Toxic Substance Reduction Plan

Public Summary Report

Ammonia (Total), CAS NA-16

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

Ingredion Canada Incorporated
4040 James St.
Cardinal, Ontario

December 12, 2013

1. Facility Information

Facility NPRI No.	488
Facility MOE No. if assigned	8405
Company legal and trade names	Ingredion Canada Incorporated
Facility street/mailing address	4040 James Street Cardinal, Ontario K0E 1E0
No. of full-time employee equivalent	106
2, 4, and 6 digit NAICS Codes	31-33 Manufacturing 3112 Grain & Oilseed Milling 311221 Wet Corn Milling
UTM spatial coordinates with NAD83 datum	18T 470334m E 4959196m N
Legal name of Canadian parent company	Ingredion Canada Incorporated
Street and mailing address of parent company	1600 - 90 Burnhamthorpe Road West Mississauga, Ontario, L5B 0H9
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Steve Mundell, Plant Manager 613-657-3131
Licence no. of TR Planner making recommendations to the plan	TSRP0006
Licence number of TR Planner signing plan certification	TSRP0006
Name and CAS No. of toxic substance for this report	Ammonia CAS NA-16
Name and CAS No's of other toxic substances for which plans have been prepared at the facility	Hydrochloric Acid, CAS 7647-01-0 Hydrogen Sulphide, CAS 7783-06-4 Total Reduced Sulphur, CAS NA-M14 Sulphur Dioxide, CAS 7446-09-5 Phosphorus (Total), CAS NA-22 Total Particulate, CAS NA-M08 PM10 - Particulate <= 10 micron, CAS NA-M09 PM2.5 Particulate <= 2.5 micron, CAS NA-M10 Carbon Monoxide (CO), 630-08-0 Nitrogen Oxides (Expressed as NO_2), 11104-93-1

2. Description of Why Ammonia is Used or Created

Aqueous ammonia is used as a nutrient, and mostly consumed in the wastewater treatment process at this facility. Anhydrous ammonia is used in a closed-system as a refrigerant.

3. Statement of Intent to Reduce Ammonia

Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce excess ammonia usage.

4. Ammonia Reduction Objectives

Ingredion's main business is producing valuable products from corn, and has already invested significant resources to reduce waste and excess chemical usage. Through this plan, Ingredion is committed to reducing usage of excess ammonia. This will be accomplished by assessing potential reductions through 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.

5. Ammonia Reduction Options to be implemented within the Plan

1. Reduce ammonia concentration from 29% to 19%
   Planned annual reductions and timelines:
   a. Quarter 1, 2013: 0.002 tonne ammonia reductions

6. Ammonia Reductions Outside of this Plan

7. In 2012, a wastewater management firm was contracted to measure and optimize operational parameters for the wastewater treatment plant, and perform training for all operators.

8. Certifications

This toxic reduction plan summary for ammonia (total) accurately reflects the toxic reduction plan for ammonia (total) dated December 12, 2013. A copy of the actual plan certifications is provided on the following page.

8. Certifications

8.1. Certification by Toxic Substance Reduction Planner

As of December 12, 2013, I John McGeough, certify that I am familiar with the processes at the Ingredion Canada Incorporated Cardinal, 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 December 12, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Ammonia (Total) CAS NA-16

John McGeough

TSRP0006

Licensed Planner No.

8.2. Certification by Highest Ranking Employee at Facility

As of December 12, 2013 I, Steve Mundell, certify 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 the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: Ammonia (Total) CAS NA-16

