



# Technical Memorandum

September 30, 2021

<b>To</b>	Mark Hammond	<b>Tel</b>	519-340-3794
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<b>From</b>	Matt Griffin	<b>Ref. No.</b>	017211-MEM-22
<b>Subject</b>	Documentation Report for 2020 Reporting Year National Pollutant Release Inventory, Greenhouse Gas and Toxics Reduction Act Reporting Raytheon ELCAN Optical Technologies, Midland, Ontario		

This memorandum has been prepared to provide documentation for the National Pollutant Release Inventory (NPRI), Toxics Reduction Act (TRA) and Greenhouse Gas (GHG) reporting for 2020 for the Raytheon ELCAN Optical Technologies (ELCAN) Plant 1 facility in Midland, Ontario.

The memorandum is summarized in the following sections:

1. NAICS Code Classification
2. NPRI Applicability
3. Manufacture, Process, or Otherwise Use Threshold Determinations
4. NPRI CAC Air Emission Release Estimates
5. Environment Canada GHG Summary
6. Ontario GHG Reporting
7. Toxics Reduction Act, O. Reg. 455/09
8. Section A Administrative Information
9. Conclusions
10. Next Steps – TRA

Additional documents are attached and include:

- Attachment 1 – 2020 Confirmation of Report Submission
- Attachment 2 – 2020 NPRI Inventory Report

## 1. NAICS Code Classification

ELCAN is a manufacturer of complex, precision opto-mechanical and electro-optical systems and subsystems for projection display. Activities include machining, assembly, warehouse and painting operations. The North American Industry Classification System (NAICS) Code that applies to this Facility is 333310 – Commercial and Service Industry Machinery Manufacturing.

## 2. NPRI Parts 1, 2, 3 Applicability

As of January 1, 2020 Reg. 127 has been revoked. ELCAN uses acetone and was previously Reg. 127 reportable, however ELCAN is not required to report acetone usage for the 2020 reporting year.

The Facility will be required to calculate and report the emissions of substances listed in NPRI annually only if both of the following criteria are met:

- The equivalent of 20,000 hours of labour or more annually (equal to 10 full time employees).
- Any substance in NPRI has manufactured, process or otherwise used (MPO) quantities that are equal to or greater than the corresponding MPO threshold identified in NPRI.

Since the Facility employs more than 10 people, the first criterion is met. The Facility used compounds listed on NPRI as raw materials during the 2020 reporting year and summarized in Table 1. Therefore, NPRI MPO criteria were assessed and summarized in Table 1. The compounds that exceed the MPO thresholds as specified with a "Yes" are therefore reportable. Selenium and Lead was determined to be reportable under NPRI Part 1.

## 3. Manufacture, Process, or Otherwise Use Threshold Determinations

Raw materials used by ELCAN in 2020 consisted of a variety of chemical and welding products as well as lens material. The usage rates of each of the chemicals contained in the materials used are listed in Table 1.

The MPO quantities for the Facility were compared with the NPRI MPO thresholds to determine reporting status. The MPO quantities for total selenium and total lead (NPRI Part 1B) exceed the NPRI thresholds and are therefore, reportable. The NPRI reportable quantities are summarized on Table 1.

## 4. NPRI CAC Air Emission Release Estimates

The quantities of NPRI Criteria Air Contaminants (CAC) from natural gas combustion are determined using an emission factor calculation methodology and the monthly natural gas consumption provided by ELCAN, and is summarized in Table 2.

Volatile organic compounds (VOCs) released from chemical usages are identified as all compounds used which meet the criteria of an organic compound, as per the NPRI definition. It has been conservatively assumed that 100 percent of all VOCs are emitted to the atmosphere. The total VOCs released are included on Table 2.

Since the VOC threshold has been exceeded, the Part 5 NPRI Speciated VOCs must be assessed for additional reporting requirements. As shown in Table 3, the Facility is reportable for 2-Propanol under Part 5 VOCs.

2.5 µm Particulate Matter (PM<sub>2.5</sub>) releases from the spray booths sent through a filter system prior to being released to the atmosphere – the total releases are estimated based on the summation of the total solids contained in materials used within the spray booths (identified by ELCAN) and the filter efficiency of 99.1 percent. The emissions from lens usage are based on 3.1 percent of total usage emitted as total PM, with 25 percent of that emitted as PM<sub>10</sub> and 1 percent emitted as PM<sub>2.5</sub> as based on previous testing. The 10 µm Particulate Matter (PM<sub>10</sub>) emissions generated from process welding are calculated based on an AP-42 emission factor for Gas Metal Arc Welding, Chapter 12.19. The particulate matter emission releases are summarized on Table 2.

## **5. Environment Canada GHG Summary**

Federally, Facilities must report their GHG emissions to Environment Canada if they exceed 10,000 tonnes carbon dioxide equivalent (CO<sub>2</sub>e).

The federal reporting requirements and sources to include in the reporting are described in the Canada Gazette. ELCAN does not exceed the reporting threshold and therefore is not required to report GHG emissions to Environment Canada. The applicability threshold determination is presented in Table 4A.

## **6. Ontario GHG Reporting**

Facilities are required to report in June 2021 for the 2020 calendar year emissions if they exceed 10,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e). The regulation sets out sources that must be included in the threshold determination as well as reporting requirements.

The ELCAN sources included are stationary combustion sources. ELCAN's GHG emissions do not exceed the threshold, therefore the Facility is not required to report GHG emissions to the Ministry of the Environment. The applicability determination is presented in Table 4B.

## **7. Toxics Reduction Act Reporting**

The TRA and Regulation 455/09 applies to manufacturing (NAICS 31-33) and select mining/processing facilities that employ more than an equivalent of 10 full-time persons, and who use or create materials regulated by the NPRI.

