Toxic Substance Reduction Plan

Central Wire (Erin)

Al McMillan

12/11/2012

Ontario industries must comply to the Ontario Toxic Substance Reduction Act (2009) and Ontario Reg 455/09. This document is the toxic substance plan for Central Wire (Erin)

Contents

2.2. Operator of the Facility:

Name:	Central Wire Industries
Address:	1 North Street, Perth, ON K7H 5S2
Phone Number:	1–613–267-3752
Fax Number:	1-613-267-3929
E-mail:	info@centralwire.com

2.3. Highest ranking Employee at the Facility:

Name:	Al McMillan
Title:	General Manager
Address:	1 Erinville Drive, Erin ON N0B-1T0
Phone Number:	1-519-833-9632
Fax Number:	1-519-833-2213
E-mail:	amcmillan@centralwire.com

2.4. Parent Company:

Legal Name:	Central Wire Industries
Address:	1 North Street, Perth, ON K7H 5S2
Percentage of Facility Owned by Company:	100%
CCRA Business Number:	100875202

2.5. Toxic Substances for Which Facility Must Prepare Plan:

These substances are:

Chromium	(NA-04)	CAS: 7440-47-3
Manganese	(NA-09)	CAS: 7439-96-5
Nickel	(NA-11)	CAS: 7440-02-0

Toxic Substance Reduction Plan – Central Wire Industries Ltd. (Erin)

Central Wire Industries Ltd (CWI) manufactures stainless steel wire, nickel alloy wire and related products in alloys tailored to meet specific customer requirements.

Wire diameters from 0.003inches to 0.5 inch in a variety of surface finishes, coatings and packages.

Located in Perth, Ontario, the company known as Central Wire was founded in 1955 to manufacture red metal wire for weaving of fourdrinier fabric for the paper industry. Over the years the firm developed the expertise in the production of fine stainless steel wire for the fourdrinier fabric and many other applications serving a wide variety of domestic and international markets.

In 1989 CWI acquired an additional plant in Dumas, Arkansas. CWI operations were further strengthened in 1998 with the purchase of a facility in Lancaster, South Carolina.

In January of 2003 Central Wire announced the acquisition of the Greening Donald stainless wire plant in Erin, Ontario.

Other acquisitions included facilities in Union IL (2005), Perris CA (2005), and Fond Du Lac WI (2010).

Wire drawing is one of the oldest metal working technologies in the world. The process entails pulling or drawing material through a series of "dies" of specific diameters to satisfy parameters of both customers and downstream processes. The drawn wire can be further processed after a heat treatment called a solution anneal. When annealing of the drawn wire is required, the wire is passed through a horizontal tube furnace, with the tubes having a controlled atmosphere to facilitate heat transport and inhibit any oxidation so the wire maintains its luster. The process heats the wire to critical temperature and quickly quenching the wire to achieve properties that make wire malleable for future processing. Similar to the drawing process any scrap generated through set-up or off spec product is handled as part of documented non-conforming material procedures or scrapped into the proper hopper and then collected for transfer to recyclers. The toxic substances are present in the annealing process as a component of product and are neither created, added nor removed from the bulk metal.

The wire drawing process or annealing process may need to be repeated to achieve the desired properties for the customer.

1. Description of Toxic Substances at Central Wire Industries (Erin)

There are three Phase 1 toxic substances that are subject to the criteria set out in the Toxics Reduction Act, 2009 and Ontario regulation 455/09.

These substances are:

Chromium (NA-04)

Manganese (NA-09)

Nickel (NA-11)

2. Facility Information:

Facility Name:	CENTRAL WIRE INDUSTRIES Ltd. (Erin)
NPRI Identification Number:	05752
Two Digit NAICS Code:	33
Four Digit NAICS Code:	3312
Six Digit NAICS Code:	331222
Number of Fulltime Employees:	32
UTM Spatial Coordinates (NAD83)	Latitude: 43.77990
	Longitude: -80.07500
	Datum: 17

2.1. Owner of the Facility:

Name:	Central Wire Industries Ltd.
Address:	1 North Street, Perth, ON K7H 5S2
Phone Number:	1–613–267-3752
Fax Number:	1-613-267-3929
E-mail:	info@centralwire.com

2.2. Operator of the Facility:

Name:	Central Wire Industries
Address:	1 North Street, Perth, ON K7H 5S2
Phone Number:	1–613–267-3752
Fax Number:	1-613-267-3929
E-mail:	info@centralwire.com

2.3. Highest ranking Employee at the Facility:

Name:	Al McMillan
Title:	General Manager
Address:	1 Erinville Drive, Erin ON N0B-1T0
Phone Number:	1-519-833-9632
Fax Number:	1-519-833-2213
E-mail:	amcmillan@centralwire.com

2.4. Parent Company:

Legal Name:	Central Wire Industries
Address:	1 North Street, Perth, ON K7H 5S2
Percentage of Facility Owned by Company:	100%
CCRA Business Number:	100875202

2.5. Toxic Substances for Which Facility Must Prepare Plan:

These substances are:

Chromium	(NA-04)	CAS: 7440-47-3
Manganese	(NA-09)	CAS: 7439-96-5
Nickel	(NA-11)	CAS: 7440-02-0

2.6. Plan Contacts:

Person Coordinating the Preparation of the Plan:

Name:	Al McMillan
Title:	General Manager
Address:	1 Erinville Drive, Erin ON N0B-1T0
Phone Number:	1-519-833-9632
Fax Number:	1-519-833-2213
E-mail:	amcmillan@centralwire.com

Person who Prepared the Plan:

Name:	Al McMillan
Title:	General Manager
Address:	1 Erinville Drive, Erin ON N0B-1T0
Phone Number:	1-519-833-9632
Fax Number:	1-519-833-2213
E-mail:	amcmillan@centralwire.com

Statement of Intent:

It is not Central Wire Industries' intent to reduce our use of the contaminants Manganese (Mn), Chromium (Cr) and Nickel (Ni) in our processes. The contaminants are components of product and their use relates directly to our business volume. We do intend to make the most efficient use of the substances and to minimize waste in our operations and reduce transfers to recyclers. The substances Manganese (Mn), Chromium (Cr) and Nickel (Ni) are not created in any of Central Wire's operations.

Objective:

The volume of toxic substances used in our operations is directly related to our business activities. It is our objective to maximize the efficiencies of our operations and in turn reduce the amount of Manganese (Mn), Chromium (Cr) and Nickel (Ni) transferred for recycling, in compliance with Federal, Provincial and local legislation.