Steve Mundell, Plant Manager

Toxic Substance Reduction Plan

Public Summary Report

Hydrogen Sulphide, CAS 7783-06-4
Total Reduced Sulphur, CAS NA-M14

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

Ingredion Canada Incorporated
4040 James St.
Cardinal, Ontario

December 16, 2013

1. Facility Information

Facility NPRI No.	488
Facility MOE No. if assigned	8405
Company legal and trade names	Ingredion Canada Incorporated
Facility street/mailing address	4040 James Street Cardinal, Ontario K0E 1E0
No. of full-time employee equivalent	210
2, 4, and 6 digit NAICS Codes	31-33 Manufacturing 3112 Grain & Oilseed Milling 311221 Wet Corn Milling
UTM spatial coordinates with NAD83 datum	18T 470334m E 4959196m N
Legal name of Canadian parent company	Ingredion Canada Incorporated
Street and mailing address of parent company	1600 - 90 Burnhamthorpe Road West Mississauga, Ontario, L5B 0H9
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Steve Mundell Plant Manager 613-657-3131
Licence no. of TR Planner making recommendations to the plan	TSRP0006
Licence number of TR Planner signing plan certification	TSRP0006
Name and CAS No. of toxic substance for this report	Hydrogen Sulphide, CAS 7783-06-4 Total Reduced Sulphur, CAS NA-M14
Name and CAS No's of other toxic substances for which plans have been prepared at the facility	Ammonia CAS NA-16 Hydrochloric Acid, CAS 7647-01-0 Sulphur Dioxide, CAS 7446-09-5 Phosphorus (Total), CAS NA-22 Total Particulate, CAS NA-M08 PM10 - Particulate <= 10 micron, CAS NA-M09 PM2.5 Particulate <= 2.5 micron, CAS NA-M10 Carbon Monoxide (CO), 630-08-0 Nitrogen Oxides (Expressed as NO_2), 11104-93-1

In this document, hydrogen sulphide, and total reduced sulphur will be referred to as "H_2S" and "TRS" respectively.

2. Description of Why H_2S and TRS are Used or Created

H_2S and TRS are created at this facility during the anaerobic treatment of wastewater. H_2S and TRS are not used at this facility.

3. Statement of Intent to Reduce H_2S and TRS

Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce excess creation of H_2S and TRS.

4. H_2S and TRS Reduction Objectives

Ingredion's main business is producing valuable products from corn, and has already invested significant resources to reduce waste and excess chemical usage. Through this plan, Ingredion is committed to reducing excess creation of H_2S and TRS. This will be accomplished by assessing potential reductions through 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.

5. H_2S and TRS Reduction Options to be implemented within the Plan

1. Address leaks in building 17 filters
   Planned annual reductions and timelines:
   a. January, 2015: 0.027 tonne H2S reduction and 0.027 tonne TRS reduction
2. Minimize product losses to waste in refinery
   Planned annual reductions and timelines:
   a. January, 2015: 0.271 tonne H2S reduction and 0.271 tonne TRS reduction
3. Recover filtrates back to process
   Planned annual reductions and timelines:
   a. January, 2016: 0.160 tonne H2S reduction and 0.160 tonne TRS reduction

6. H_2S and TRS Reductions Outside of this Plan

Ingredion Cardinal has a strong culture of Continuous Improvement. The plant has implemented energy reduction and yield improvement objectives using various methods, including the use of lean six sigma principles. Opportunities are continually being identified, reviewed, prioritized and implemented.

7. Certifications

This toxic reduction plan summary for hydrogen sulphide and total reduced sulphur accurately reflects the toxic reduction plans for hydrogen sulphide and total reduced sulphur dated December 16, 2013. A copy of the actual plan certifications is provided on the following page.

8.1. Certification by Toxic Substance Reduction Planner

As of December 16, 2013, I John McGeough, certify that I am familiar with the processes at the Ingredion Canada Incorporated Cardinal, 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 December 16, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Hydrogen Sulphide CAS 7783-06-4
Total Reduced Sulphur CAS NA-M14

John McGeough — TSRP0006 (Licensed Planner No.)

8.2. Certification by Highest Ranking Employee at Facility

As of December 16, 2013 I, Steve Mundell, certify 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 the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: Hydrogen Sulphide CAS 7783-06-4
Total Reduced Sulphur CAS NA-M14

