

**GFSA TRA Annual Summary**

**Comparison 2014-2015**

**Facility Information**

Company Name: Greenfield Specialty Alcohols Inc.  
Tiverton Plant

Facility Address: 99 Farrell Drive  
4<sup>th</sup> Concession Rd.  
Tiverton, Ontario  
N0G 2T0

Contact Information: Dianne Schenk  
EHS Manager  
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Certifying Official: Jim Murr (Public Contact)  
Plant Manager  
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[jim.murr@gfsa.com](mailto:jim.murr@gfsa.com)

Parent Company: Greenfield Specialty Alcohols Inc.  
100% Ownership

UTM Coordinates: Zone 17  
UTM Easting 454889; UTM Northing 4907493

Facility NPRI ID: 209

In 2015, GFSA Tiverton Facility employed 40 full time employees

NAICS Codes:           Two Digit NAICS – 31, 32  
                              Four Digit NAICS - 3121, 3251  
                              Six Digit NAICS - 312140, 325190

**Reduction Objectives:**

Greenfield Specialty Alcohols Inc. (GFSA) operates an ethanol production facility. GFSA is committed to protect the environment through continual improvement of its manufacturing processes and the prevention of pollution. The objective of GFSA is to determine the technical and economic feasibility of various reduction options and identify if any are viable for implementation.

**Toxic Substances:**

The TRA requires the tracking of the following NPRI substances: Methanol, Sulphuric Acid, Ammonia, Carbon Monoxide, Ethanol, Ethyl Acetate, Isopropyl Alcohol, Nitrogen Oxides, PM 2.5, PM 10 and Sulphur Dioxide.

**Tracking and Quantifications:**

The method used to calculate the TRA quantifications was a mass balance approach.

Table 1 provides a summary of the facility TRA steps taken in 2015.

Table 2 provides a summary of the TRA quantities for the 2015 operational year compared to the last reported values.