Description of Facility (Erin) – Main Operations

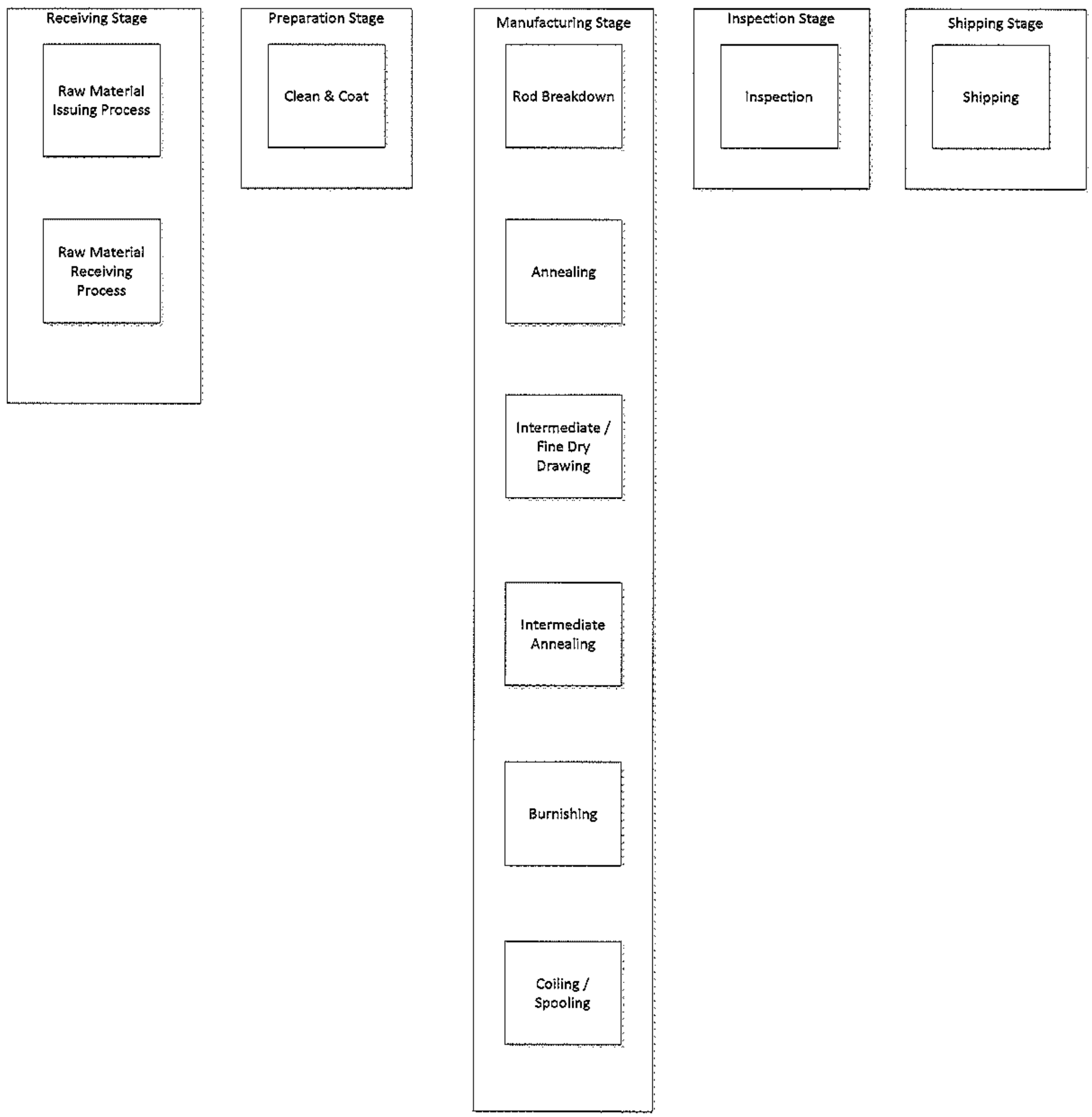
Central Wire Industries Erin facility is 66,000 sq-ft (6124 sq-m) currently employing 37 people fulltime. The plant operates 5 days - 24 hours, with the production staff working a rotating 3 shift schedule. The Erin facility manufactures stainless steel and nickel alloy wire ranging in diameters of 0.024 inches (0.6 mm) up to 0.375 inches (9.5 mm) in a range of tempers, finishes and packages. Main manufacturing operations / processes at the mill consist of Pre-coating, Drawing, Annealing, Coiling and Burnishing. The toxic substances are present as a component of the product with any scrap being collected and segregated into the appropriate bins for recycling. Off-spec or non-conforming wire is identified as such and placed in a holding area for disposition.

Stages and Processes that Use Manganese, Chromium & Nickel

Identification of and Description of the Stages that Use Manganese, Chromium & Nickel:

The manufacturing of stainless steel wire consists of four stages at the Erin facility. For the calendar year 2011, manganese (Mn), chromium (Cr) and nickel (Ni) were present as a component of product at the receiving stage where the raw material is offloaded and weighed into inventory, in the preparation stage where the rod is a staged for manufacturing orders and coated to facilitate manufacturing, the manufacturing stage where the rod dimensions and mechanical properties are significantly transformed to meet customer requirements or for subsequent processing, at the inspection stage the finished product is audited for conformance to the job specifications, at the shipping stage the finished wire is moved and weighed into finished goods ready for sale as shown in Figure 1. No process at the facility actually creates manganese, chromium or nickel.

Stages & Processes of Stainless Steel & Nickel Alloy Wire Manufacturing



LEGEND

☐	Process where substance is present
U-Mn	Use of Manganese
U-Cr	Use of Chromium
U-Ni	Use of Nickel
TR-Mn	Transfer of Manganese
TR-Cr	Transfer of Chromium
TR-Ni	Transfer of Nickel

Identification of the Processes that Use Manganese, Chromium & Nickel:

The manufacturing of stainless steel wire begins with the Receiving Process where random wound rod coils weighing approximately 2200 lbs (1000 kgs) each are entered into our raw material inventory. Once a purchase order is received from a customer, a manufacturing order is entered into the manufacturing schedule. The appropriate amount of the required alloy is weighed out of the raw material inventory and allocated into the job. The material itself passes through the Clean & Coat Process where the rod is dipped into a tank of pre-coat solution. The pre-coat is applied to facilitate the drawing process. The coating is cured and the material staged for the next process. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

During the Rod Breakdown Process the wire is pulled through a series of dies of decreasing diameter to achieve the mechanical properties and dimensions required by the customer or in preparation for further processing. This process results in significant transformation of the mechanical and dimensional properties of the raw material. Scrap material generated during set-up and any off-spec material is either placed in the appropriate hopper or identified as non-conforming and placed in a holding area referred to as restricted stock to either be reworked or deemed unsalvageable. The scrap generated in the area is segregated then collected for transfer to recyclers. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

Heavy Annealing Process, at this operation the wire is cleaned inline and heated to a critical temperature that results in changes to mechanical properties but not dimensional. Each wire is individually annealed by feeding it through a tube and taking it up into a coil or spool / reel at the exit of the furnace. Scrap generated in the area is segregated and then collected for transfer to recyclers. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

Similar to the Rod Breakdown Process but on a smaller scale the Intermediate / Fine Dry Drawing Process, the wire is pulled through a series of dies of decreasing diameter to achieve the mechanical properties and dimensions required by the customer or in preparation for further processing. This process results in significant transformation of the mechanical and dimensional properties of the raw material. Scrap material generated during set-up and any off-spec material is either placed in the appropriate hopper or identified as non-conforming and placed in a holding area referred to as restricted stock to either be reworked or deemed unsalvageable. The scrap generated in the area is segregated then collected for transfer to recyclers. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

The Intermediate Annealing Process consists. At this step the wire is cleaned inline then heated to a critical temperature that results in changes to mechanical properties but not dimensional. Each wire is individually annealed by feeding it through a tube and taking it up into a coil or spool / reel at the exit of the furnace. Scrap generated in the area is segregated and then collected for transfer to recyclers. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

Other ancillary processes include coiling / spooling and burnishing. In coiling the drawn and annealed wire is either wound into coils of specific length or weight, also can be wound onto spools to specific length or weight requirement.