Steve Mundell, Plant Manager

Toxic Substance Reduction Plan

Public Summary Report

Phosphorus (Total), CAS NA-22

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

Ingredion Canada Incorporated
4040 James St.
Cardinal, Ontario

December 18, 2013

1. Facility Information

Facility NPRI No.	488
Facility MOE No. if assigned	8405
Company legal and trade names	Ingredion Canada Incorporated
Facility street/mailing address	4040 James Street Cardinal, Ontario K0E 1E0
No. of full-time employee equivalent	210
2, 4, and 6 digit NAICS Codes	31-33 Manufacturing 3112 Grain & Oilseed Milling 311221 Wet Corn Milling
UTM spatial coordinates with NAD83 datum	18T 470334m E 4959196m N
Legal name of Canadian parent company	Ingredion Canada Incorporated
Street and mailing address of parent company	1600 - 90 Burnhamthorpe Road West Mississauga, Ontario, L5B 0H9
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Steve Mundell Plant Manager 613-657-3131
Licence no. of TR Planner making recommendations to the plan	TSRP0006
Licence number of TR Planner signing plan certification	TSRP0006
Name and CAS No. of toxic substance for this report	Phosphorus (Total), CAS NA-22
Name and CAS No's of other toxic substances for which plans have been prepared at the facility	Hydrochloric Acid, CAS 7647-01-0 Sulphur Dioxide, CAS 7446-09-5 Hydrogen Sulphide, CAS 7783-06-4 Total Reduced Sulphur, CAS NA-M14 Total Particulate, CAS NA-M08 PM10 - Particulate <= 10 micron, CAS NA-M09 PM2.5 Particulate <= 2.5 micron, CAS NA-M10 Ammonia CAS NA-16 Carbon Monoxide (CO), 630-08-0 Nitrogen Oxides (Expressed as NO_2), 11104-93-1

2. Description of Why Phosphorus is Used or Created

Ingredion Canada Incorporated (Ingredion) produces oil, starch, and sweetener products from corn. Corn naturally contains phosphorus, and this accounts for the majority of the phosphorus used on site. Phosphorus is not created at this facility.

3. Statement of Intent to Reduce Phosphorus

Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce excess phosphorus usage.

4. Phosphorus Reduction Objectives

Ingredion's main business is producing valuable products from corn, and has already invested significant resources to reduce waste and excess usage of corn containing phosphorus. Through this plan, Ingredion is committed to reducing excess usage of phosphorus. This will be accomplished by assessing potential reductions through 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.

5. Phosphorus Reduction Options to be implemented within the Plan

1. Optimize finished goods inventory
   Planned annual reductions and timelines:
   a. Q4, 2014: 45.451 tonnes phosphorus reductions
2. Increase dust collector preventive maintenance
   Planned annual reductions and timelines:
   a. Preventive activities – no planned phosphorus reductions

6. Phosphorus Reductions Outside of this Plan

Ingredion Canada Incorporated Cardinal plant has a strong culture of continuous improvement. The plant has implemented energy reduction and yield improvement objectives using various methods, including the use of lean six sigma principles. Opportunities are continually being identified, reviewed, prioritized and implemented. Ingredion Canada Incorporated Cardinal plant, has implemented an intensive yield sustainability project which is focused on optimization of our manufacturing processes. Ingredion Canada Incorporated Cardinal plant is committed to continuous improvement and in reducing phosphorus creation and emissions to the environment.

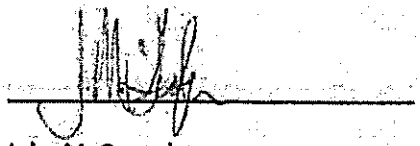
7. Certifications

This toxic reduction plan summary for phosphorus (total) accurately reflects the toxic reduction plan for phosphorus (total) dated December 18, 2013. A copy of the actual plan certifications is provided on the following page.

8.1. Certification by Toxic Substance Reduction Planner

As of December 18, 2013, I John McGeough, certify that I am familiar with the processes at the Ingredion Canada Incorporated Cardinal, 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 December 18, 2013 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Phosphorus (Total) CAS NA-22



John McGeough

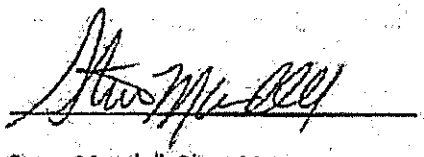
T5RP0006

Licensed Planner No.

8.2. Certification by Highest Ranking Employee at Facility

As of December 18, 2013 I, Steve Mundell, certify 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 the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: Phosphorus (Total) CAS NA-22



Steve Mundell, Plant Manager

Toxic Substance Reduction Plan

Public Summary Report

For Hydrochloric Acid (CAS 7647-01-0)