**Table 1: Toxic Reduction Act- Phase 1 & 2 - ACTIONS FOR 2015**

		TOXIC SUBSTANCES - Phase 2									
		Phase 1					Phase 2				
		Methanol CAS#: 67-56-1	Sulphuric Acid CAS#: 7664-93-9	Ammonia CAS#: NA-15	PM10, PM2.5 CAS#: NA-M10, NA-M09	CO, NOx, SO2 CAS#: 630-08-0; 11104-93-1; 7446-09-5	Isopropyl Alcohol CAS#: 67-63-0	Ethyl Acetate CAS#: 141-78-6	Ethanol CAS#: 64-17-5		
	<b>SOURCE</b>	Utilized as a denaturant following Excise Canada requirements. Generated in fermentation process.	Purchased in bulk, received and stored on plant site in 55 gallon drums. Consumed / neutralized upon mixing into process. Used for pH control.	1. Purchased in bulk, received and stored on plant site in 55 gallon drums. Vapour balance with truck during transfers. Neutralized/converted upon mixing in to process. Used for pH control.	Created at grain unloading and milling, the corn vents, grain transfers, cooling towers and boiler stack.	Products of NG and #2 oil combustion from boilers.	Raw material delivered by tank truck to storage and used as an ethanol denaturant following Excise Canada requirements.	Raw material delivered by tank truck to storage and used as an ethanol denaturant following Excise Canada requirements.	Generated in fermentation process.		
	1. Material or feedstock substitution	Customer-based required denaturant. Excise Canada regulated.	No direct substitution is being made at this time. New enzymes are being tested to reduce usage.	No direct substitution is being made at this time. New enzymes are being trialed.	Not applicable.	Not applicable.	Customer-based required denaturant. Excise Canada regulated.	Customer-based required denaturant. Excise Canada regulated.	not applicable, product that is produced.		
	2. Product design or reformulation	Involve and work with Excise Canada to develop a formulation that uses less methanol as a denaturant or eliminates it's use.	Ongoing trials of enzyme to reduce usage, success with AVF enzyme.	New enzymes are being trialed, success with AVF enzyme.	Not applicable.	Not applicable.	No change at this time	No change at this time	not applicable, product that is produced.		
	3. Equipment or process modification	Use of new enzymes in fermentation may have impact on methanol generation.	No longer used in distillation. Removed redundant acid lines and pumps in 2014.	New enzymes are being trialed.	Not applicable.	Not applicable.	No change at this time.	No change at this time.	not applicable, product that is produced.		
	4. Spill and leak prevention	Shipping, Maintenance and operations are taught to detect, report and repair leaks whenever possible. This early detection allows us to prevent emissions.	Maintenance and operations are taught to detect, report and repair leaks whenever possible.	Maintenance and operations are taught to detect, report and repair leaks whenever possible.	Continued PMs. These PMs help prevent leaks and spills by maintaining equipment before they lead to breakdowns and releases.	Continued PMs. These PMs help prevent leaks and spills by maintaining equipment before they lead to breakdowns and releases.	Shipping, Maintenance and operations are taught to detect, report and repair leaks whenever possible. This early detection allows us to prevent emissions.	Shipping, Maintenance and operations are taught to detect, report and repair leaks whenever possible. This early detection allows us to prevent emissions.	Maintenance and operations are taught to detect, report and repair leaks whenever possible. This early detection allows us to prevent emissions.		
	5. On-site reuse or recycling	not applicable.	not applicable. All sulphuric acid is consumed in process.	not applicable. All ammonia is consumed in process.	All materials captured via dust collectors are returned to the process.	Not applicable.	Not applicable.	Not applicable.	Any test samples taken are captured and re-introduced into the process.		
	6. Improved inventory management or purchasing techniques	Purchased as required.	Purchased as required.	Purchased as required.	Purchased as required.	Tight monitoring of CMG production and transport to minimize use of #2 oil contributing to higher Nox emissions.	Purchased as required.	Purchased as required.	not applicable, product that is produced.		
	7. Training or improved operating practices	Training ongoing. Shipping, Maintenance and operations are taught to detect, report and repair leaks whenever possible.	Training ongoing. Maintenance and operations are taught to detect, report and repair leaks whenever possible.	Purchase and installation of an automatic titrator for more consistent test results which will tighten operating parameters. Training ongoing. Maintenance and operations are taught to detect, report and repair leaks whenever possible.	No change planned at this time.	Operating Engineers are trained to monitor for leaks and shut down and report any problems so repairs can be made.	Training ongoing. Maintenance and operations are taught to detect, report and repair leaks whenever possible.	Training continues to improve. Maintenance and operations are taught to detect, report and repair leaks whenever possible.	Training ongoing. Maintenance and operations are taught to detect, report and repair leaks whenever possible.		
	Reduction Targets	10 % reduction	10% reduction	10% reduction	N/A	1% reduction in Nox	N/A	N/A	N/A		
	Timeline/Steps Taken	Implementation of Product Design or reformulation method of reduction reliant upon Excise Canada to change formulation and there has been no change made to date.	On Schedule	On schedule	N/A	On schedule	N/A	N/A	N/A		
	Amendments to Plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Additional Reduction Actions	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Table 2: Toxic Reduction Act- Phase 1 & 2 - 2015 Quantities

