

# 2020 NPRI & TOXIC SUBSTANCE REDUCTION - ANNUAL SUMMARY REPORT

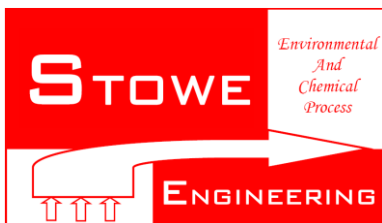
Prepared for:

**WEATHERSTRONG BUILDING PRODUCTS**

37 Union Street, Smiths Falls, Ontario, K7A 4Z4



Attention: **Mark Boisclair, Plant Manager**  
Phone: **(613) 283-0999**  
Email: [mark90@kaycan.ca](mailto:mark90@kaycan.ca)



Prepared by: **Doug Stowe P.Eng. CHMM TSRP**  
**Stowe Engineering**  
211 Spring Street, Almonte, Ontario K0A 1A0  
Phone: **(613) 256-9321**  
Email: [doug@stowe-engineering.ca](mailto:doug@stowe-engineering.ca)  
Web: [www.stowe-engineering.ca](http://www.stowe-engineering.ca)

1.0	STATEMENT OF INTENT.....	3
2.0	OBJECTIVE.....	5
2.1	TARGETS .....	5
3.0	DESCRIPTION OF THE TOXIC SUBSTANCE.....	5
4.0	FACILITY INFORMATION .....	5
4.1	Owner/Contact of the Facility Information.....	5
4.2	Operator of the Facility Information .....	5
4.3	Highest Ranking Employee at the Facility Information .....	6
4.4	Parent Company Information.....	6
4.5	Plan Contacts.....	6
4.6	Person Who Prepared the Plan .....	6
4.7	Public Contact.....	6
4.8	Technical Contact .....	6
5.0	STAGES AND PROCESSES THAT USE THE TOXIC SUBSTANCES .....	7
5.1	STAGES .....	7
5.2	Paint Line Description.....	7
6.0	FLOW CHARTS – MASS BALANCE .....	8
6.1	Paint line process .....	8
6.2	NPRI Substances Summary.....	9
7.0	ESTIMATED DIRECT AND INDIRECT COST.....	10
8.0	COMMENT ON MASS BALANCE RESULTS.....	10
9.0	REDUCTION OPTIONS SELECTED .....	10
9.1	Use only Recycled Solvent to Clean the Paint Line (Ref: 7.1 (i)) .....	10
9.2	Review the Process Around Paint Line Cleaning to Determine if Reductions (Ref 7.4 (v)).....	10
9.3	Optimize the use of Gas Burners (Ref 7.4 (vi)) .....	10
9.4	Improve Cleaning Process through Operator Training (Ref 7.7 (xi)) .....	10
10.0	PLANNER COMMENTS.....	10
10.1	Calculation Changes Statement - Ref 26.(2).....	10
10.2	Process Changes Statement – Ref 26(1) 5.....	10
10.3	Incident Impact Statement - Ref 26.(1) 6.....	10
11.0	PLANNER RECOMMENDATIONS.....	11
11.1	Evaluate Recycled Solvent.....	11
11.2	Review the Solvent Cleaning Process.....	11
11.3	Improved Record Keeping / Oxidizer Efficiency .....	11
11.4	Support A Move to Chrome-free Pre-treatment .....	11
11.5	Plan Sign-Off.....	11
12.0	PLAN CERTIFICATIONS – (for Substances).....	12

## 1.0 STATEMENT OF INTENT

Weatherstrong paints aluminum sheet metal used as siding for building materials. Order quantities along with paint colour and specifications are provided by the parent company Kaycan. Weatherstrong operates an automated paint line where large aluminum rolls are loaded at one end and fed through the paint line in a long strip. The strip passes through a roll-coater and a curing oven to dry the paint before the strip is coiled into a finished roll at the opposite end of the line. The paints contain solvents which contain VOCs that act as a carrier for paint pigment application. Weatherstrong uses an exhaust equipped with a high efficiency catalytic oxidizer to destroy VOCs volatilizing from the paint as it dries (97.5% efficient). Weatherstrong strives to optimize the paint process while reducing operating costs. The facility does not create solvents therefore, its plan will not address reducing solvent creation.