Ingredion Canada Incorporated

4040 James St.

Cardinal, Ontario

December 17, 2012

1. Facility Information

Facility NPRI No.	488
Facility MOE No. if assigned	8405
Company legal and trade names	Ingredion Canada Incorporated
Facility street/mailing address	4040 James Street Cardinal, Ontario K0E 1E0
No. of full-time employee equivalent	210 Employees
2, 4, and 6 digit NAICS Codes	31-33 Manufacturing 3112 Grain & Oilseed Milling 311221 Wet Corn Milling
UTM spatial coordinates with NAD83 datum	18T 470334m E 4959196m N
Legal name of Canadian parent company	Ingredion Canada Incorporated
Street and mailing address of parent company	405 The West Mall, Suite 600 Etobicoke, Ontario M9C 0A1
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Steve Mundell Plant Manager 613-657-3131
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	Hydrochloric Acid
CAS No. of toxic substance for this report	7647-01-0
Name of other toxic substances for which plans have been prepared at the facility	None

2. Description of Why HCl is Used or Created

Hydrochloric acid (HCl) is used in various processes to convert the components of corn to starch and sweetener products, and to aid in the purification of syrup products. HCl is destroyed or removed from finished products before shipping, and is not created at this facility.

3. Statement of Intent to Reduce HCl

Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce HCl usage.

4. HCl Reduction Objectives

Ingredion Canada Incorporated has a long history of safe and responsible use of hazardous materials in Cardinal, and has already invested significant resources to reduce the use of toxic and hazardous materials including HCl. Going forward, Ingredion Canada Incorporated is committed to reducing the amount of HCl used. This will be accomplished by assessing potential reductions through 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.

5. HCl Reduction Options to be implemented within the Plan

1. Additional instrumentation to control acid addition endpoint to reduce excess acid addition.
    a. Planned annual reductions and timelines:
        i. 100 tonnes/year beginning January 2015

2. Reduce acid use in dry starch by increasing conversion time and accounting for slurry supply pH and Baume variations & improved mixing. Calculate actual acid requirements depending on starch variables. Standardize batch formulations.
    a. Planned cumulative annual reductions and timelines:
        i. 5 tonnes by June 2013
        ii. 10 tonnes beginning January 2014

6. Toxic Substance Reductions Outside of this Plan

The following are toxic substance reductions that were undertaken outside of the plan:

1. In 2011, the concentrated acid tank was relined, and the diluted acid tank replaced and relocated into a dedicated and contained room.
2. In 2010, the emergency action plan (EAP) was updated and response training provided for EAP team members.

7. Certifications

1. This toxic reduction plan summary for HCl accurately reflects the toxic reduction plan for HCl dated December 17, 2012.
2. A copy of the actual plan certifications is provided on the following page.

8.1 Certification by Toxic Substance Reduction Planner

As of 12/17/12, I John McGeough, certify that I am familiar with the processes at the Ingredion Canada Incorporated Cardinal, Ontario facility that uses or creates 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 17 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Hydrochloric Acid

John McGeough

TSRP0006

Licensed Planner No.

8.2 Certification by Highest Ranking Employee at Facility

As of 12/17/12, I Steve Mundell, certify 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 the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: Hydrochloric Acid

Steve Mundell, Plant Manager

Toxic Substance Reduction Plan

Public Summary Report

Carbon Monoxide (CAS 630-08-0)
Nitrogen Oxides expressed as NO_2 (CAS 11104-93-1)

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

Ingredion Canada Corporation
4040 James St
Cardinal, Ontario

December 13, 2018

1. Facility Information

Facility NPRI No.	488
Facility MOE No. if assigned	8405
Company legal and trade names of owner and operator of the facility	Ingredion Canada Corporation
Facility street and mailing address	4040 James Street Cardinal, Ontario K0E 1E0
No. of full-time employee equivalent	200
2, 4, and 6 digit NAICS Codes	31-33 Manufacturing 3112 Grain & Oilseed Milling 311221 Wet Corn Milling
UTM spatial coordinates with NAD83 datum	18T 470334m E 4959196m N
Legal name of Canadian parent company	Ingredion Canada Corporation
Street and mailing address of parent company	1600 - 90 Burnhamthorpe Road West Mississauga, Ontario, L5B 0H9
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Lee Whitley, Plant Manager 613-657-3131
Licence no. of TR Planner making recommendations to the plan	TSRP0006
Licence number of TR Planner signing plan certification	TSRP0006
Name and CAS No. of toxic substance for this report	Carbon Monoxide (CO), 630-08-0 Nitrogen Oxides (Expressed as N02), 11104-93-1
Name and CAS No's of other toxic substances for which plans have been prepared at the facility	Hydrochloric Acid, CAS 7647-01-0 Hydrogen Sulphide, CAS 7783-06-4 Total Reduced Sulphur, CAS NA-M14 Sulphur Dioxide, CAS 7446-09-5 Phosphorus (total), CAS NA-22 Total Particulate, CAS NA-M08 PM10 - Particulate <= 10 micron, CAS NA-M09 PM2.5 Particulate <= 2.5 micron, CAS NA-M10 Ammonia CAS NA-16