ELCAN's NAICS Code is 333310 – Commercial and Service Industry Machinery Manufacturing and the Facility is NPRI Reportable for the 2020 reporting year; therefore, ELCAN is currently applicable under the Act.

The reporting thresholds for the Toxics Reduction Act are harmonized with the NPRI reporting thresholds, meaning that ELCAN is reportable for the following compounds in 2020 (total VOCs are not applicable under the TRA):

- Total Selenium (CAS# NA-12)
- Total Lead (CAS# NA-08)

The NPRI and TRA reportable quantities are summarized in Table 5.

## **8. Section A Administrative Information**

The administrative information provided by ELCAN is summarized in Table 6.

## **9. Conclusions**

ELCAN is reportable to NPRI for total selenium, total lead, Total VOCs, and 2-Propanol. These compounds are also reportable under TRA (except for Total VOCs and 2-Propanol).

A summary of administrative information for the Facility is provided in Table 6.

A summary of the change of NPRI and TRA reportable quantities from the year 2020 to 2021 is provided in Tables 7A through Table 7E.

## 10. Next Steps – TRA

ELCAN is required to make available to the public on the internet, and provide to a member of the public upon written request, the information reported to the Toxics Reduction Act in accordance with Section 27 of O. Reg. 455/09. A NPRI/TRA Public Reporting Summary for ELCAN is provided in Attachment 2.

Should you have any questions on the above, please do not hesitate to contact our office.

Regards

A handwritten signature in blue ink, appearing to read "Matthew Griffin".

**Matthew Griffin**  
Engineering Leader

Encl.

Table 1

**MPO Threshold Table  
ELCAN Optical Technologies  
Midland, Ontario**

Substance	CAS	Usage from Chemicals (kg)	Usage from Lenses (kg)	Usage from Welding (kg)	Total Usage <sup>(1)</sup> (kg)	Threshold (kg)	Report (Yes/No)	Table ID
Ethylbenzene	100-41-4	5.02	0.00		5.02	10,000	No	1A
Styrene Monomer	100-42-5	4.95	0.00		4.95	10,000	No	1A
4,4'-Diphenylmethane Diisocyanate	101-68-8	38.08	0.00		38.08	10,000	No	1A
4,4 - Methylene dianiline	101-77-9	0.00	0.00		0.00	10,000	No	1A
1,2 Epoxybutane	106-88-7	0.00	0.00		0.00	10,000	No	1A
Epichlorohydrin	106-89-8	0.00	0.00		0.00	10,000	No	1A
Ethylene Glycol	107-21-1	0.16	0.00		0.16	10,000	No	1A
Methyl Isobutyl Ketone	108-10-1	7.56	0.00		7.56	10,000	No	1A
Toluene	108-88-3	15.44	0.00		15.44	10,000	No	1A
Monochlorobenzene	108-90-7	12.10	0.00		12.10	10,000	No	1A
Phenol	108-95-2	0.15	0.00		0.15	10,000	No	1A
Ethylene glycol methyl ether	109-86-4	0.33	0.00		0.33	10,000	No	1A
Tetrahydrofuran	109-99-9	0.00	0.00		0.00	10,000	No	1A
Hexane	110-54-3	1.18	0.00		1.18	10,000	No	1A
2-Ethoxyethanol	110-80-5	2.20	0.00		2.20	10,000	No	1A
Cyclohexane	110-82-7	0.00	0.00		0.00	10,000	No	1A
Diethanolamine	111-42-2	48.50	0.00		48.50	10,000	No	1A
2-Butoxyethanol	111-76-2	0.33	0.00		0.33	10,000	No	1A
Propylene	115-07-1	0.00	0.00		0.00	10,000	No	1A
Hydroquinone	123-31-9	0.23	0.00		0.23	10,000	No	1A
ethene, 1,1,2,2-tetrachloro-	127-18-4	0.15	0.00		0.15	10,000	No	1A
Xylene Isomers Mixture	1330-20-7	125.49	0.00		125.49	10,000	No	1A
Alumina /Aluminum Oxide	1344-28-1	8.39	57.55		65.94	10,000	No	1A
2-Mercaptobenzothiazole	149-30-4	0.00	0.00		0.00	10,000	No	1A
Toluene diisocyanate	26471-62-5	0.03	0.00		0.03	100	No	1B
Formaldehyde	50-00-0	0.00	0.00		0.00	10,000	No	1A
Dicyclohexylmethane-4,4'-Diisocyanate	5124-30-1	0.68	0.00		0.68	10,000	No	1A
Toluene-2,4-diisocyanate	584-84-9	0.01	0.00		0.01	100	No	1B
Methyl Alcohol	67-56-1	44.19	0.00		44.19	10,000	No	1A
2-Propanol	67-63-0	1,013.40	0.00		1,013.40	10,000	No	1A
n-Butanol	71-36-3	4.52	0.00		4.52	10,000	No	1A
Aluminum	7429-90-5	3.83	0.00		3.83	10,000	No	1A
Methylene Chloride	75-09-2	0.00	0.00		0.00	10,000	No	1A
2-methyl-2-propanol	75-65-0	0.00	0.00		0.00	10,000	No	1A
Hydrogen Fluoride	7664-39-3	5.95	0.00		5.95	10,000	No	1A
Ammonia	7664-41-7	9.52	0.00		9.52	10,000	No	1A
Sulfuric acid	7664-93-9	825.53	0.00		825.53	10,000	No	1A
Sodium Fluoride	7681-49-4	0.00	0.00		0.00	10,000	No	1A
Nitric Acid	7697-37-2	195.53	0.00		195.53	10,000	No	1A
Fluorine	7782-41-4	0.00	0.90		0.90	10,000	No	1A
Chlorine	7782-50-5	0.00	0.00		0.00	10,000	No	1A
Calcium Fluoride	7789-75-5	0.00	1.28		1.28	10,000	No	1A
2-methylpropan-1-ol	78-83-1	0.00	0.00		0.00	10,000	No	1A
Butyl Alcohol	78-92-2	0.77	0.00		0.77	10,000	No	1A
Methyl Ethyl Ketone	78-93-3	19.38	0.00		19.38	10,000	No	1A
Acrylic acid	79-10-7	0.59	0.00		0.59	10,000	No	1A
Bisphenol A	80-05-7	0.11	0.00		0.11	100	No	1B
Cumene hydroperoxide	80-15-9	0.13	0.00		0.13	10,000	No	1A
Methyl Methacrylate	80-62-6	120.12	0.00		120.12	10,000	No	1A
Dibutyl phthalate	84-74-2	0.16	0.00		0.16	10,000	No	1A
4-Nonylphenol	84852-15-3	6.48	0.00		6.48	10,000	No	1A
Butyl Benzyl Phthalate	85-68-7	0.00	0.00		0.00	10,000	No	1A
1-Methyl-2-Pyrrolidone	872-50-4	0.93	0.00		0.93	10,000	No	1A
Polymeric Diphenylmethane Diisocyanate	9016-87-9	5.38	0.00		5.38	10,000	No	1A
Naphthalene	91-20-3	0.22	0.00		0.22	10,000	No	1A
Dibenzoyl Peroxide	94-36-0	0.60	0.00		0.60	10,000	No	1A
5-Sulphosalicylic Acid	95-05-2	0.00	0.00		0.00	10,000	No	1A
1,2,4-Trimethylbenzene	95-63-6	0.10	0.00		0.10	10,000	No	1A
Cumene	98-82-8	0.04	0.00		0.04	10,000	No	1A
Antimony Trioxide	1309-64-4	0.12	3.87		3.33			
Antimony	7440-36-0	0.34	0.00		0.34			
Rutile, Antimony Chromium Buff	68186-90-3	0.00	0.00		0.00			
Total Antimony	NA-01				3.67	10,000	No	1A
Arsenic Trioxide	1327-53-3	0.00	12.31		9.32			
Total Arsenic	NA-02				9.32	50	No	1B
Cadmium Oxide	1306-19-0	0.00	0.00		0.00			
Total Cadmium	NA-03				0.00	5	No	1B