The burnishing process is a unique mechanical finishing process that is applied to "hard" wire while it is being spooled onto reels to specific lengths or weights. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

The Cleaning Process drawn wire is dipped into a solution containing surfactants that removes residual drawing compounds leaving a clean lustrous appearance required by some customers The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

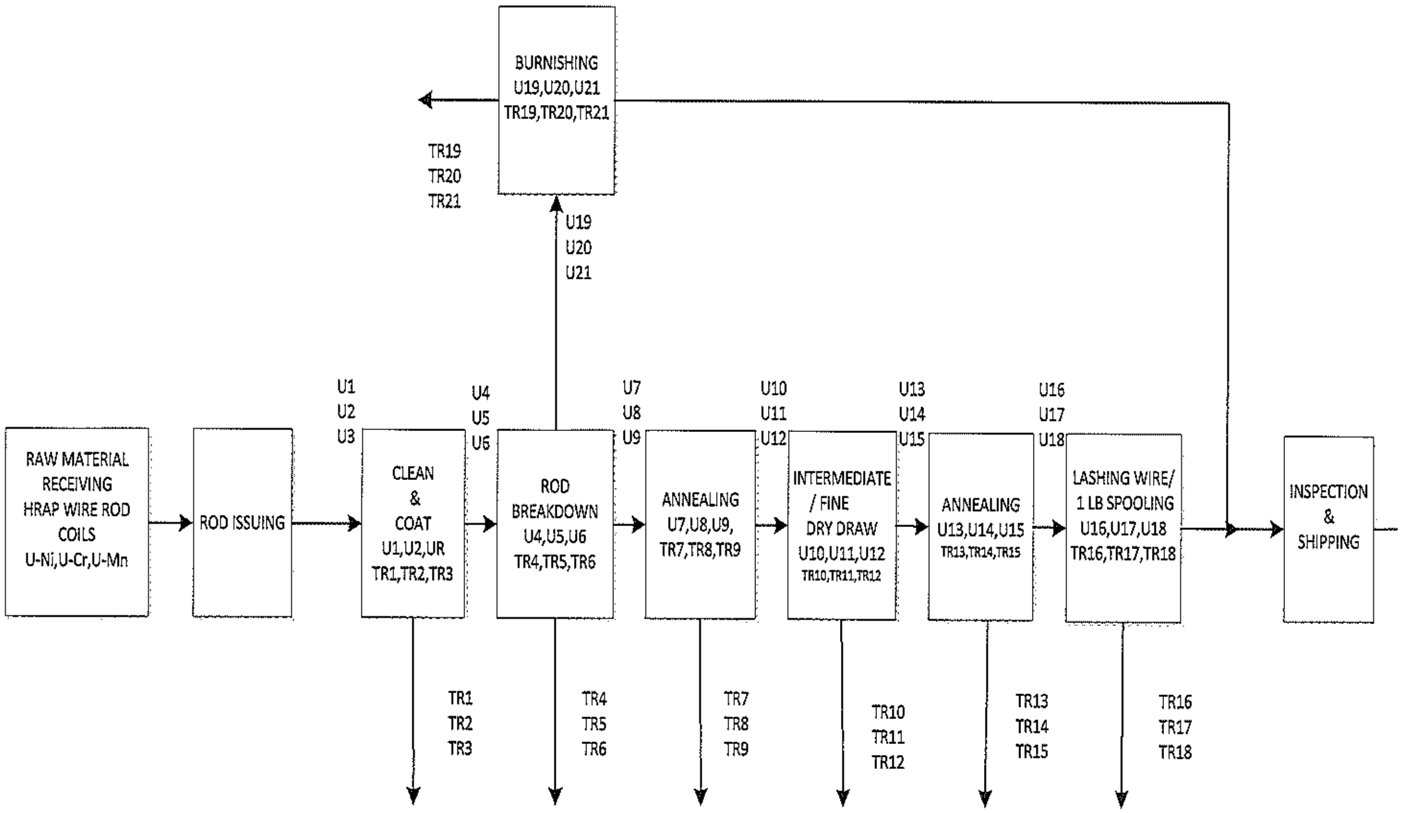
When wire leaves the manufacturing processes it is in a packaged form that is suitable for shipping.

At the inspection stage samples are taken from the finished product and the dimensional and mechanical properties are verified for reporting and the required labeling is correct and present. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

The inspected wire is weighed into stock by the shipper and is ready for release to the customer at the date requested at time of order. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

In 2011 the plant operated 24hrs a day, 5 days per week. Shutdown periods included a 1 week summer maintenance shutdown, 1 week Christmas shutdown and statutory holidays.

PROCESS FLOW DIAGRAM



LEGEND

U-Mn	Use of Manganese
U-Cr	Use of Chromium
U-Ni	Use of Nickel
TR-Mn	Transfer of Manganese
TR-Cr	Transfer of Chromium
TR-Ni	Transfer of Nickel

TRACKING AND QUANTIFICATION

Substance enters a process (Use):

U-Mn (i.e. the amount of manganese present in the grade of stainless steel used in the process)

U-Cr (i.e. the amount of chromium present in the grade of stainless steel used in the process)

U-Ni (i.e. the amount of nickel present in the grade of stainless steel used in the process)

Tracking and Quantification Method: Mass Balance

Method Rationale

The nature of the business is that all activities and processes at the facility are recorded by weight. A live data system tracks manufacturing orders through the factory by weight. Upon completion of the order the finished product is weighed into inventory. The concentration of the toxic substances is also a function of percent weight of the bulk metal. Vendors provide mill certificates which contain a chemical analysis of the percent weight of the elements present in the alloy. For the reasons listed the use of the Mass Balance technique for the calculations was appropriate. For the purpose of this report the % wt of each substance was based on an average of the company's max and min tolerances for Mn, Cr and Ni published in their purchasing specifications.