2. Description of Why CO and NO_2 are Used or Created

Carbon monoxide (CO) and Nitrogen Oxides (expressed as NO_2) are not used in processes, but are created when fuels are combusted for heating and drying of buildings and processes, for generating electrical energy, and burning of biogas.

3. Statement of Intent to Reduce CO and NO_2

Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce excess CO and $N0_2$ creation.

4. CO and NO_2 Reduction Objectives

Ingredion has a long history of safe and responsible use of combustion fuels in Cardinal, and has already invested significant resources to reduce excess usage of fuels that, when combusted, create and emit toxic substances including CO and NO_2. Through this plan, Ingredion is committed to reducing excess usage of fuels that create CO and NO_2. This will be accomplished by assessing potential reductions through 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.

5. CO and NO_2 Reduction Options to be implemented within the Plan

1. Modify gluten cone mill
   Planned annual reductions and timelines:
   a. Q4, 2019: 1.330 tonne CO reductions and 1.590 tonne NO_2 reductions at creation
   b. Q4, 2019: 1.330 tonne CO reductions and 1.590 tonne NO_2 reductions at emission

6. CO and NO_2 Reductions Outside of this Plan

Ingredion Canada Corporation Cardinal plant has a strong culture of continuous improvement. The plant has implemented energy reduction and yield improvement objectives using various methods, including the use of lean six sigma principles. Opportunities are continually being identified, reviewed, prioritized and implemented. Ingredion Canada Corporation Cardinal plant is committed to continuous improvement and in reducing emissions to the environment.

7. Certifications

This toxic reduction plan summary for CO and NO_2 accurately reflects the toxic reduction plan for CO and NO_2 dated December 13, 2018. A copy of the plan certifications is provided below.

8. Certifications

8.1. Certification by Toxic Substance Reduction Planner

As of December 13, 2018, I John McGeough, certify that I am familiar with the processes at the Ingredion Canada Corporation Cardinal, 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 December 13, 2018 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Carbon Monoxide (CAS 630-08-0)
Nitrogen Oxides expressed as NO_2 (CAS 11104-93-1)

Original Document Signed — TSRP0006

John McGeough — Licensed Planner No.

8.2. Certification by Highest Ranking Employee at Facility

As of December 13, 2018, I Lee Whitley, certify 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 the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: Carbon Monoxide (CAS 630-08-0)
Nitrogen Oxides expressed as NO_2 (CAS 11104-93-1)

Original Document Signed

Lee Whitley, Plant Manager

Toxic Substance Reduction Plan

Public Summary Report

Sulphur Dioxide (CAS 7446-09-5)

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

Ingredion Canada Corporation
4040 James St.
Cardinal, Ontario

December 13, 2018

1. Facility Information

Facility NPRI No.	488
Facility MOE No. if assigned	8405
Company legal and trade names	Ingredion Canada Corporation
Facility street/mailing address	4040 James Street Cardinal, Ontario K0E 1E0
No. of full-time employee equivalent	200
2, 4, and 6 digit NAICS Codes	31-33 Manufacturing 3112 Grain & Oilseed Milling 311221 Wet Corn Milling
UTM spatial coordinates with NAD83 datum	18T 470334m E 4959196m N
Legal name of Canadian parent company	Ingredion Canada Corporation
Street and mailing address of parent company	1600 - 90 Burnhamthorpe Road West Mississauga, Ontario, L5B 0H9
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Lee Whitley, Plant Manager 613-657-3131
Licence no. of TR Planner making recommendations to the plan	TSRP0006
Licence number of TR Planner signing plan certification	TSRP0006
Name and CAS No. of toxic substance for this report	Sulphur Dioxide, CAS 7446-09-5
Name and CAS No's of other toxic substances for which plans have been prepared at the facility	Ammonia CAS NA-16 Hydrochloric Acid, CAS 7647-01-0 Phosphorus (Total), CAS NA-22 Total Reduced Sulphur, CAS NA-M14 Hydrogen Sulphide, CAS 7783-06-4 Total Particulate, CAS NA-M08 PM10 - Particulate <= 10 micron, CAS NA-M09 PM2.5 Particulate <= 2.5 micron, CAS NA-M10 Carbon Monoxide (CO), 630-08-0 Nitrogen Oxides (Expressed as NO_2), 11104-93-1

In this document, sulphur dioxide will be referred to as "SO_2."