Table 1

**MPO Threshold Table  
ELCAN Optical Technologies  
Midland, Ontario**

Substance	CAS	Usage from Chemicals (kg)	Usage from Lenses (kg)	Usage from Welding (kg)	Total Usage <sup>(1)</sup> (kg)	Threshold (kg)	Report (Yes/No)	Table ID
CR2O3	1308-38-9	0.69	0.00		0.48			
Calcium dichromate	14307-33-6	0.00	0.00		0.00			
Chromium, elemental	7440-47-3	3.00	0.00	0.77	3.77			
Zinc Chromates	49663-84-5	0.00	0.00		0.00			
Rutile, Antimony Chromium Buff	68186-90-3	0.00	0.00		0.00			
C.I.#77343 Cobalt chromite Blue Green Spinel	68187-11-1	0.00	0.00		0.00			
Cobalt Chromite Green Spinel	68187-49-5	1.34	0.00		0.22			
Hematite, Chromium Green Black	68909-79-5	0.00	0.00		0.00			
Silica Chromium Oxide	7631-86-9	5.08	0.00		5.08			
Strontium Chromate	7789-06-2	0.20	0.00		0.05			
Total Chromium	NA-04				9.60	10,000	No	1A
cobalt bis(2-ethylhexanoate)	136-52-7	0.00	0.00		0.00			
neodecanoic acid, cobalt salt	27253-31-2	0.00	0.00		0.00			
C.I.#77343 Cobalt chromite Blue Green Spinel	68187-11-1	0.00	0.00		0.00			
Cobalt Chromite Green Spinel	68187-49-5	1.34	0.00		0.25			
Total Cobalt	NA-05		0.00		0.25	50	No	1A
Copper	7440-50-8	6.72	0.00	0.00	6.72			
Total Copper	NA-06				6.72	10,000	No	1A
Lead Dioxide	1309-60-0	5.96	0.00		5.16			
Lead Oxide	1317-36-8	1.02	56.15		53.07			
Lead	7439-92-1	3.79	0.00		3.79			
Total Lead	NA-08				62.02	50	Yes	1B
Manganese Dioxide	1313-13-9	0.90	0.00		0.57			
Manganese	7439-96-5	0.00		0.50	0.50			
Total Manganese	NA-09				1.07	10,000	No	1A
Nickel (II) Acetate	373-02-4	0.20	0.00		0.07			
Nickel	7440-02-0	150.88	0.00	1.82	152.70			
Nickel acetate, tetrahydrate	6018-89-9	0.00	0.00		0.00			
Sulfuric acid, nickel	7786-81-4	83.16	0.00		31.54			
Total Nickel	NA-11				184.31	10,000	No	1A
Phosphine oxide derivat	75980-60-8	0.02	0.00		0.00			
Phosphoric Acid	7664-38-2	625.62	0.00		197.71			
Aluminum dihydrogen triphosphate	13939-25-8	0.00	0.00		0.00			
Phosphate	14265-44-2	0.00	0.00		0.00			
Potassium Phosphate Salt	7320-34-5	0.00	0.00		0.00			
Tetrasodium Pyrophosphate	7722-88-5	0.00	0.00		0.00			
Sodium Tripolyphosphate	7758-29-4	22.38	0.00		5.65			
Zinc Phosphate	7779-90-0	0.84	0.00		0.14			
Phosphoric acid, triethyl ester triethyl phosphate	78-40-0	1.23	0.00		0.21			
Tri(Butoxyethyl) phosphate	78-51-3	0.00	0.00		0.00			
Total Phosphorus	7723-14-0	0.00			203.71	10,000	No	1A
Zinc Selenide	1315-09-9	0.00	188.77		103.27			
Selenium Oxide	7446-08-4	0.00	2.09		1.49			
<b>Total Selenium</b>	<b>NA-12</b>				<b>104.76</b>	<b>100</b>	<b>Yes</b>	<b>1B</b>
Silver	7440-22-4	25.20	0.00		25.20			
Silver Nitrate	7761-88-8	0.00	0.00		0.00			
Total Silver	NA-13				25.20	10,000	No	1A
Zinc Chromate Pigment	11103-86-9	3.05	0.00		1.10			
Zinc Oxide	1314-13-2	0.03	229.25		184.17			
Zinc Sulfide	1314-98-2	0.00	53.24		35.72			
Zinc Selenide	1315-09-9	0.00	188.77		85.50			
Zinc	7440-66-6	0.34	0.00		0.34			
Zinc Chromates	49663-84-5	0.00	0.00		0.00			
Zinc-5-nitro isophthlate	60580-61-2	0.00	0.00		0.00			
Zinc Phosphate	7779-90-0	0.84	0.00		0.43			
Zinc Compound	Proprietary	140.82	0.00		140.82			
Total Zinc	NA-14				307.26	10,000	No	1A
Chromium (VI) Oxide	1333-82-0	0.00	0.00		0.00			
Chromium VI	18540-29-9	0.00	0.00	0.01	0.01			
Total Cr-VI	NA-19				0.01	50	No	1A