Quantification of Manganese, Chromium and Nickel (Table 1)

TS Calculations		Avg. Substance Conc. (%wt)			Kg Substance Produced		
		Mn	Cr	Ni	Mn	Cr	Ni
204Cu	139279.5	0.002	0.165	0.025	278.559	22981.12	3481.988
2205	50575.9	0.002	0.165	0.065	101.1518	8345.024	3287.434
304	871226.36	0.02	0.19	0.092	17424.53	165533	80152.83
308		0.0175	0.215	0.102	0	0	0
310	23936	0.02	0.26	0.22	478.72	6223.36	5265.92
314	298926	0.02	0.25	0.22	5978.52	74731.5	65763.72
316	384067	0.02	0.125	0.11	7681.34	48008.38	42247.37
347		0.02	0.18	0.105	0	0	0
330(35/19 CB)	124192	0.006	0.2	0.35	745.152	24838.4	43467.2
410	22051	0.01	0.125	0.005	220.51	2756.375	110.255
430	396741	0.005	0.165	0.003	1983.705	65462.27	1190.223
600/601	140	0.008	0.155	0.75	1.12	21.7	105
625	309	0.003	0.22	0.6	0.927	67.98	185.4
80/20	6407	0.005	0.02	0.77	32.035	128.14	4933.39
825	5412	0.01	0.0215	0.42	54.12	116.358	2273.04
GD316	59922	0.017	0.173	0.113	1018.674	10366.51	6771.186
GD31Mo	116269	0.01	0.205	0.25	1162.69	23835.15	29067.25
GD35Mo	7688	0.02	0.27	0.31	153.76	2075.76	2383.28
GD37Mo	11087	0.003	0.213	0.27	33.261	2361.531	2993.49
Z100	1613	0.01	0.25	0.07	16.13	403.25	112.91
GD50(MP35N)	2345	0.0015	0.2	0.355	3.5175	469	832.475
M400		0.0125	0	0.665	0	0	0
Tot. Prod. Kg					37368.42	458724.8	294624.4

Quantification of Toxic Substance Flow

Clean & Coat Process:

The toxic substances enter the process as a constituent of the raw material in concentrations specific to the grade of stainless steel being processed. **(Table 1)**

Quantification Method:

- Mass Balance – the amount of Mn, Cr, & Ni are known to be the same amount contained in product following the Clean & Coat process.

$U_{-Mn} = U_1 + TR_1$ $\quad$ $U_{-Cr} = U_2 + TR_2$ $\quad$ $U_{-Ni} = U_3 + TR_3$

$U_{-Mn} = 43{,}759.5kg+0kg$ $\quad$ $U_{-Cr} = 540{,}539.1kg+0kg$ $\quad$ $U_{-Ni} = 346{,}003kg+0kg$

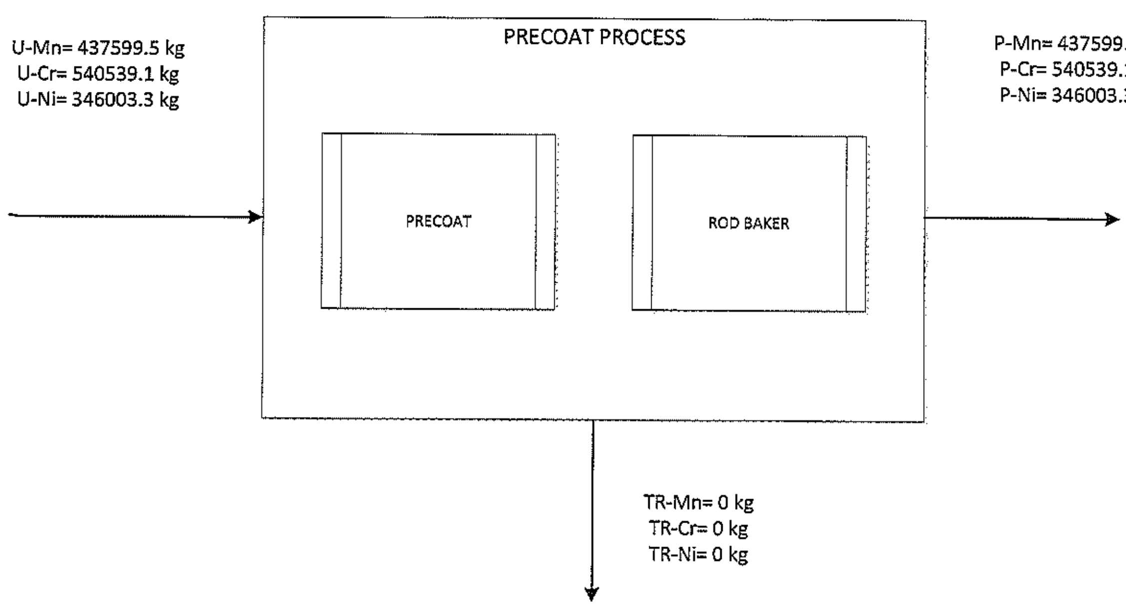
Manganese (Mn) used in this process in 2011: 43,759.5kg

Chromium (Cr) used in this process in 2011: 540,539.1kg

Nickel (Ni) used on this process in 2011: 346,003 kg

No change to dimensional or mechanical properties occurs at this stage hence no transfers for offsite recycling. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

Use + Creation = Transformed + Destroyed + Contained in Product + On site / Off site Release (to Air, Land, Water) + Offsite Transfer (for treatment, recycling)



Quantification of Toxic Substance Flow

Rod Breakdown Process:

The toxic substances enter the process as a constituent of the raw material in concentrations specific to the grade of stainless steel being processed. **(Table 1)**

Quantification Method:

- Mass Balance – the amount of Mn, Cr, & Ni are known to be the same amount contained in product following the Rod Breakdown process.

$U_{-Mn} = U_4 + TR_4$ $U_{-Cr} = U_5 + TR_5$ $U_{-Ni} = U_6 + TR_6$

$U_{-Mn} = 41{,}795.9\text{kg}+767.7 \text{ kg}$ $U_{-Cr} = 525{,}854.1\text{kg}+11{,}171.6 \text{ kg}$ $U_{-Ni} =331{,}526.6\text{kg}+7{,}496.4 \text{ kg}$

Manganese (Mn) used in this process in 2011: 42,563.5 kg

Chromium (Cr) used in this process in 2011: 537,025.7 kg

Nickel (Ni) used on this process in 2011: 339,023 kg

Significant change to dimensional or mechanical properties occurs at this stage hence transfers for offsite recycling. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