2. Description of Why SO_2 is Used or Created

SO_2 is not used at this facility, but is created and emitted when molten sulphur is combusted for creation of SO_2 for the processes associated with milling and refining of corn. SO_2 is also created and emitted during the combustion of fuels, for heating of processes, and for building services.

3. Statement of Intent to Reduce SO_2

Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce excess SO_2 creation and emission.

4. SO_2 Reduction Objectives

Ingredion has a long history of safe and responsible use of combustion fuels and corn milling solutions used in Cardinal, and has already invested significant resources to reduce excess usage of fuels that, when combusted, create and emit toxic substances including SO_2. Through this plan, Ingredion is committed to reducing excess creation and emission of SO_2. This will be accomplished by assessing potential reductions through 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.

5. SO_2 Reduction Options to be implemented within the Plan

1. Modify and repair sulfur burner system
   Planned annual reductions and timelines:
   a. 4th Quarter, 2019: 2.528 tonne SO_2 reductions in creation
   b. 4th Quarter, 2019: 2.528 tonne SO_2 reductions in emission

2. Increase sulfur burner system reliability to decrease BSS usage
   Planned annual reductions and timelines:
   a. 4th Quarter, 2019: 0.057 tonne SO_2 reductions in emission

6. Reductions Outside of this Plan

Ingredion Canada Corporation Cardinal plant has a strong culture of continuous improvement. The plant has implemented energy reduction and yield improvement objectives using various methods, including the use of lean six sigma principles. Opportunities are continually being identified, reviewed, prioritized and implemented. Ingredion Canada Corporation Cardinal plant is committed to continuous improvement and in reducing SO_2 emissions to the environment.

7. Certifications

This toxic reduction plan summary accurately reflects the toxic reduction plan for SO_2 dated December 13, 2018. A copy of the plan certifications is provided below.

Toxic Substance Reduction Plan
Sulphur Dioxide, SO_2
Ingredion Canada Corporation
Cardinal, Ontario

8. Certifications

8.1. Certification by Toxic Substance Reduction Planner

As of December 13, 2018, I John McGeough, certify that I am familiar with the processes at the Ingredion Canada Corporation Cardinal, 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 December 13, 2018 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: Sulphur Dioxide, (CAS 7446-09-5)

Original Document Signed — TSRP0006

John McGeough — Licensed Planner No.

8.2. Certification by Highest Ranking Employee at Facility

As of December 13, 2018, I, Lee Whitley, certify 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 the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: Sulphur Dioxide, (CAS 7446-09-5)

Original Document Signed

Lee Whitley, Plant Manager

Toxic Substance Reduction Plan

Public Summary Report

PM_T Total Particulate (CAS NA-M08)
PM_{10} Particulate <= 10 micron (CAS NA-M09)
$PM_{2.5}$ Particulate <= 2.5 micron (CAS NA-M10)