Prior to painting, chromic acid, containing hexavalent chrome is applied to prepare the surface. The roll application is isolated within a recirculating system and the thin aqueous surface dries prior to the paint roller application. There are no air emissions and all of the chrome pre-treatment applied stays on the metal or remains in the application tank.

## 2020 NPRI SUMMARY

Name	ID#	Part	Limit	UOM	Qty	UOM	Reportable?
<b>Part 1A - MPO</b>							
Butoxyethanol	111-76-2	1A	10	tonnes	34.4	tonnes (MPO)	YES
Butyl alcohol	71-36-3	1A	10	tonnes	17.6	tonnes (MPO)	YES
Trimethylbenzene	95-63-6	1A	10	tonnes	32.6	tonnes (MPO)	YES
Xylene (all isomers) <sup>15</sup>	1330-20-7	1A	10	tonnes	31.8	tonnes (MPO)	YES
<b>Part 1B</b>							
Hexavalent chromium (and its compounds) <sup>3</sup>	NA-46	1B	50	kg	475.3	kg (MPO)	YES
<b>Part 4 - Criteria Air Contaminants (CAC)</b>							
Carbon monoxide	630-08-0	4	20	tonnes	0.54	tonnes	NO
Nitrogen oxides (expressed as nitrogen dioxide)	11104-93-1	4	20	tonnes	2.71	tonnes	NO
PM <sub>2.5</sub> <sup>22,23</sup>	NA - M10	4	0.3	tonnes	0.05	tonnes	NO
PM <sub>10</sub> <sup>23,24</sup>	NA - M09	4	0.5	tonnes	0.05	tonnes	NO
Sulphur dioxide	7446-09-5	4	20	tonnes	0.02	tonnes	NO
Total particulate matter <sup>23,25</sup>	NA - M08	4	20	tonnes	0.05	tonnes	NO
Volatile organic compounds <sup>26</sup>	NA - M16	4	10	tonnes (to air)	5.9	tonnes (to air)	NO
<b>Part 5 - VOCs to Air</b>							
Total VOCs used from paints and solvents	NA - M16				220.8	tonnes	
Catalytic Oxidizer efficiency	97.50%	2.50%					
Air Emission of VOCs from paints and solvents	NA - M16	5			5.5	tonnes	
VOCs from combustion (natural gas)	NA - M16	5			0.37	tonnes	
TOTAL VOCs (tonnes)	NA - M16	5	10	tonnes (to air)	5.9	tonnes (to air)	NO

**MPO = Manufactured, Processed or Otherwise used**

### Notes

The use and emission quantity of Part 1A solvents is based on demand for painted products. Demand remained relatively consistent between 2019 and 2020. Weatherstrong has no control over the paint type or demand. Often, customers get both sides of the aluminum sheet painted to provide options for the end users. In some cases, 'Backer' is applied when only one side is painted. 'Backer' is a less expensive thin coating used to protect and cover the 'backside' of the aluminum sheet. It allows for recycling as well. Soffits are an example of a backer product. Backer contains a higher weight percent of xylene.

There is no plan to reduce the quantity or change the type of material used.

There was no need to report on VOCs to air or the specific Part 5 VOC substances because the catalytic oxidizer effectively reduced emissions below the reporting threshold.

Mark Boisclair is the Plant Manager.

## 2.0 OBJECTIVE

Weatherstrong strives to minimize waste and optimize the use of paints, efficiently preventing excessive emissions by using a catalytic oxidizer maintained to support a highly efficient destruction rate (97.5%). Further, this plan assesses the technical and economic feasibility of options to determine which are viable for implementation.

### 2.1 TARGETS

- (i) To improve spill containment strategies on site;
- (ii) To optimize energy consumption relating to paint line operations.

