success, and compel us to continually innovate for safer and greener products and processes, and work to continuously improve our environmental, health and safety performance.

3.0 REPORTING CRITERIA

Section 3(1) of the Act specifies the criteria requiring the preparation of a toxic substance plan. These criteria are as follows:

- 3. (1) The owner and the operator of a facility shall ensure that a toxic substance reduction plan is prepared for a toxic substance in accordance with this Act and the regulations if all of the following criteria are met:*
- 1. The facility belongs to a class of facilities prescribed by the regulations.*
 - 2. The number of persons employed at the facility exceeds the number of persons prescribed by the regulations.*
 - 3. The toxic substance is used or created at the facility and the amounts of the substance that are used or created meet the criteria prescribed by the regulations.*
 - 4. Such other criteria as are prescribed by the regulations. 2009, c. 19, s. 3 (1).*

Specific criteria are outlined in O. Reg. 455/09. The following sections detail the criteria and applicability to the ARLANXEO West facility.

3.1 Class of Facility

Section 4(1) of O. Reg. 455/09 specifies the types of facilities subject to toxic substance reduction planning and includes facilities that begin in North American Industry Classification System code "31", "32" or "33" and "212".

The ARLANXEO West Site carries out manufacturing activities related to "Chemical Manufacturing", which begins in NAICS code "325", which is a code identified in O. Reg. 455/09.

3.2 Number of Persons

Section 5 of O. Reg. 455/09 specifies the numbers of persons at a facility must be greater than zero. As of December 31, 2017 the ARLANXEO Canada Sites in total employed 349 full-time equivalent employees.

3.3 Amounts of Toxic Substance Used or Created

Section 6 of O. Reg. 455/09 specifies that amounts of a toxic substance used or created must exceed zero. In 2013, the use or creation of toxic substances for which accounting is required is greater than zero (refer to Section 4).

3.4 Other Criteria

Section 7(1) of O. Reg. 455/09 requires the owner and operator of a facility provide information on National Pollutant Release Inventory (TRIA) substances if reporting to the TRIA is required; or if the substance is acetone and reporting under Ontario Regulation 127/01 (Airborne Contaminant Discharge Monitoring and Reporting) made under the Environmental Protection Act applies. In 2013, the ARLANXEO West Site was required to report to the TRIA. Specifically, the ARLANXEO West Site met the reporting requirements for the following substances listed in Schedule A of O. Reg. 455/09:

TRIA Part 1A Substances:

- 1,3-Butadiene
- Acetonitrile
- Ammonia
- Asbestos
- Chloromethane
- Isoprene – Note: Isoprene is no longer present in feed streams and therefore an exit report has been submitted. This is the last year isoprene will be reported for this Site.
- Methanol
- Sulphuric Acid
- tert-Butyl Alcohol

TRIA Part 5 Substances:

- Butane (all isomers)
- Butene (all isomers)

4.0 GENERAL FACILITY INFORMATION

Table 4-1 summarizes the general facility information with reference to the Act and/or O. Reg. 455/09.

Table 4-1: General Facility Information

Reporting Requirement	Facility Information	Reference to Act and/or O. Reg. 455/09
Parent Company Name	ARLANXEO Canada Inc.	O. Reg. 455/09 s.18(2) subparagraph 14
Parent Company Address	1265 Vidal St. South Sarnia, ON N7T 7M2	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Name	ARLANXEO WEST	O. Reg. 455/09 s.18(2) subparagraph 14
Facility Address	1265 Vidal St. South Sarnia, ON N7T 7M2	O. Reg. 455/09 s.18(2) subparagraph 14
Universal Transverse Mercator (UTM) in North American Datum (NAD83)	Latitude: 42.93610 Longitude: -82.42670 UTM Easting : 383801.38 UTM Northing : 475588.71	O. Reg. 455/09 s.18(2) subparagraph 13
National Pollutant Release Inventory Identification Number	1944	O. Reg. 455/09 s.18(2) subparagraph 2
Ontario Regulation 127/01 Identification Number	Not applicable	O. Reg. 455/09 s.18(2) subparagraph 3
Two Digit North American Industry Classification System (NAICS) Code	32 – Manufacturing	O. Reg. 455/09 s.18(2) subparagraph 6
Four Digit North American Industry Classification System (NAICS) Code	3252 – Chemical Manufacturing Synthetic Rubber	O. Reg. 455/09 s.18(2) subparagraph 6
Six Digit North American Industry Classification System (NAICS) Code	325210 - Chemical Manufacturing Synthetic Rubber	O. Reg. 455/09 s.18(2) subparagraph 6
Number of Full-time Employee Equivalents at both ArlanxEO East and ArlanxEO West Facilities combined	349 (as at December 31, 2017)	O. Reg. 455/09 s.18(2) subparagraph 5
Facility Public Contact	Robin Hart P.Eng. Manager, Health Safety, Environment and Quality 1265 Vidal St. South Sarnia, Ontario N7T 7M2 Email: robin.hart@arlanxEO.com	O. Reg. 455/09 s.18(2) subparagraph 7