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

Ingredion Canada Corporation
4040 James St.
Cardinal, Ontario

December 13, 2018

1. Facility Information

Facility NPRI No.	488
Facility MOE No. if assigned	8405
Company legal and trade names	Ingredion Canada Corporation
Facility street/mailing address	4040 James Street Cardinal, Ontario, K0E 1E0
No. of full-time employee equivalent	200
2, 4, and 6 digit NAICS Codes	31-33 Manufacturing 3112 Grain & Oilseed Milling 311221 Wet Corn Milling
UTM spatial coordinates with NAD83 datum	18T 470334m E , 4959196m N
Legal name of Canadian parent company	Ingredion Canada Corporation
Street and mailing address of parent company	1600 - 90 Burnhamthorpe Road West Mississauga, Ontario, L5B 0H9
Percentage ownership of facility	100
Name, position, telephone no. of facility public contact	Lee Whitley, Plant Manager 613-657-3131
Licence no. of TR Planner making recommendations to the plan	TSRP0006
Licence number of TR Planner signing plan certification	TSRP0006
Name and CAS No. of toxic substance for this report	PM_T Total Particulate, CAS NA-M08 PM_{10} - Particulate <= 10 micron, CAS NA-M09 $PM_{2.5}$ Particulate <= 2.5 micron, CAS NA-M10
Name and CAS No's of other toxic substances for which plans have been prepared at the facility	Carbon Monoxide (CO), 630-08-0 Nitrogen Oxides (Expressed as NO_2), 11104-93-1 Hydrochloric Acid, CAS 7647-01-0 Hydrogen Sulphide, CAS 7783-06-4 Total Reduced Sulphur, CAS NA-M14 Sulphur Dioxide, CAS 7446-09-5 Phosphorus (total), CAS NA-22 Ammonia CAS NA-16

Throughout this document, total particulate, particulate <=10 micron, and particulate <=2.5 micron will be referred to as "PM_T", "PM_{10}" and "$PM_{2.5}$" respectively. When referring to all three particulate substances collectively, they will be referred to as "particulates".

2. Description of Why Particulates are Used or Created

Particulates are not used at this site, but are created and emitted when fuels are combusted for heating of processes and building services; during process operations involving dry product movement or transfers in unenclosed areas; and during the operation of bag houses, dust collectors, cyclones, and scrubbers. Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce excess creation and emission of particulates.

3. Statement of Intent to Reduce Particulates

Through this toxic substance reduction plan, Ingredion intends to identify and assess feasible opportunities to reduce excess creation and emission of particulates.

4. Particulates Reduction Objectives

Ingredion has a long history of safe and responsible use of combustion fuels and process operations in Cardinal. This site has already invested significant resources to reduce excess usage of combustion fuels and process operations that create and emit particulates. Through this plan, Ingredion is committed to reducing excess usage of equipment that create and emit particulates. This will be accomplished by assessing potential reductions through 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.

5. Particulates Reduction Options to be implemented within the Plan

1. Install dustless loading spouts in Dry Starch/Bulk Loading
   Planned annual reductions and timelines:
   a) Q4, 2020: 0.919 tonne PM_T, 0.881 tonne PM_{10}, and 0.865 tonne $PM_{2.5}$ reductions at creation
   b) Q4, 2020: 0.809 tonne PM_T, 0.771 tonne PM_{10}, and 0.754 tonne $PM_{2.5}$ reductions at emission

6. Reductions Outside of this Plan

Ingredion Canada Corporation Cardinal plant has a strong culture of continuous improvement. The plant has implemented energy reduction and yield improvement objectives using various methods, including the use of lean six sigma principles. Opportunities are continually being identified, reviewed, prioritized and implemented. Ingredion Canada Corporation Cardinal plant is committed to continuous improvement and in reducing particulate emissions to the environment.

7. Certifications

This toxic reduction plan summary for PM_T, PM_{10}, and $PM_{2.5}$ accurately reflects the toxic reduction plan for PM_T, PM_{10}, and $PM_{2.5}$ dated December 13, 2018. A copy of the plan certifications is provided below.

8. Certifications

8.1. Certification by Toxic Substance Reduction Planner

As of December 13, 2018, I, John McGeough, certify that I am familiar with the processes at the Ingredion Canada Corporation Cardinal, 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 December 13, 2018 and that the plan complies with that Act and Ontario Regulation 455/09 (General) made under the Act.

Toxic Substance: PM_T – Total Particulate (CAS NA-M08)
PM_{10} - Particulate <=10 micron (CAS NA-M09)
$PM_{2.5}$ - Particulate <=2.5 micron (CAS NA-M10)

Original Document Signed _____ TSRP0006_____

John McGeough Licensed Planner No.

8.2. Certification by Highest Ranking Employee at Facility

As of December 13, 2018, I, Lee Whitley, certify 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 the *Toxics Reduction Act, 2009* and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substance: PM_T – Total Particulate (CAS NA-M08)
PM_{10} - Particulate <=10 micron (CAS NA-M09)
$PM_{2.5}$ - Particulate <=2.5 micron (CAS NA-M10)

Original Document Signed _____

Lee Whitley, Plant Manager