## 3.0 DESCRIPTION OF THE TOXIC SUBSTANCE

All paints contain Volatile Organic Compounds (VOCs) to varying percentages depending on the formulation. There are over 200 different paint formulations. Based on the annual paint use, the four VOC chemicals tabled below met the NPRI reporting threshold. The high efficiency catalytic oxidizer reduced the overall VOC emissions to air (Part 5) below the reporting threshold.

A pre-treatment chemical contains hexavalent chrome which meets the 50 kg reporting threshold requirement.

Reducing toxics is difficult because the organization has no control over the paint formulation. The paint-roll transfer application is efficient with minimal waste as no paint is atomized. Based on this, Weatherstrong has decided not to proceed with a Toxic Reduction Plan focused on these components - but is implementing other environmental strategies to reduce energy consumption.

## 4.0 FACILITY INFORMATION

**Name:** Weatherstrong Building Products, 37 Union Street, Smiths Falls, Ontario, K7A 4Z4  
**NPRI #:** 0000005703  
**NAICS Code:** 332810  
**# of Full-time Employees:** 32  
**UTM Coordinates (NAD83):** Latitude 44.9125, Longitude -76.0220

### 4.1 Owner/Contact of the Facility Information

**Contact:** Mark Boisclair, Plant Manager, Weatherstrong Building Products  
**Address:** 37 Union Street, Smiths Falls Ontario, K7A 4Z4  
**Phone:** (613) 283-0999  
**E-mail:** [mark90@kaycan.ca](mailto:mark90@kaycan.ca)

### 4.2 Operator of the Facility Information

**Name:** Mark Boisclair, Plant Manager, Weatherstrong Building Products  
**Address:** 37 Union Street, Smiths Falls Ontario, K7A 4Z4  
**Phone Number:** (613) 283-0999