## Note:

(1) Total usage is summation of usage from chemical products, from lenses and from welding. Calculation of individual compounds have been calculated separately - the detailed calculations can be provided upon request.

Table 2

**Natural Gas Combustion CAC Release Estimates  
ELCAN Optical Technologies  
Midland, Ontario**

Compound	USEPA AP-42 Emission Factor (kg/10 <sup>6</sup> m <sup>3</sup> ) <sup>(1)</sup>	Estimated Annual Emission Rate (kg/yr)	NPRI Reporting Threshold (kg/yr)	NPRI Reportable?
Carbon Monoxide	1,344	350	20,000	No
Oxides of Nitrogen (expressed as NO <sub>2</sub> )	1,600	417	20,000	No
Oxides of Nitrogen (NO)	1,600	272		
Sulphur Dioxide	9.6	2.5	20,000	No
Particulate Matter <sup>(2)</sup>				
Natural Gas	30	8		
Spray Booths <sup>(5)</sup>		3		
Lenses <sup>(6)</sup>		241		
Welding <sup>(7)</sup>		0.4		
Total		253	20,000	No
10µm Particulate Matter <sup>(2, 3)</sup>				
Natural Gas	30	8		
Spray Booths <sup>(5)</sup>		3		
Lenses <sup>(6)</sup>		60		
Welding <sup>(7)</sup>		0.4		
Total		72	500	No
2.5µm Particulate Matter <sup>(2, 3)</sup>				
Natural Gas	30	8		
Spray Booths <sup>(5)</sup>		3		
Lenses <sup>(6)</sup>		2		
Welding <sup>(7)</sup>		0.3		
Total		14	300	No
VOC				
Natural Gas	88	23		
Chemical Usage <sup>(8)</sup>		14,594		
Total		<b>14,617</b>	<b>10,000</b>	<b>Yes</b>

## Notes:

- (1) Emission Factors are from USEPA AP-42 for boilers < 100MMBtu.
- (2) Based on Facility-wide natural gas combustion, welding, and painting.
- (3) PM<sub>2.5</sub> is a subset of PM<sub>10</sub>, and PM<sub>10</sub> is a subset of PM.
- (4) AP-42 defines natural gas combustion particulate emissions as less than 2.5 µm.
- (5) Assumed that 1% of solids contained in sprayed products are released as PM<sub>2.5</sub>.
- (6) Assumed that 3.1% of lens material is released as PM. 25% of PM is assumed to be PM<sub>10</sub>, and 1% of PM is released as PM<sub>2.5</sub>.
- (7) USEPA AP 42 emission factors from Chapter 12.19 for welding used for PM<sub>10</sub> from welding. Further assumed 75% of PM<sub>10</sub> releases are PM<sub>2.5</sub>.
- (8) VOC releases from chemical usage based on the sum of all chemical usages considered VOCs (as per Environment Canada's definition) and conservative assumption that 100% of these compounds are released to the atmosphere.