Phase 1											
TOXIC SUBSTANCES - Phase 2											
	Methanol CAS#: 67-56-1	Sulphuric Acid CAS#: 7664-93-9	Ammonia CAS#: NA-16	PM2.5 CAS#: NA-10	PM10 CAS#: NA-1009	Nox CAS#: 11104-93-1	SO2 CAS#: 7446-09-5	CO CAS#: 630-08-0	Isopropyl Alcohol CAS#: 67-63-0	Ethyl Acetate CAS#: 141-78-6	Ethanol CAS#: 64-17-5
SOURCE	Utilized as a denaturant following Excise Canada requirements. Generated in fermentation process.	Purchased in bulk, received and stored on plant site in 55 tank. Consumed / neutralized upon mixing into process. Used for pH control.	1. Purchased in bulk, received and stored on plant site in tank. Vapour balance with truck during transfers.	Created at grain unloading and milling, the corn vents, grain transfers, cooling towers and boiler stack.	Created at grain unloading and milling, the corn vents, grain transfers, cooling towers and boiler stack.	Products of NG and #2 oil combustion from boilers.	Products of NG and #2 oil combustion from boilers.	Products of NG and #2 oil combustion from boilers.	Raw material delivered by tank truck to storage and used as an ethanol denaturant following Excise Canada requirements.	Raw material delivered by tank truck to storage and used as an ethanol denaturant following Excise Canada requirements.	Generated in fermentation process, final production product.
2015 Used (tonnes)	>100-1000	>100-1000	>10-100	0	0	0	0	0	>10-100	>10-100	0
2014 Used - Last reported value	>100-1000	>100-1000	>100-1000	0	0	0	0	0	>10-100	>10-100	0
% Change	1.71%	-34.19	-22.02%	0	0	0	0	0	0	0	0
2015 Created (tonnes)	>1-10	0	0	>0-1	>1-10	>1-10	>0-1	>10-100	0	0	>10-100
2014 Created - Last reported value	>1-10	0	0	>1-10	>10-100	>1-10	>1-10	>10-100	0	0	>10-100
% Change	0.01%	0	0	-28.48%	-14.01%	-27.58	-68.96	-9.29%	0	0	0.36%
2015 Contained in Product (tonnes)	>100-1000	0	0	0	0	0	0	0	>10-100	0	0
2014 Contained in Product - Last Reported Value	>100-1000	0	0	0	0	0	0	0	>10-100	0	0
% Change	1.71%	0	0	0	0	0	0	0	0	0	0
2015 Released to Air (tonnes)	0	0	0	>0-1	>0-1	>1-10	>0-1	>10-100	>0-1	>0-1	>10-100
2014 Released to Air - Last Reported	0	0	0	>1-10	>10-100	>1-10	>1-10	>10-100	>0-1	>0-1	>10-100
% Change	0	0	0	-28.48%	-14.01%	-27.58	-68.96	-9.29%	0%	-62.68%	0.36%
Quantity Released to Surface Waters	0	0	0	0	0	0	0	0	0	0	0
Quantity Released to Land	0	0	0	0	0	0	0	0	0	0	0
Quantity Disposed of on-site to Land	0	0	0	0	0	0	0	0	0	0	0
Quantity Transferred off-site for Disposal	0	0	0	0	0	0	0	0	0	0	0
Quantity Transferred off-site for Treatment prior to final disposal	0	0	0	0	0	0	0	0	0	0	0
Quantity transferred off-site for Recycling	0	0	0	0	0	0	0	0	0	0	0
Reason for Change	No significant change - increase in production	Reduction from the implementation of toxic reduction plan	Reduction from the implementation of toxic reduction plan	Improved efficiency	Improved efficiency	Implementation of toxic reduction plan	Ability to operate on natural gas instead of #2 oil due to a milder winter.	Improved combustion efficiency	No Change	Emission remodeling completed	No significant change

Quantification

Certification Statement:

**Highest Ranking Employee**

As of March 24, 2016, I Jim Murr, certify that I have read the toxic substance reduction plans for the toxic substances referred to below and am familiar with its contents, and to my knowledge the plans are factually accurate and comply with the Toxic Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

This certification statement reflects the change in the Highest Ranking Employee at the Tiverton facility and replaces the statement submitted December 20, 2013 by Ted Dodkin.

Ammonia, Ethyl Acetate, Ethyl Alcohol, Isopropyl Alcohol, Methanol, Sulphuric Acid, Nitrogen Oxides, PM 2.5, PM 10, Carbon Monoxide, Sulphur Dioxide



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Jim Murr

Plant Manager

Greenfield Specialty Alcohols Inc., Tiverton Facility

**Planner**

As of March 24, 2016, I Dianne Schenk, certify that I am familiar with the processes at the Greenfield Tiverton facility that use or create the toxic substances 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 plans dated December 10, 2013 and that the plans comply with the Act and Ontario Regulation 455/09 (General) made under the Act.

Ammonia, Ethyl Acetate, Ethyl Alcohol, Isopropyl Alcohol, Methanol, Sulphuric Acid, Nitrogen Oxides, PM 2.5, PM 10, Carbon Monoxide, Sulphur Dioxide



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Dianne Schenk (Planner License # TSRP0190)

EH&S Manager / Toxic Substance Reduction Planner

Greenfield Specialty Alcohols Inc., Tiverton Facility