Toxic Substance Reduction Plan

Public Summary Report

Phosphorus (Total), CAS NA-22

In accordance with Toxics Reduction Act
and Ontario Regulation 455/09 (General)

Shell Canada Limited

Brockville Lubricants Plant
250 Laurier Blvd.
Brockville, Ontario
K6V 5V7

November 23, 2016

1. Facility Information

Facility NPRI No.	2122
Facility MOE No. if assigned	Not assigned
Company legal and trade names	Shell Canada Limited
Facility street/mailing address	Brockville Lubricants Plant 250 Laurier Blvd. Brockville, Ontario, K6V 5V7
No. of full-time employee equivalent	73
2, 4, and 6 digit NAICS Codes	31-33 3241 324190
UTM spatial coordinates with NAD83 datum	18T 445136 Easting 18T 4941437 Northing
Legal name of Canadian parent company	Shell Canada Limited
Street and mailing address of parent company	400 4th Avenue Southwest, Calgary, Alberta, T2P 4V8
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Stephen Doolan Downstream Communication Manager 403-691-3143
Licence no. of TR Planner making recommendations to the plan	TSRP0006
Licence number of TR Planner signing plan certification	TSRP0006
Name of toxic substance for this report	Phosphorus (Total)
CAS No. of toxic substance for this report	NA-22
Name of other toxic substances for which plans have been prepared at the facility	Zinc, CAS NA-14

2. Description of Why Phosphorus is Used or Created

Phosphorus is contained in a number of oil additives that are blended into numerous finished oil products produced by Shell Canada Limited in Brockville Ontario. Phosphorus is not created at this facility.

Phosphorus is a component of dialkyldithiophosphate, or ZDDP. ZDDP and other additives are used in engine lubricants as essential ingredients to reduce wear in high-pressure contacts such as are found in the valve train and ring and liner areas of an engine. ZDDP also functions as an antioxidant in the lubricant, helping to prevent chain reaction oxidation events that can lead to engine oil breakdown and deposits.

3. Statement of Intent to Reduce Phosphorus

Through this toxic substance reduction plan, Shell Canada Limited intends to identify and assess feasible opportunities to reduce usage of phosphorus.

4. Phosphorus Reduction Objectives

Shell has a history of safe and responsible use of hazardous materials in Brockville, and has already invested significant resources to contain, recycle, and minimize the use of all hazardous materials. Going forward, Shell is committed to continuing to reduce the amount of phosphorus used by assessing material or feedstock substitution, product design or reformulation, equipment or process modification, spill and leak prevention, on-site reuse or recycling, improved inventory management or purchasing techniques, and training or improved operating procedures. The actual usage of phosphorus and achieved reductions will be documented and made available to public and Shell employees.

5. Phosphorus Reduction Options to be implemented within the Plan

1. Reduce the amount of flush at additive unloading through equipment and process modifications

Implementation Steps	Timeline	Planned usage reductions
Develop and submit capital plan proposal for approval	Q1 2017	0 tonne
Install and modify equipment if project is approved	Q4 2017	0 tonne
Manufacture products using new equipment	2018	0.11 tonne

2. Reduce the amount of flush at blending stage by modifying equipment and process controls

Implementation Steps	Timeline	Planned usage reductions
Install and modify equipment and controls	2016	0 tonne
Manufacture products using new equipment and controls	2017	0.013 tonne

3. Determine and use the minimum amount of flush necessary when changing products on packaging lines

Implementation Steps	Timeline	Planned usage reductions
Determine and document minimum required flush volumes	2016	0 tonne
Manufacture products with new system	2017	0.009 tonne

4. Reduce the amount of flush required at truck product loading

Implementation Steps	Timeline	Planned usage reductions
Determine and document minimum required flush volumes	2016	0 tonne
Manufacture products with new system	2017	0.009 tonne

6. Phosphorus Reductions Outside of this Plan

There are no phosphorus reductions outside of this plan to report.

7. Confirmations

This toxic reduction plan summary for phosphorus (Total) accurately reflects the toxic reduction plan for phosphorus dated November 23, 2016. A copy of the actual plan confirmations is provided on the following page.

8. Confirmations

8.1.Confirmation by Toxic Substance Reduction Planner

As of November 23, 2016, I, John McGeough, confirm that I am familiar with the processes at the Shell Canada's Brockville , Ontario facility that uses or creates the toxic substance(s) 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 November 23, 2016 and the plan meets all requirements of that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Phosphorus (Total), CAS NA-22

John McGeough

TSRP0006

Licensed Planner No.

8.2. Confirmation by Highest Ranking Employee at Facility

As of November 23, 2016, I, Kelly McKinnon, confirm that I have read the toxic substance reduction plan for the toxic substance referred to below and am familiar with its contents and to my knowledge the plan is factually accurate and complies with all requirements of the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: Phosphorus (Total), CAS NA-22

Kelly McKinnon, Plant Manager