Table 3

**NPRI Part 5 Threshold Table  
ELCAN Optical Technologies  
Midland, Ontario**

<b>Substance</b>	<b>CAS</b>	<b>Total Usages (kg) <sup>(1)</sup></b>	<b>Threshold (kg)</b>	<b>Report (Yes/No)</b>
Styrene Monomer	100-42-5	4.95	1,000	No
Methyl Isobutyl Ketone	108-10-1	7.56	1,000	No
Prop. Gly. Methyl Ether Acetate	108-65-6	7.85	1,000	No
Toluene	108-88-3	15.44	1,000	No
Tetrahydrofuran	109-99-9	0.00	1,000	No
Hexane	110-54-3	1.18	1,000	No
2-Butoxyethanol	111-76-2	0.33	1,000	No
Propylene	115-07-1	0.00	1,000	No
Xylene Isomers Mixture	1330-20-7	125.49	1,000	No
Ethyl acetate	141-78-6	342.96	1,000	No
Formaldehyde	50-00-0	0.00	1,000	No
Ethyl alcohol	64-17-5	9,092.12	1,000	(2)
Aliphatic Hydrocarbon	64742-47-8	3.61	1,000	No
Petroleum Distillates	64741-65-7	0.00	1,000	No
VM & P Naptha	64742-48-9	0.45	1,000	No
VM&P naphtha	64742-89-8	5.09	1,000	No
Aromatic Hydrocarbons	64742-94-5	0.18	1,000	No
Solvent naphtha (petroleum), light arom	64742-95-6	4.71	1,000	No
Methyl Alcohol	67-56-1	44.19	1,000	(2)
2-Propanol	67-63-0	1,013.40	1,000	Yes
Propane	74-98-6	0.00	1,000	No
Methyl Ethyl Ketone	78-93-3	19.38	1,000	No
VM&P naphtha	8030-30-6	1.36	1,000	No
Ligroine	8032-32-4	0.00	1,000	No
Mineral oil	8042-47-5	242.50	1,000	No
Aliphatic Hydrocarbons	8052-41-3	3.22	1,000	No
1,2,4-Trimethylbenzene	95-63-6	0.10	1,000	No

## Notes:

(1) Emissions of individual VOCs have been estimated based on total usage of compound and assumption that 100% is emitted to the atmosphere. Detailed calculations of the usages are calculated separately and can be provided upon request.

(2) It is assumed that there are no releases to atmosphere from this product as it is 100% recycled on-Site



Table 4A

**Carbon Dioxide Equivalent Greenhouse Gas Summary - Federal  
ELCAN Optical Technologies  
Midland, Ontario**

<b>Compound</b>	<b>CAS No.</b>	<b>Annual Emission Rate (kg/yr)</b>	<b>Global Warming Potential Factor</b>	<b>CO<sub>2</sub> Equivalent Emission (kg/yr)</b>
Carbon Dioxide	124-38-9	500,701	1	500,701
Methane	74-82-8	10	25	240
Nitrous Oxide	10024-97-2	9	298	2,735
HFC-134A	811-97-2	0	1,430	0
<b>Total CO<sub>2</sub> Equivalent</b>				<b>503,677</b>
<b>Federal Reporting Criteria</b>				<b>10,000,000</b>
<b>Reportable (yes/no)?</b>				<b>No</b>

Table 4B

**Carbon Dioxide Equivalent Greenhouse Gas Summary - Ontario  
ELCAN Optical Technologies  
Midland, Ontario**

<b>Compound</b>	<b>CAS No.</b>	<b>Annual Emission Rate (kg/yr)</b>	<b>Global Warming Potential Factor</b>	<b>CO<sub>2</sub> Equivalent Emission (kg/yr)</b>
Carbon Dioxide	124-38-9	500,701	1	500,701
Methane	74-82-8	10	25	240
Nitrous Oxide	10024-97-2	9	298	2,735
HFC-134A	811-97-2	0	1,430	0
<b>Total CO<sub>2</sub> Equivalent</b>				<b>503,677</b>
<b>Ontario Reporting Criteria</b>				<b>10,000,000</b>
<b>Reportable (Yes/No)?</b>				<b>No</b>

**Table 5**  
**Summary of NPRI / TRA Reportable Quantities**  
**ELCAN Optical Technologies**  
**Midland, Ontario**

Reportable Substances	CAS No.	Units	NPRI Reportable Release Quantity		TRA Reportable Release Quantity		
			Air	Off-Site Disposal	Amount Used In Process	Amount Created in Process	Amount Contained in Product
<b>NPRI Part 1</b>							
Total Selenium	NA-12	(kg)	3.201	62.503 (1)	104.761	0.000	39.056
Total Lead	NA-08	(kg)	1.616	10.000 (2)	62.020	0.000	50.404
<b>NPRI Part 4</b>							
Total VOCs	NA	(tonne)	14.617	0.000	14.594	0.023	0.000
<b>NPRI Part 5</b>							
2-Propanol	67-63-0	(tonne)	1.013	0.000	1.013	0.000	0.000

Notes:

- (1) Selenium disposals based on total off-site disposals of "Chalcogenic glass", "Amtir/Zinc Selenide" and "Zinc Selenide Sludge", as tracked on ELCAN's Master Waste Summary.
- (2) Lead disposals based on total off-site disposals of "Lead Solder Scrap", as tracked on ELCAN's Master Waste Summary.

Table 6

**"Section A" Administrative Information  
ELCAN Optical Technologies  
Midland, Ontario**

**A1.0 Reporting Year, NPRI ID, Language and Web Site Address**

A1.1	NPRI ID	20-130-3419
A1.2	Language	English
A1.4	Web Site Address	
A1.5	Dun and Bradstreet (D-U-N-S) Number	24-703-0307
A1.6	Business Number (first 9 digits)	121772636

**A2.0 Facility Identification and Site Address**

A2.1	Company Name	ELCAN Optical Technologies
A2.2	Facility Name	
A2.3	Street Address	450 Leitz Road
A2.4	(Street Address 2)	
A2.5	City/District	Midland
A2.6	Province or Territory Code	ON
A2.7	Postal Code	L4R 5B8
A2.11	Does this Facility Have a Rural Address	No
A2.12	MOE ID	

**A3.0 Identification of Parent Companies**

P1.0	D&B D-U-N-S Number	24-703-0307
P1.1	% Ownership	100%
P1.2	Parent Company Name	Raytheon Canada Ltd.
P1.3	Address	360 Albert St. Suite 1640
P1.4	(Address)	
P1.5	City/District	Ottawa
P1.6	Province/Territory	Ontario
P1.7	Postal Code	K1R 7X7
P1.8	State	
P1.9	ZIP Code	
P1.10	Country	Canada
P1.12	Business Number (first 9 digits)	121772636