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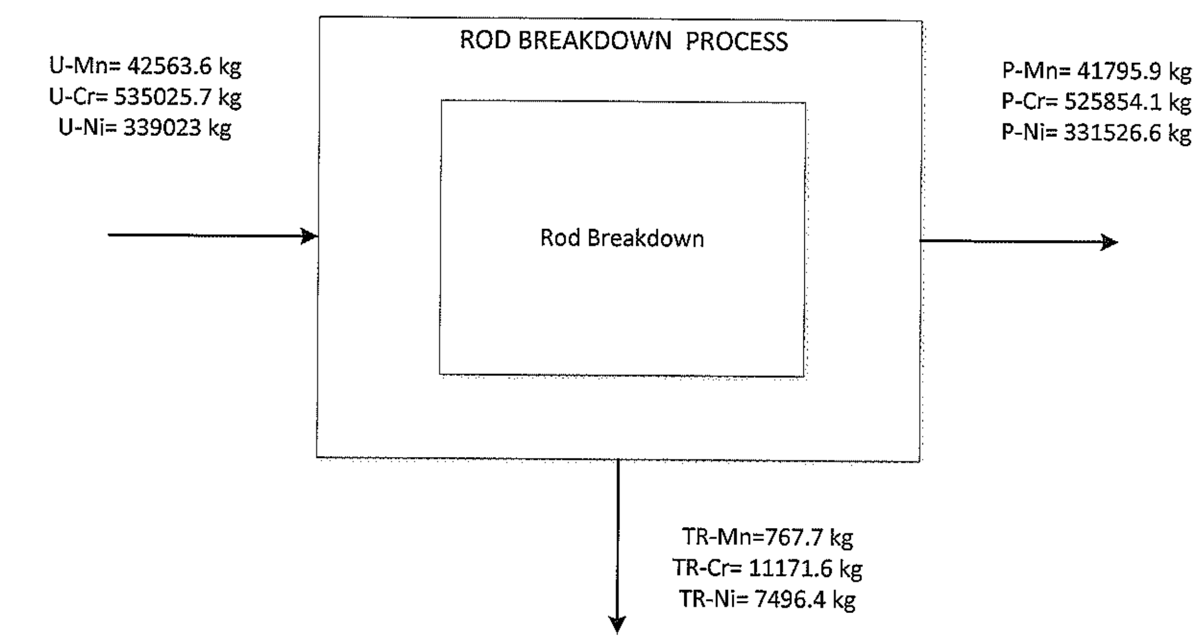

Quantification of Toxic Substance Flow

Coarse / Heavy Annealing Process:

The toxic substances enter the process as a constituent of the raw material in concentrations specific to the grade of stainless steel being processed. **(Table 1)**

Quantification Method:

- Mass Balance – the amount of Mn, Cr, & Ni are known to be the same amount contained in product following the Heavy Annealing process.

$U_{-Mn} = U_7 + TR_7$ $\quad$ $U_{-Cr} = U_8 + TR_8$ $\quad$ $U_{-Ni} = U_9 + TR_9$

$U_{-Mn} = 25{,}451.4\text{kg} + 44.9\text{ kg}$ $\quad$ $U_{-Cr} = 284{,}981.6\text{kg} + 550.8\text{ kg}$ $\quad$ $U_{-Ni} = 231{,}069.9\text{kg} + 590.5\text{ kg}$

Manganese (Mn) used in this process in 2011: 25,496.3 kg

Chromium (Cr) used in this process in 2011: 285,532.5 kg

Nickel (Ni) used on this process in 2011: 231,660.4 kg

Significant change to the mechanical properties occurs at this stage hence transfers for offsite recycling. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

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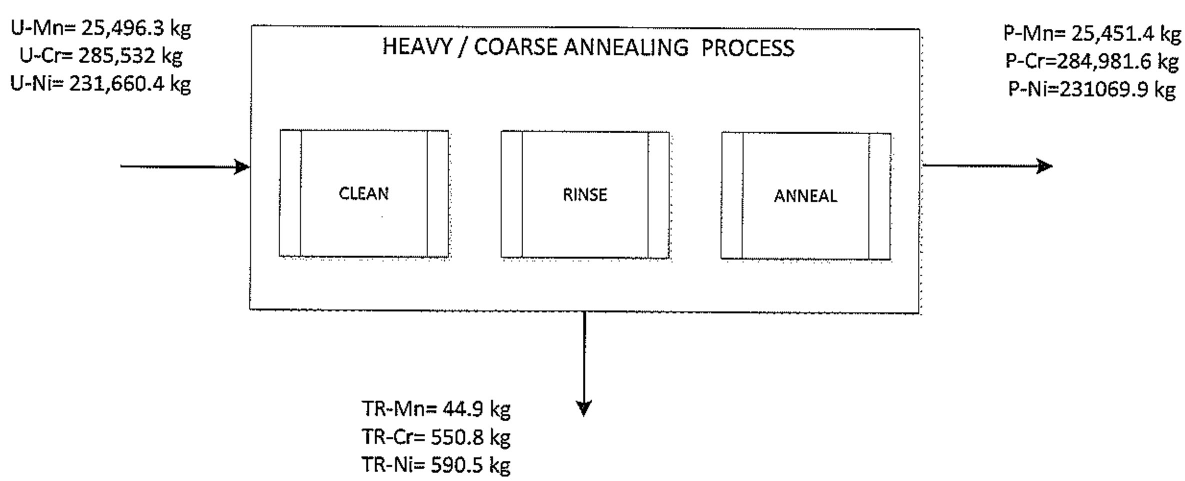

Quantification of Toxic Substance Flow

Intermediate Wire Drawing Process:

The toxic substances enter the process as a constituent of the raw material in concentrations specific to the grade of stainless steel being processed. **(Table 1)**

Quantification Method:

- Mass Balance – the amount of Mn, Cr, & Ni are known to be the same amount contained in product following the Intermediate Drawing process.

$U_{-Mn} = U_{10} + TR_{10}$ $U_{-Cr} = U_{11} + TR_{11}$ $U_{-Ni} = U_{12} + TR_{12}$

U_{-Mn} = 5,406.5kg+ 64.8kg U_{-Cr}= 62,195.6kg+ 842.3kg U_{-Ni} = 43,661.5kg+ 740.1kg

Manganese (Mn) used in this process in 2011: 5,471.3kg

Chromium (Cr) used in this process in 2011: 63,037.9kg

Nickel (Ni) used on this process in 2011: 44,401.6kg

Significant change to the dimensional and mechanical properties occurs at this stage hence transfers for offsite recycling. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