5.0 SUBSTANCE REPORTING

In accordance with s. 26(1) subparagraphs 2 and 7, the ARLANXEO West Site made determinations for each substance reportable under the Act as follows:

- 1) The amount of the substance that enters a process as the substance itself or as a constituent of another substance.
- 2) The amount of the substance that is created.
- 3) If the substance is a TRA substance,
 - i. quantifications relating to its release, disposal and transfer that
 - A. are required to be provided under the TRA Notice, or
 - B. are determined through mass balance, published emission factors, site specific emission factors or engineering estimates, if no quantifications were required to be provided under the TRA Notice, and
 - ii. the amount of the substance that is contained in product, other than a substance that is identified as a criteria air contaminant or a volatile organic compound in the TRA Notice.
- 4) If the toxic substance is acetone, the calculations mentioned in subsection 4 (3) of Ontario Regulation 127/01 (Airborne Contaminant Discharge Monitoring and Reporting) made under the Environmental Protection Act.

The units of measure depend upon the substance being reported under the TRA and O. Reg. 127/01. Generally, release, disposal and recycling quantities are reported in tonnes. However, for substances with alternate reporting thresholds, these quantities are reported in kilograms or grams.

- TRA Part 1A – Substances listed at the original TRA threshold [tonnes]
- TRA Part 1B – Metals listed at an alternate threshold [kilograms]
- TRA Part 2 – Polycyclic aromatic compounds (PAHs), [kilograms]
- TRA Part 3 – Hexachlorobenzene (HCB), Dioxins/furans (toxic equivalent), [grams]
- TRA Part 4 – Criteria Air Contaminants (CACs) [tonnes]
- TRA Part 5 – Speciated volatile organic compounds [tonnes]
- O. Reg. 127/01 – Acetone [tonnes]

5.1 1,3-Butadiene

Substance Name	1,3-Butadiene
CAS Number	106-99-0

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target No plans for reduction of the use of 1,3-Butadiene are targeted as this is a main product of the facility. Plans for the reduction of emissions are targeted and are proceeding on schedule.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	83496	66536	-20%	-16960	Feed supplier planned outage.
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	83312	66342	-20%	-16970	Feed supplier planned outage.
Air Releases (tonnes)	5.457	2.112	-61%	-3.345	Improved LDAR
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.2 Acetonitrile

Substance Name	Acetonitrile
CAS Number	75-05-8

Date of Toxic 23-December-2013

Reduction Plan

Reduction Objective and Target A reduction of the usage and emissions of Acetonitrile is not targeted at this point.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	98.474	20.085	-80%	-78.389	Trial of purge rates.
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	7.466	1.556	-79%	-5.910	Trial of purge rates.
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.3 Ammonia

Substance Name	Ammonia
CAS Number	NA-16

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target A reduction of the creation and emissions of Ammonia is not targeted at this point.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	0	0	0%	0	NA
Created (tonnes)	0.000	0.000	0%	0.000	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	0	0	0%	0	NA
Water Releases (tonnes)	0.000	0.000	0%	0.000	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.4 Asbestos

Substance Name	Asbestos
CAS Number	1332-21-4

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target A reduction of the disposal of Asbestos is not targeted at this point.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	0	0	0%	0	NA
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	0	0	0%	0	NA
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	41.527	49.470	19%	7.943	Increased abatement activity.
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.5 Butane (all isomers)