**A4.0 Facility Public Contact**

A4.1	Title (Mr./Ms./etc)	Mr.
A4.2	First Name	Mark
A4.3	Last Name	Hammond
A4.4	Position	Environmental, Health, Safety and Security Manager
A4.5	Phone	(705) 528-7133
A4.6	Phone Extension	
A4.7	Fax	(705) 528-7175
A4.8	e-mail address	<a href="mailto:mark.hammond@rtx.com">mark.hammond@rtx.com</a>

**A5.0 Facility Public Contact Address**

A5.1	Company Name	Same as Facility
A5.2	Facility Name	
A5.3	Mailing Address	
A5.4	(Mailing Address 2)	
A5.5	City/District	
A5.6	Province/Territory	
A5.7	Postal Code	
A5.8	State	
A5.9	ZIP Code	
A5.10	Country	

Table 6

**"Section A" Administrative Information  
ELCAN Optical Technologies  
Midland, Ontario**

**A6.0 Facility Technical Contact**

A6.1	Title (Mr./Ms./etc)	Mr.
A6.2	First Name	Mark
A6.3	Last Name	Hammond
A6.4	Position	Environmental, Health, Safety and Security Manager
A6.5	Phone	(705) 528-7133
A6.6	Phone Extension	
A6.7	Fax	(705) 528-7175
A6.8	e-mail address	<a href="mailto:mark.hammond@rtx.com">mark.hammond@rtx.com</a>

**A7.0 Facility Technical Contact Address**

A7.1	Company Name	Same as Facility
A7.2	Facility Name	
A7.3	Mailing Address	
A7.4	(Mailing Address 2)	
A7.5	City/District	
A7.6	Province/Territory	
A7.7	Postal Code	
A7.8	State	
A7.9	ZIP Code	
A7.10	Country	

**A8.0 Company Coordinator**

A8.1	Title (Mr./Ms./etc)	Mr.
A8.2	First Name	Mark
A8.3	Last Name	Hammond
A8.4	Position	Environmental, Health, Safety and Security Manager
A8.5	Phone	(705) 528-7133
A8.6	Phone Extension	
A8.7	Fax	(705) 528-7175
A8.8	e-mail address	<a href="mailto:mark.hammond@rtx.com">mark.hammond@rtx.com</a>

**A9.0 Company Coordinator Address**

A9.1	Company Name	Same as Facility
A9.2	Facility Name	
A9.3	Mailing Address	
A9.4	(Mailing Address 2)	
A9.5	City/District	
A9.6	Province/Territory	
A9.7	Postal Code	
A9.8	State	
A9.9	ZIP Code	
A9.10	Country	

**A10.0 Industrial Classification Codes**

A10.1	Two-digit Canadian SIC Code	33
A10.2	Four-digit Canadian SIC Code	3359
A10.3	Four-digit U.S. SIC Code	
A10.4	Two-digit NAICS Code	33
A10.5	Four-digit NAICS Code	3333
A10.6	Six-digit NAICS Canada Code	333310

**A11.0 Full-time Employees**

= total worker hours per year/2,000 hrs per worker

A11.1	Number of (Eq.) Full-time Employees	537
A11.2	Activities to Which the 20 000 hr Employee Threshold does not Apply	

Table 6

**"Section A" Administrative Information  
ELCAN Optical Technologies  
Midland, Ontario**

<b>A12.0</b>	<b>Activities Relevant to the Reporting of Dioxins/Furans and HCB</b>	
A12.1	Facility Used for Wood Preservation (PCP)	None
<b>A13.0</b>	<b>Activities Relevant to the Reporting of PAH</b>	
A13.1	Facility Used for Wood Preservation (creosote)	None
<b>A14.0</b>	<b>Other Environmental Regulations or Permits (optional)</b>	
A14.1	Other Environmental Reporting/Permits	
<b>A15.0</b>	<b>Comments</b>	
A15.1	Comments (Facility)	
A15.2	Comments (Pollution Prevention)	
<b>A16.0</b>	<b>Company Official Certifying this Submission</b>	
A16.1	Title (Mr./Ms./etc)	Mrs.
A16.2	First Name	Katharine
A16.3	Last Name	Rowe-Bailey
A16.4	Position	General Manager
A16.5	Phone	(705) 528-7104
A16.6	Phone Extension	
A16.7	Fax	(705) 528-7175
A16.8	e-mail address	<a href="mailto:katharine.rowe-bailey@rtx.com">katharine.rowe-bailey@rtx.com</a>
<b>A17.0</b>	<b>Company Official Address</b>	
A17.1	Company Name	ELCAN Optical Technologies
A17.2	Facility Name	
A17.3	Mailing Address	
A17.4	(Mailing Address)	450 Leitz Road
A17.5	City/District	Midland
A17.6	Province/Territory	Ontario
A17.7	Postal Code	L4R 5B8
A17.8	State	
A17.9	ZIP Code	
A17.10	Country	Canada
<b>A19.0</b>	<b>Facility Latitude and Longitude</b>	
A19.1	Facility Latitude (decimal degrees)	
A19.2	Facility Longitude (decimal degrees)	
<b>A21.0</b>	<b>Independent Contractor</b>	
A21.1	Title/First Name	Matthew
A21.3	Last Name	Griffin
A21.4	Position	Environmental Engineer
A21.5	Telephone	519-340-3794
A21.7	Facsimile No.	519-884-0525
A21.8	Email Address	<a href="mailto:matthew.griffin@ghd.com">matthew.griffin@ghd.com</a>
<b>A22.0</b>	<b>Independent Contractor Address</b>	
A22.1	Company Name	GHD Limited
A22.2	Facility Name	
A22.3	Mailing Address	455 Phillip Street
A22.4	(Mailing Address 2)	
A22.5	City	Waterloo
A22.6	Province/Territory	Ontario
A22.10	Country	<a href="#">Canada</a>