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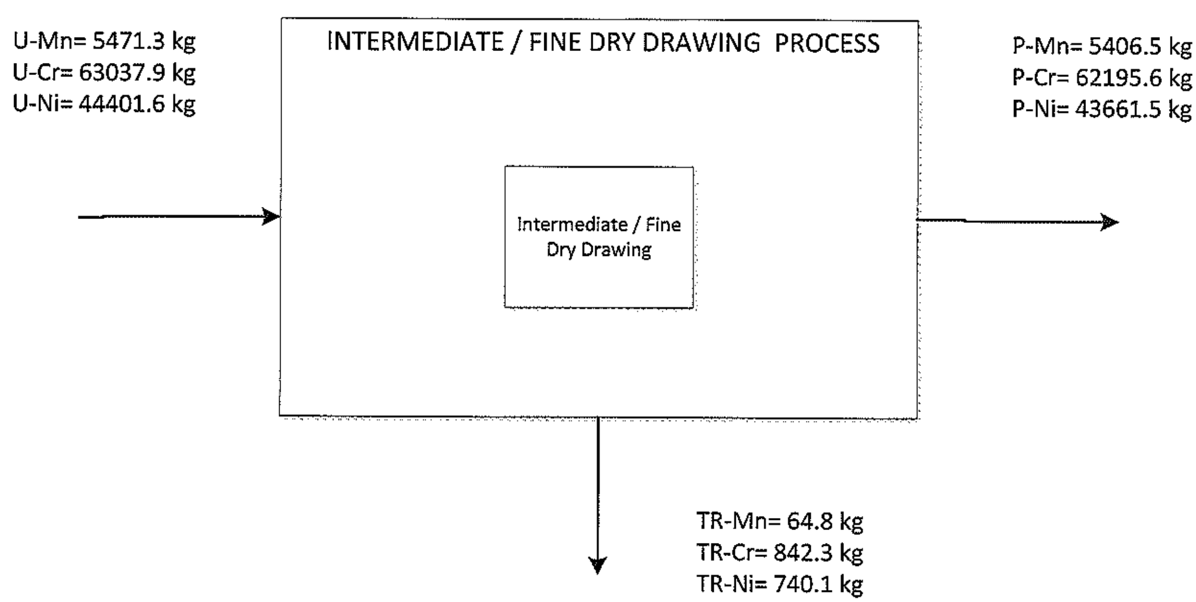

Quantification of Toxic Substance Flow

Intermediate Annealing Process:

The toxic substances enter the process as a constituent of the raw material in concentrations specific to the grade of stainless steel being processed. **(Table 1)**

Quantification Method:

- Mass Balance – the amount of Mn, Cr, & Ni are known to be the same amount contained in product following the Intermediate Annealing process.

$U\text{-}_{Mn} = U_{13} + TR_{13}$ $U\text{-}_{Cr} = U_{14} + TR_{14}$ $U\text{-}_{Ni} = U_{15} + TR_{15}$

$U\text{-}_{Mn}$ = 5746.5kg+ 0kg $U\text{-}_{Cr}$ = 40407.1kg+ 0kg $U\text{-}_{Ni}$ = 4953.6kg+0kg

Manganese (Mn) used in this process in 2011: 5,746.5kg

Chromium (Cr) used in this process in 2011: 40,407.1kg

Nickel (Ni) used on this process in 2011: 4953.6kg

Significant change to the dimensional and mechanical properties occurs at this stage hence transfers for offsite recycling. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

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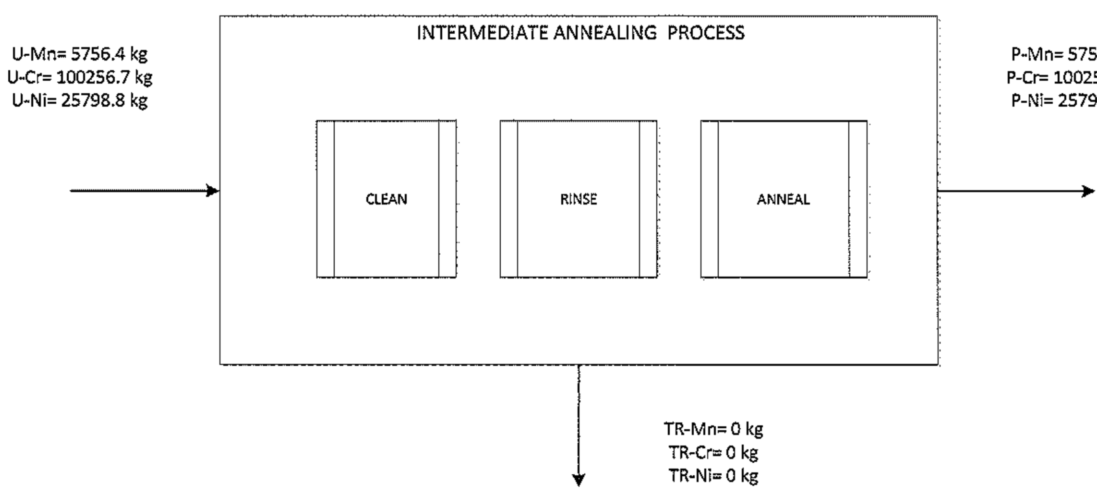

Quantification of Toxic Substance Flow

Burnishing Process:

The toxic substances enter the process as a constituent of the raw material in concentrations specific to the grade of stainless steel being processed. **(Table 1)**

Quantification Method:

- Mass Balance – the amount of Mn, Cr, & Ni are known to be the same amount contained in product following the Burnishing process.

$U_{-Mn} = U_{16} + TR_{16}$ $U_{-Cr} = U_{17} + TR_{17}$ $U_{-Ni} = U_{18} + TR_{18}$

U_{-Mn} = 155.1kg+17.2kg U_{-Cr} = 1,473.9kg+295.7kg U_{-Ni} = 713.7kg+289.9kg

Manganese (Mn) used in this process in 2011: 172.3kg

Chromium (Cr) used in this process in 2011: 1769.6kg

Nickel (Ni) used on this process in 2011: 1003.5kg

Significant change to the dimensional or mechanical properties occurs at this stage hence minimal transfers for offsite recycling. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

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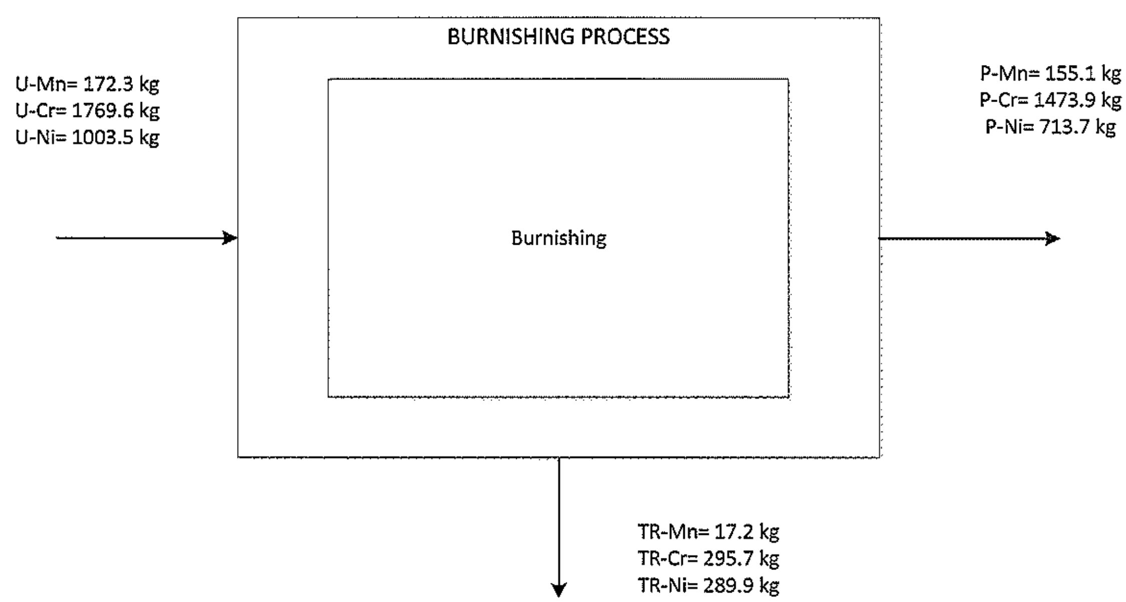


Coiling / Spooling Process:

The toxic substances enter the process as a constituent of the raw material in concentrations specific to the grade of stainless steel being processed. **(Table 1)**

Quantification Method:

- Mass Balance – the amount of Mn, Cr, & Ni are known to be the same amount contained in product following the Coiling / Spooling process.