#### 4.3 Highest Ranking Employee at the Facility Information

**Name:** Mark Boisclair, Plant Manager, Weatherstrong Building Products

**Address:** 37 Union Street, Smiths Falls Ontario, K7A 4Z4

**Phone:** (613) 283-0999

**E-mail:** [Mark90@kaycan.ca](mailto:Mark90@kaycan.ca)

*This facility is a subsidiary of Kaycan Inc.*

#### 4.4 Parent Company Information

**Name:** Kaycan

**Address:** 3075 Trans Canada Hwy, Pointe Claire, Quebec, H9R 1B4

**Phone:** (613) 283-0999

**Percentage of Facility Owned by Company:** 100 per cent

**Business Number:** 102777612RC0001

#### 4.5 Plan Contacts

*Person Coordinating the Preparation of the Plan*

**Name:** Mark Boisclair, Plant Manager, Weatherstrong Building Products

**Address:** 37 Union Street, Smiths Falls Ontario, K7A 4Z4

**Phone:** (613) 283-0999

**E-mail:** [Mark90@kaycan.ca](mailto:Mark90@kaycan.ca)

#### 4.6 Person Who Prepared the Plan

**Name:** Doug Stowe P.Eng. TSRP

**Position:** Toxic Substance Reduction Planner (#TSRP0157)

**Address:** 73 Mill St., PO Box 486, Almonte, Ontario KOA1A0

**Phone:** (613)256-9321

**E-mail:** [Doug@stowe-engineering.ca](mailto:Doug@stowe-engineering.ca)

#### 4.7 Public Contact

**Name:** Mark Boisclair, Plant Manager, Weatherstrong Building Products

**Address:** 37 Union Street, Smiths Falls Ontario, K7A 4Z4

**Phone:** (613) 283-0999

**E-mail:** [Mark90@kaycan.ca](mailto:Mark90@kaycan.ca)

#### 4.8 Technical Contact

**Name:** Doug Stowe P.Eng. TSRP

**Position:** Toxic Substance Reduction Planner (#TSRP0157)

**Address:** 73 Mill St., PO Box 486, Almonte, Ontario KOA1A0

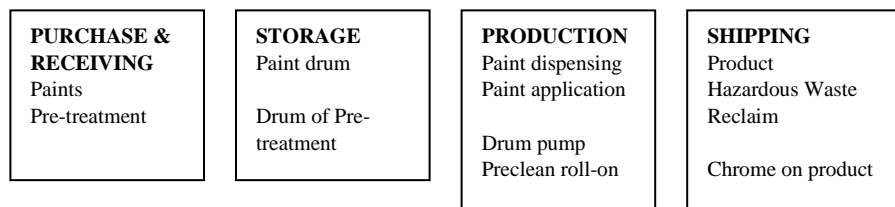
**Phone:** (613)256-9321

**E-mail:** [Doug@stowe-engineering.ca](mailto:Doug@stowe-engineering.ca)

## 5.0 STAGES AND PROCESSES THAT USE THE TOXIC SUBSTANCES

### 5.1 STAGES

The main stages for paint processing: Purchasing & Receiving, Storage, Production and Shipping. The substances are present in the first three stages.



### 5.2 Paint Line Description

Weatherstrong produces painted aluminum sheet for building applications.

Paint Line: Bare aluminum sheet is received at the plant warehouse in large rolls. A roll is loaded onto the feed station cradle at the start of the paint line and gradually uncoiled to feed through a series of processing stages. Initially the aluminum is cleaned and dried before it passes across a paint roller. Paint is applied both sides of the roll. A 'Backer' coating may be used if only one side is painted. The painted surfaces pass through a long, enclosed gas-heated drying oven that cures the paint onto the aluminum and releases any carrier solvents. The finished dry painted sheet is coiled up again at the opposite end of the line, removed from the cradle and packaged for shipment.

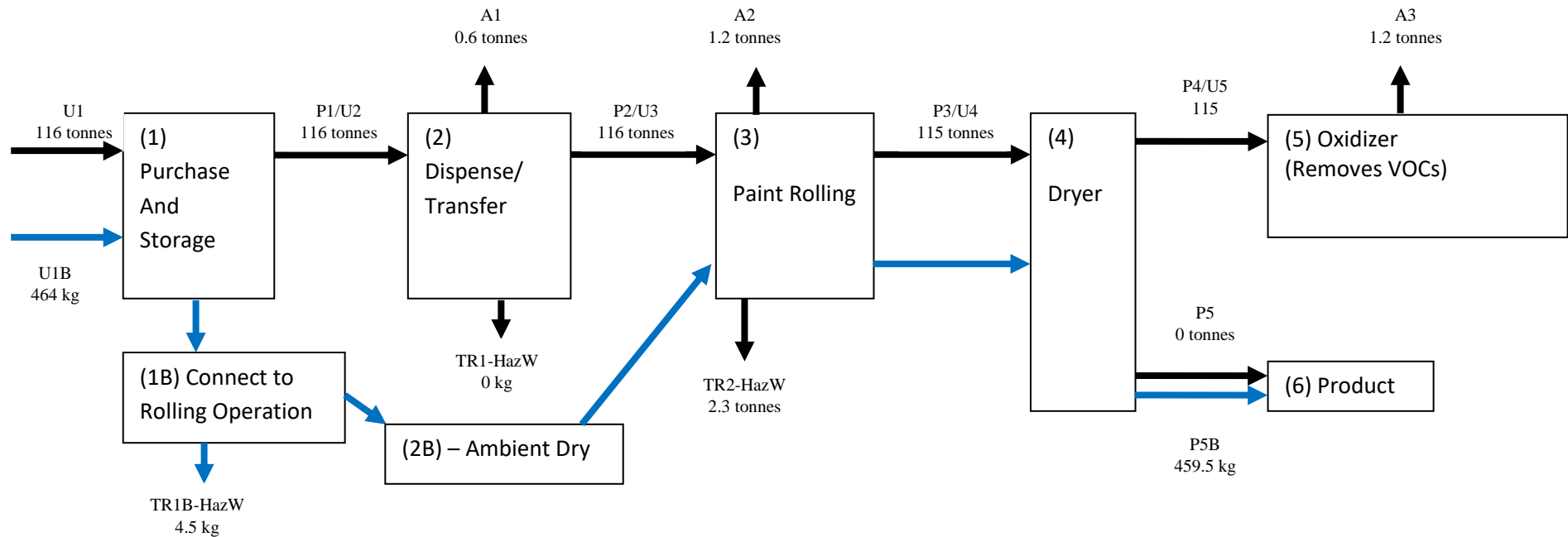
All solvent vapours emitted from the drying oven during production are captured and treated in a catalytic oxidizer with a design destruction efficiency rating of 97.5%.