Table 6

**"Section A" Administrative Information  
ELCAN Optical Technologies  
Midland, Ontario**

**A25.0 Criteria Air Contaminants (CACs)**

A25.1	Required to report for one or more CACs?	Y
T1.0	Facility Operating Schedule (Temporal Variation)	
T1.1	Days of Operation	7 days/week
T1.2 a)	Hours of Operation	24 hours/day
T1.2 b)	Average daily start time	
T1.3	Shut down longer than one week?	No
T1.4	Date/time of shutdown longer than one week	N/A
T1.5	Comments (Shutdown periods) (optional)	N/A

**A26.0 Pollution Prevention**

A26.1	Pollution Prevention Plans	None
Off-Site Transfer Facility Name (01)		Terrapure Environmental Industrial Waste Management
Street Address		1131 Snow Valley Road
City		Barrie
Province		ON
Postal Code		L4M 4S5
Country		Canada
Off-Site Transfer Facility Name (02)		Clean Harbors Canada Inc.
Street Address		1831 Allanport Rd.
City		Thorold
Province		ON
Postal Code		L2V 3Y9
Country		Canada

Table 7A

**Summary of Reasons for Change from 2019 to 2020 for Releases to Air  
ELCAN Optical Technologies  
Midland, Ontario**

Compound	CAS No.	Units	2019 Releases to Air (mass/yr)	2020 Releases to Air (mass/yr)	Percent Change from 2019-2020 (%)	NPRI Software Letter Code	Description
<b>NPRI Part 1</b>							
Total Selenium	NA-12	(kg)	15.549	3.201	-79.4	A	Decrease in usage of zinc selenide lenses
Total Lead	NA-08	(kg)	<NPRI Threshold	1.616	100.0	A	Increase in usage of blank prism (Product code BAK4)
<b>NPRI Part 4</b>							
Total VOCs	NA	(tonne)	16.885	14.617	-13.4	A	Decrease in painting and other VOC releases
<b>NPRI Part 5</b>							
2-Propanol	67-63-0	(tonne)	0.600	1.013	68.9	A	Increase in usage of 2-Propanol

## Notes:

NPRI Software Reasons for Change must be selected from the following list for each reportable substance:

- A Changes in Production Levels
- B Changes in Estimation Methods
- C Pollution Prevention Activities
- D Changes in On-Site Treatment
- E Changes in Disposal
- F Changes in Off-Site Transfers for Recycling
- G Other (specify in comments field B14.2)
- H No Significant Change (< 10%) or No Change
- I Not Applicable (First year reporting this substance)
- NR Not reportable



Table 7B

**Summary of Reasons for Change from 2019 to 2020 for Off-Site Disposals  
ELCAN Optical Technologies  
Midland, Ontario**

Compound	CAS No.	Units	2019 Off-Site Disposals (mass/yr)	2020 Off-Site Disposals (mass/yr)	Percent Change from 2019-2020 (%)	NPRI Software Letter Code	Description
<b>NPRI Part 1</b>							
Total Selenium	NA-12	(kg)	76.891	62.503	-18.7	A	Increase in zinc selenium disposed off-site
Total Lead	NA-08	(kg)	10.000	10.000	No change	A	No change in lead solder scrap disposal.

## Notes:

NPRI Software Reasons for Change must be selected from the following list for each reportable substance:

- A Changes in Production Levels
- B Changes in Estimation Methods
- C Pollution Prevention Activities
- D Changes in On-Site Treatment
- E Changes in Disposal
- F Changes in Off-Site Transfers for Recycling
- G Other (specify in comments field B14.2)
- H No Significant Change (< 10%) or No Change
- I Not Applicable (First year reporting this substance)
- NR Not reportable

Table 7C

**Summary of Reasons for Change from 2019 to 2020 for Amount Used  
ELCAN Optical Technologies  
Midland, Ontario**

<b>Compound</b>	<b>CAS No.</b>	<b>Units</b>	<b>2019 Used (mass/yr)</b>	<b>2020 Used (mass/yr)</b>	<b>Percent Change from 2019-2020 (%)</b>	<b>NPRI Software Letter Code</b>	<b>Description</b>
<b>NPRI Part 1</b>							
Total Selenium	NA-12	(kg)	508.534	104.761	-79.4	A	Decrease in usage of zinc selenide lenses
Total Lead	NA-08	(kg)	36.100	62.020	71.8	A	Increase in usage of blank prism (Product code BAK4)
<b>NPRI Part 4</b>							
Total VOCs	NA	(tonne)	16.849	14.594	-13.4	A	Decrease in painting and other VOC releases
<b>NPRI Part 5</b>							
2-Propanol	67-63-0	(tonne)	0.600	1.013	68.9	A	Increase in usage of 2-Propanol

## Notes:

NPRI Software Reasons for Change must be selected from the following list for each reportable substance:

- A Changes in Production Levels
- B Changes in Estimation Methods
- C Pollution Prevention Activities
- D Changes in On-Site Treatment
- E Changes in Disposal
- F Changes in Off-Site Transfers for Recycling
- G Other (specify in comments field B14.2)
- H No Significant Change (< 10%) or No Change
- I Not Applicable (First year reporting this substance)
- NR Not reportable