Substance Name	Butane (all isomers)
CAS Number	NA-24

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target A reduction of the usage and emissions of Butane is not targeted at this point.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	28599	20976	-27%	-7623	Change in production level
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	28233	20395	-28%	-7838	Change in production level
Air Releases (tonnes)	1.972	2.951	50%	0.979	Increase flaring during production outage.
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.6 Butene (all isomers)

Substance Name	Butene (all isomers)
CAS Number	25167-67-3

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target A reduction of the use and emissions of Butene resulted from a change in the composition of the raw material feedstock to the site.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	30106	20098	-33%	-10008	Change in production level
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	28965	18293	-37%	-10672	Change in production level
Air Releases (tonnes)	12.446	10.725	-14%	-1.721	Increase flaring during production outage.
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.7 Chloromethane

Substance Name	Chloromethane
CAS Number	74-87-3

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target A reduction of the use and emissions of Chloromethane is not targeted at this point. Process changes in the ARLANXEO East Site resulted in a reduction of chloromethane in the wastewater sent to the ARLANXEO West Site .

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	7.879	7.896	0%	0.017	No significant change
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	1.937	4.675	141.4%	2.738	Change in production level
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.8 Isoprene

Substance Name	Isoprene
CAS Number	78-79-5

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target Isoprene emissions at ARLANXEO West were a result of reprocessing isobutylene from ARLANXEO East. With the shutdown of the I-Plant in 2014, isobutylene is no longer reprocessed at ARLANXEO West and therefore isoprene emissions no longer occur. An exit report has been submitted to remove isoprene from TRA reporting.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	0	0	0%	0	NA
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	0.000	0.000	0%	0.000	NA
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.9 Methanol

Substance Name	Methanol
CAS Number	67-56-1

Date of Toxic Reduction Plan 23-December-2013

Reduction Plan

Reduction Objective and Target A reduction of the use of Methanol is not targeted at this point.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	43.739	26.078	-40%	-17.661	Changes in feed composition.
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	12.151	11.164	-8%	-0.987	Changes in feed composition.
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.10 Sulphuric Acid

Substance Name	Sulphuric Acid
CAS Number	7664-93-9

Date of Toxic Reduction Plan 23-December-2013

Reduction Objective and Target A reduction of the use and emissions of Sulphuric Acid was not targeted in the original plan. Usage of sulphuric acid is dependent upon pH of feed water.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	172.010	35.000	-80%	-137.010	Change in operating conditions.
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	0	0	0%	0	NA
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

5.10 tert-Butyl Alcohol

Substance Name	tert-Butyl Alcohol
CAS Number	75-65-0

Date of Toxic Reduction Plan 23-December-2013

Reduction Plan

Reduction Objective and Target A reduction of the use, creation and emissions of tert-Butyl Alcohol was not targeted in the original plan.

Description of Steps and Effectiveness Not applicable.

Amendments There have been no amendments to the plan in the reporting period.

Substance Accounting

Required Information	2016 Reporting Year	2017 Reporting Year	Change (%)	Change (tonnes)	Rationale for Change (if >10%)
Use (tonnes)	1.362	1.280	-6%	-0.082	No significant change
Created (tonnes)	0	0	0%	0	NA
Contained in Product (tonnes)	0	0	0%	0	NA
Air Releases (tonnes)	0.024	0.000	-100%	-0.024	No significant change
Water Releases (tonnes)	0	0	0%	0	NA
On-site Disposal (tonnes)	0	0	0%	0	NA
Transferred for Disposal (tonnes)	0	0	0%	0	NA
Transferred for Recycling (tonnes)	0	0	0%	0	NA

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6.0 ANNUAL CERTIFICATION STATEMENT

As of June 12, 2018, I certify that I have read the report on the toxic substance reduction plan for 1,3-Butadiene, Acetonitrile, Ammonia, Asbestos, Chloromethane, Isoprene, Methanol, Sulphuric Acid, tert-Butyl Alcohol, Butane (all isomers) and Butene (all isomers) and am familiar with their contents and to my knowledge the information contained in the report is factually accurate and the report complies with the Toxic Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under the Act.



June 12, 2018

John Schmidt, President and Site Manager, ARLANXEO Canada Inc.