Pre-treatment: contains chromic acid, which includes a small percentage of hexavalent chrome (VI). It is used from the supply drums and is connected to a recirculating system.

Solvent Dispense: Solvent dispensing is done in an ancillary Solvent Dispense Room serviced with two wall mounted exhaust fans. Diacetone alcohol, Vansol and a recycled solvent made up of both these products are used to clean sections of the paint line. Solvents are dispensed into 20 litre containers and brought to the paint line for in-situ cleaning. Contaminated solvent solutions are brought back into the Solvent Dispense Room and decanted into a storage container for recycling and eventual shipment as hazardous waste.

## 6.0 FLOW CHARTS – MASS BALANCE

### 6.1 Paint line process



LEGEND	
	Paint Line Process Components
	Chrome VI Process
U1	Solvent VOC Used
U1B	Chrome VI Used
P	Produced
TR	Toxic Waste Recycled or Hazardous Waste Disposal
A	Air Emission
Re	Reclaim
HazW	Hazardous Waste

DQL Data Quality Level = "Average"



## 6.2 NPRI Substances Summary

Name	ID#	Part	Limit	UOM	Qty	UOM	Reportable?
<b>Part 1A - MPO</b>							
Butoxyethanol	111-76-2	1A	10	tonnes	34.4	tonnes (MPO)	YES
Butyl alcohol	71-36-3	1A	10	tonnes	17.6	tonnes (MPO)	YES
Trimethylbenzene	95-63-6	1A	10	tonnes	32.6	tonnes (MPO)	YES
Xylene (all isomers) <sup>15</sup>	1330-20-7	1A	10	tonnes	31.8	tonnes (MPO)	YES
<b>Part 1B</b>							
Hexavalent chromium (and its compounds) <sup>3</sup>	NA-46	1B	50	kg	475.3	kg (MPO)	YES
<b>Part 4 - Criteria Air Contaminants (CAC)</b>							
Carbon monoxide	630-08-0	4	20	tonnes	0.54	tonnes	NO
Nitrogen oxides (expressed as nitrogen dioxide)	11104-93-1	4	20	tonnes	2.71	tonnes	NO
PM <sub>2.5</sub> <sup>22,23</sup>	NA - M10	4	0.3	tonnes	0.05	tonnes	NO
PM <sub>10</sub> <sup>23,24</sup>	NA - M09	4	0.5	tonnes	0.05	tonnes	NO
Sulphur dioxide	7446-09-5	4	20	tonnes	0.02	tonnes	NO
Total particulate matter <sup>23,25</sup>	NA - M08	4	20	tonnes	0.05	tonnes	NO
Volatile organic compounds <sup>26</sup>	NA - M16	4	10	tonnes (to air)	5.9	tonnes (to air)	NO
<b>Part 5 - VOCs to Air</b>							
Total VOCs used from paints and solvents	NA - M16				220.8	tonnes	
Catalytic Oxidizer efficiency	97.50%	2.50%					
Air Emission of VOCs from paints and solvents	NA - M16	5			5.5	tonnes	
VOCs from combustion (natural gas)	NA - M16	5			0.37	tonnes	
TOTAL VOCs (tonnes)	NA - M16	5	10	tonnes (to air)	5.9	tonnes (to air)	NO

**MPO = Manufactured, Processed or Otherwise used**

## **7.0 ESTIMATED DIRECT AND INDIRECT COST**

Direct costs were based on purchased costs for the paints and solvents. Direct labour costs were also included but no cost savings were directly determined based on reduced labour. Gas usage for heat was included in cost calculations.

## **8.0 COMMENT ON MASS BALANCE RESULTS**

Mass balance results assumed conservation of material through purchasing and shipping. Since actual measurements were not available percentages were used to estimate quantities to air and hazardous waste. Oxidizer emission rates were based on the specified efficiency of the oxidizer. Quality of data should be considered 'Average' meaning more improvements could be made in assuring accuracy through measurements.