$U_{-Mn} = U_{19} + TR_{19}$	$U_{-Cr} = U_{20} + TR_{20}$	$U_{-Ni} = U_{21} + TR_{21}$
$U_{-Mn} = 1877.8kg+113.2$	$U_{-Cr} = 1{,}473.9kg+295.7kg$	$U_{-Ni} = 713.7kg+289.9kg$

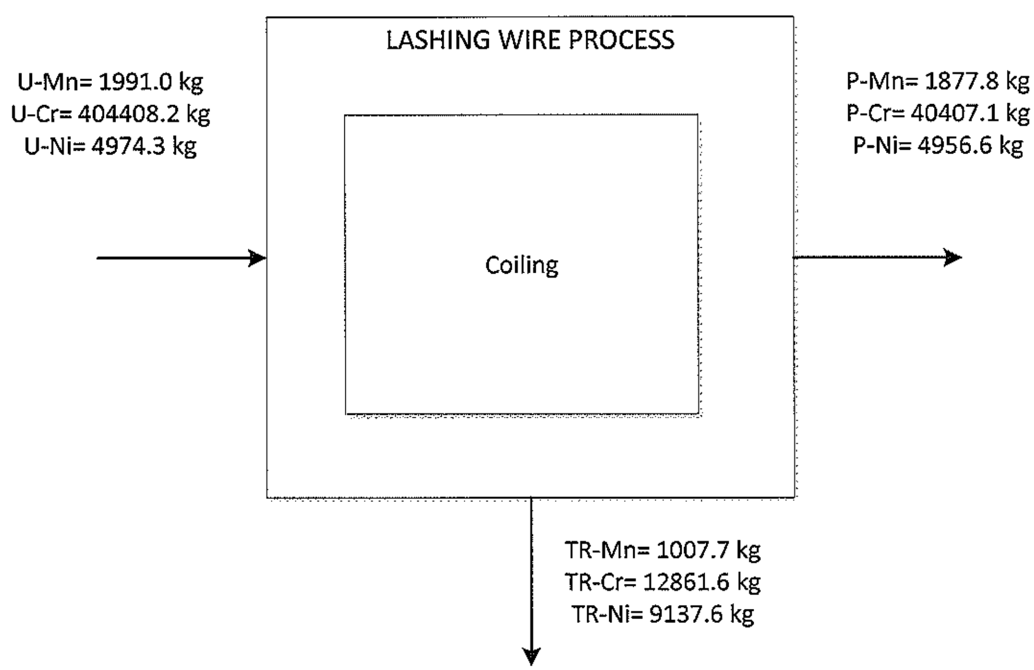
Manganese (Mn) used in this process in 2011: 172.3kg

Chromium (Cr) used in this process in 2011: 1769.6kg

Nickel (Ni) used on this process in 2011: 1003.5kg

No Significant change to the dimensional or mechanical properties occurs at this stage hence minimal transfers for offsite recycling. The toxic substances are present as a component of product and are neither created, added nor removed from the bulk metal.

Use + Creation = Transformed + Destroyed + Contained in Product + On site / Off site Release (to Air, Land, Water) + Offsite Transfer (for treatment, recycling)



Costs Associated With the Production of Toxic Substances at Central Wire (Erin) - 2011

Costs Associated With Manganese, Chromium & Nickel

Direct Costs		Mn	Cr	Ni
Personnel - Direct	$1,062,700.00	$15,940.50	$201,913.00	$122,210.50
Utilities	$604,700.00	$9,070.50	$114,893.00	$69,540.50
Dies & Tubes	$158,600.00	$2,379.00	$30,134.00	$18,239.00
Supplies	$474,200.00	$7,113.00	$90,098.00	$54,533.00
Other Direct	$24,300.00	$364.50	$4,617.00	$2,794.50
Direct Prod. Costs	$2,330,000.00	$34,950.00	$442,700.00	$267,950.00
Manufacturing Costs				
Personnel - Mfg./SGA	$995,400.00	$14,931.00	$189,126.00	$114,471.00
Operating Costs	$295,300.00	$4,429.50	$56,107.00	$33,959.50
General Costs	$939,200.00	$14,088.00	$178,448.00	$108,008.00
Manufacturing Costs	$2,229,900.00	$33,448.50	$423,681.00	$256,438.50
Total Dir. & Mfg Costs	**$4,559,900.00**	**$68,398.50**	**$866,381.00**	**$524,388.50**

Costs Associated With the Transfer of Toxic Substances at Central Wire (Erin) - 2011

ITEM	Qty	Unit	Unit Cost	Total	Notes
Transfers	61,690	Kg			
TSRA Transfers	16,382.5	Kg			
Direct Labour	1,091.17	Hr	$28.00	$30,552.00	Produce 124.3 lbs/ Lbr Hr. (56.5 Kg/ Lbr Hr)
Direct Labour TSRA Substances	289.9	Hr	$28.00	$8,118.76	
Indirect Labour	130.0	Hr	$28.00	$3,640.00	Transfer cost 2.5 hrs / week
Electricity (TSRA)	16,382.5	Kg	$0.188	$3,079.91	Annual $461,154
Gas (TSRA)	16,382.5	Kg	$0.062	$1,015.71	Annual $151,745
Total Consumed	2,686,645	Kg			
Cost of TSRA Transfers				-$15,854.38	
Total Revenue from Transfers	61561.6	Kg	$2.31	$142,191.76	
Total Revenue from Contaminants	16382.5	Kg	$0.62	$10,027.79	
Transfer Revenue (Mn Content)	989	Kg	$0.04	$15.46	
Transfer Revenue (Cr Content)	9707	Kg	$0.40	$4,312.81	
Transfer Revenue (Ni Content)	5687	Kg	$0.20	$1,052.63	
Transfer Revenue				10,027.79	
Net Cost(-)/Gain(+)				-$5,826.48	

Table 2 Identification and Option Description in Seven Categories for Reducing use of Mn, Cr & Ni

Category	Option	Technical Feasibility
1. **Materials or Feedstock Substitution:**	*Option 1:* Offer to customers' material containing less of the substances (Ni, Cr, Mn).	The toxic substances identified in Central Wire's operations are components contained in the feedstock give each alloy specific properties which in turn lend the material to its specific end use. Offering material with lower Ni, Cr, Mn content would not satisfy the customer's specifications nor application. The substances (Ni, Cr, Mn) are not added, created nor transformed during our processes but pass through as a component of the alloys. Therefore material or feedstock substitution is not a technically feasible option.
2. **Product Design or Reformulation:**	*Option 2:* Design new alloys with reduced content of the toxic substances manganese, chromium and nickel.	Central Wire does not add, create or transform the contaminants they are present as a component of product. Central uses alloys that are produced to recognized international standards. If a reformulation were to take place the material would no longer conform to the international standards, the characteristics that make an alloy suitable for its intended application would also be compromised making our products unsuitable for sale to the market place. Therefore this option is not technically feasible.
3. **Equipment or Process Modifications:**	*Option 3:* Modify drawing and annealing equipment to use less of the contaminants.	Central Wire's equipment does not create, add or transform manganese, chromium or nickel. The equipment is used to manufacture wire to customer required dimensional & mechanical properties.

	Option 4: Alter current processes to reduce the use manganese, chromium and nickel.	Central Wire's equipment does not create, add or transform manganese, chromium or nickel. The equipment is used to manufacture wire to customer required dimensional & mechanical properties.
4. Spill & Leak Prevention:	*No options identified in this category.*	Leaks and spills of our product are not an inherent risk. The materials used in Central Wires operations are in a continuous solid strand, there are no spurious losses to the environment. The identified substances Nickel, Chrome, Manganese are a component of the solid. No technically feasible options for spill & leak prevention.
5. On Site Reuse or Recycling:	*Option 5:* On site processes to identify reuse / recycling opportunities.	The nature of Central Wire's process does allow opportunities to rework off spec product. Documented procedures are in place within the Quality management System that control the use of off spec or non-conforming material to be further processed. Products that are identified as non conforming for its intended use are segregated and identified in a separate inventory. The inventory is reviewed for suitable feedstock for an alternate item Waste materials are collected, quantified and separated based on alloy composition and recycled offsite. There are no releases to land air or water. On site reuse is a monitored process and reduces the offsite transfers and limits the need to purchase replacement raw materials. It is not technically feasible to increase the amount of onsite reuse recycling / recycling as it is already in place and implemented to its fullest extent.

6. Improved Inventory Management:	*Option 6:* Minimize the amount of manganese, chromium and nickel bearing materials inventoried.	Inventories levels are related to customer demand, market pricing and strategic purchasing. It is not technically feasible to reduce the amount of manganese, chromium or nickel.
7. Training or Improved Operating Practices:	*Option 7:* Improve the documented training processes to provide operators with skills to operate equipment efficiently, key components of the program are education on minimizing scrap and non-conforming product.	Operating practices do not impact the amounts of manganese, chromium and nickel used in Central Wire's operations. It is not a technically feasible option to reduce the use of toxic substances in our operations.
	Option 8: Scheduling maximizes the opportunities to sequence job orders of similar alloys and diameters to minimizing set-up scrap.	Scheduling is based on customer orders and lead time. It is not technically feasible option for scheduling to reduce the use of toxic substances.

Technical Feasibility of Options:

The technical feasibility of reduction options offered under the seven toxic substance reduction categories was reviewed. The use of toxic substances at Central Wire is customer driven and the contaminants themselves are contained in product no technically feasible options progressed to the financial feasibility stage.

Planner Recommendation and Rationale

Central Wire Industries – Erin

Central Wire Industries Ltd. manufactures stainless steel wire, nickel alloy wire and related products from various metals as specified by their customers. Chromium, Manganese and Nickel make up a percentage of the steel and nickel alloys used to make the wire they processed last year.

A master toxic substance reduction plan for Chromium, Manganese and Nickel was prepared by the General Manager, Al McMillan. Mr. McMillan is knowledgeable about the operations at the facility he manages and is also a Licensed Toxic Substance Reduction Planner.

The stages and processes identified in the report reflect the site operations. Earlier versions of the plan did not identify the Stages but Mr. McMillan corrected this omission. It was noted that the Clean & Coat process flow did not have any material transferred off-site for recycling but Mr. McMillan wanted to include it because it is possible for this to occur (it just didn't in 2011). It was noted that convention is to refer to off-site transfers to recycling as TR on process flows as opposed to T (indicating material transformation). It is clear that chromium, manganese and nickel are used in production because they are a part of the metal and achieve certain performance requirements dictated by the customers.

The data used for the toxic substance accounting was calculated from known material specifications from suppliers, purchasing data, and recycled metal weights. It assumed no other loss which is reasonable. The data and toxic substance accounting and input/output balances are equal because material is weighed as it enters the facility and as it flows through the processes.

An earlier version of the plan was missing direct and indirect costs associated with the use of the toxins. These have been added and are well known since all the activity at the site centers on creating wire products and would have been incurred regardless of the use of the toxic substance. The breakdown in costs was proportionate to the percentage of chromium, manganese and nickel. Additional costs that could have been added are costs to prepare the NPRI and TRPs for the facility.

An earlier version of the plan did not clearly identify options for reduction for each of the required categories or why they were not technically feasible. Mr. McMillan added this explanation.

An option for reduction that was not explored in depth was discussing the possibility of choosing raw materials with reduced chromium, manganese and nickel levels. This may be a complex option to implement since materials are ordered for individual jobs. It may be possible to identify higher volume raw material which is ordered regularly that could be analysed for options with less chromium, manganese and nickel. In addition, machine specific scrap data might help identify equipment or procedural opportunities for reductions. Starting with the processes with the highest material scrap rates, it may be possible to quantify improvements that directly relate to using less raw material. It should be noted that Central Wire is a very lean environment and a facility wide scrap reduction goal of having less scrap that the previous year as a percentage of total material processed does exist.

The reduction estimates and economic feasibility analyses were not generated because there were no technically feasible options identified.

CERTIFICATION BY HIGHEST RANKING EMPLOYEE

As of December 11, 2012 I, Alasdair McMillan, certify that I have read the toxic substance reduction plan for the toxic substances 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 the Act.

Manganese

Chromium

Nickel

Al McMillan

General Manager

Central Wire Industries Ltd. (Erin)

CERTIFICATION BY LICENSED PLANNER

As of December 11, 2012, I Laura Rourke, certify that I am familiar with the processes at Central Wire Industries Ltd. (Erin) 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 plan dated December XX, 2012 and the plan complies with the act and Ontario Regulation 455/09 (General) made under the act.

Manganese

Chromium

Nickel

Planner License# TSRP0101

Hummingbird Environment Safety & Health