## **9.0 REDUCTION OPTIONS SELECTED**

### **9.1 Use only Recycled Solvent to Clean the Paint Line (Ref: 7.1 (i))**

Understanding that recycled solvent may not be entirely effective since it is over 50% less expensive it can reduce the overall operating costs. This process change would require further review before proceeding.

### **9.2 Review the Process Around Paint Line Cleaning to Determine if Reductions (Ref 7.4 (v))**

Over 25 tonnes of solvent are used annually for cleaning. A small reduction in solvent use could result in immediate payback. Labour should be taken into consideration in the analysis.

### **9.3 Optimize the use of Gas Burners (Ref 7.4 (vi))**

It was observed that the drying oven uses a similar quantity of gas as the oxidizer. There may be opportunity to reduce or conserve energy saving gas consumption for this stage of the process. Although NPRI substance use would not change it could improve operating costs.

### **9.4 Improve Cleaning Process through Operator Training (Ref 7.7 (xi))**

This opportunity is tied closely to leveraging the use of recycled solvent (10.1). A modification to the Operator procedure may decrease the amount of solvent required. This should be assessed and reviewed with process experts to ensure the quality remains sound and the procedure is safe

## **10.0 PLANNER COMMENTS**

### **10.1 Calculation Changes Statement - Ref 26.(2)**

No changes.

### **10.2 Process Changes Statement – Ref 26(1) 5**

There were no process changes in operation over last year.

### **10.3 Incident Impact Statement - Ref 26.(1) 6**

There has been no incident out of the normal course of events at the facility during the previous calendar year whereby the incident could affect the results of tracking and quantification of the substance.

## **11.0 PLANNER RECOMMENDATIONS**

The recommendations point towards reducing the amount of cleaning solvent used (25 tonnes). Although the solvent di-acetone is not currently an NPRI reportable substance, it does contribute to the total VOCs while reducing NPRI and can be assessed for reduction.

### **11.1 Evaluate Recycled Solvent**

Identify the source and quality of recycled solvent. Verify if it can be used at a higher ratio than it currently is. Perform tests on the paint line.

### **11.2 Review the Solvent Cleaning Process**

There may be alternative methods to conserve and/or reuse the cleaning solvent to conserve solvent and reduce waste. This may involve equipment and/or procedural changes. Eliminating the loss of material before it is used is an immediate savings;

### **11.3 Improved Record Keeping / Oxidizer Efficiency**

- (i) Paints were provided from three suppliers in 2020: Kel Coatings, Allcolour, and Valspar. The MSDSs from Kel have specific concentrations of VOC components while the Valspar data sheets have ranges. For calculations using ranges, the worst-case concentration (high end of the range) was used. If a more accurate concentration was identified, then it is likely the actual amounts of toxic substances would be lower and lower chemical use could be realized. For Allcolour, it is only the polyester solmica paints which have minimal to no VOCs.
- (ii) The oxidizer procedure should be reviewed and verified to ensure it is maintaining the 97.5% efficiency identified since it is a critical control parameter in ensuring VOCs are abated.

### **11.4 Support A Move to Chrome-free Pre-treatment**

- (i) While Weatherstrong is not in control of dictating the type of pre-treatment used, if a suitable alternative is proposed, I recommend testing and eventually switching over to a more environmentally friendly pre-treatment.

### **11.5 Plan Sign-Off**

This report is provided with a sign-off page for the Plant Manager's endorsement upon review.

## 12.0 PLAN CERTIFICATIONS – (for Substances)

I, Mark Boisclair, certify that I have read the toxic substance reduction plan for **the substances listed 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.

Part 1A	CAS#
Butoxyethanol	111-76-2
Butyl alcohol	71-36-3
Trimethylbenzene	95-63-6
Xylene (all isomers) <sup>15</sup>	1330-20-7
Part 1B	
Hexavalent chrome compounds	* (various)

---

Mark Boisclair  
Plant Manager, Weatherstrong  
(Highest Ranking Employee)

May 27<sup>th</sup>, 2021

Date