Table 7D

**Summary of Reasons for Change from 2019 to 2020 for Amount Created  
ELCAN Optical Technologies  
Midland, Ontario**

<b>Compound</b>	<b>CAS No.</b>	<b>Units</b>	<b>2019 Created (mass/yr)</b>	<b>2020 Created (mass/yr)</b>	<b>Percent Change from 2019-2020 (%)</b>	<b>NPRI Software Letter Code</b>	<b>Description</b>
<b>Part 4</b>							
Total VOCs	NA	(tonne)	0.036	0.023	-37.0	A	Decrease in Natural Gas usage and releases

## Notes:

NPRI Software Reasons for Change must be selected from the following list for each reportable substance:

- A Changes in Production Levels
- B Changes in Estimation Methods
- C Pollution Prevention Activities
- D Changes in On-Site Treatment
- E Changes in Disposal
- F Changes in Off-Site Transfers for Recycling
- G Other (specify in comments field B14.2)
- H No Significant Change (< 10%) or No Change
- I Not Applicable (First year reporting this substance)
- NR Not reportable

Table 7E

**Summary of Reasons for Change from 2019 to 2020 for Amount Contained in Product  
ELCAN Optical Technologies  
Midland, Ontario**

<b>Compound</b>	<b>CAS No.</b>	<b>Units</b>	<b>2019 Used (mass/yr)</b>	<b>2020 Used (mass/yr)</b>	<b>Percent Change from 2019-2020 (%)</b>	<b>NPRI Software Letter Code</b>	<b>Description</b>
<b>NPRI Part 1</b>							
Total Selenium	NA-12	(kg)	416.094	39.056	-90.6	A	Decrease in usage of zinc selenide lenses
Total Lead	NA-08	(kg)	36.105	50.404	39.6	A	Increase in usage of blank prism (Product code BAK4)

Notes:

NPRI Software Reasons for Change must be selected from the following list for each reportable substance:

- A - Changes in Production Levels
- B - Changes in Estimation Methods
- C - Pollution Prevention Activities
- D - Changes in On-Site Treatment
- E - Changes in Disposal
- F - Changes in Off-Site Transfers for Recycling
- G - Other (specify in comments field B14.2)
- H - No Significant Change (< 10%) or No Change
- I - Not Applicable (First year reporting this substance)
- NR- Not reportable

# **Attachments**

# **Attachment 1**

**2020 Confirmation of Report Submission**

# Report Submission and Electronic Certification

## NPRI - Electronic Statement of Certification

Specify the language of correspondence

Comments (optional)

I hereby certify that I have exercised due diligence to ensure that the submitted information is true and complete. The amounts and values for the facility(ies) identified below are accurate, based on reasonable estimates using available data. The data for the facility(ies) that I represent are hereby submitted to the programs identified below using the Single Window Reporting Application.

I also acknowledge that the data will be made public.

Note: Only the person identified as the Certifying Official or the authorized delegate should submit the report(s) identified below.

Company Name

Certifying Official (or authorized delegate)

Report Submitted by

I, the Certifying Official or authorized delegate, agree with the statements above and acknowledge that by pressing the "Submit Report(s)" button, I am electronically certifying and submitting the facility report(s) for the identified company to its affiliated programs.

## ON MECP TRA - Electronic Certification Statement

### Annual Report Certification Statement

As of 2021-09-30, I, Katharine Rowe-Bailey, certify that I have read the reports on the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the information contained in the reports is factually accurate and the reports comply with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

### TRA Substance List\*

**CAS RN**

**Substance Name**

Company Name

Raytheon Canada Limited

Highest Ranking Employee

Katharine Rowe-Bailey

Report Submitted by

Katharine Rowe-Bailey

Website address

I, the highest ranking employee, agree with the certification statement(s) above and acknowledge that by checking the box I am electronically signing the statement(s). I also acknowledge that by pressing the 'Submit Report(s)' button I am submitting the facility record(s)/report(s) for the identified facility to the Director under the Toxics Reduction Act, 2009. I also acknowledge that the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 provide the authority to the Director under the Act to make certain information as specified in subsection 27(5) of Ontario Regulation 455/09 available to the public.

## Submitted Report

Period	Submission Date	Facility Name	Province	City	Programs
2020	2021-09-30	Raytheon ELCAN Optical Technologies	Ontario	Midland	NPRI, ON MECP TRA

Note: If there is a change in the contact information for the facility, a change in the owner or operator of the facility, if operations at the facility are terminated, or if information submitted for any previous year was mistaken or inaccurate, please update this information through SWIM or by contacting the National Pollutant Release Inventory directly.



# **Attachment 2**

**2020 NPRI Inventory Report**

# National Pollutant Release Inventory (NPRI) and Partners



- Home
- Submission Management
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- Ec.gc.ca

SWIM > 2020 > Raytheon Canada Limited > Raytheon ELCAN Optical Technologies > Report Preview

## Report Preview

### Report Details

Report Year	2020
Report Type:	NPRI,ON MECP TRA
Report Status:	Submitted
Modified Date/Time:	2021-09-30 9:29 AM

### Company and Facility Details

Company Name:	Raytheon Canada Limited
Business Number:	121772636
Mailing Address:	Delivery Mode: GeneralDelivery Address Line 1: 450 Leitz Road City: Midland Province/Territory: Ontario Postal Code: L4R 5B8 Country: Canada
Facility Name:	Raytheon ELCAN Optical Technologies
NAICS Code:	333310
NPRI ID:	7357
ON Reg 127/01 ID:	8499
Portable:	No
Physical Address:	Address Line 1: 450 Leitz Avenue City: Midland Province/Territory: Ontario Postal Code: L4R 5B8 Country: Canada  Latitude: 44.7489 Longitude: -79.8736

### Parent Companies

Company Name:	Raytheon Canada Ltd.
Business Number:	121772636
Percentage owned:	100.00
Civic Address:	Address Line 1: 360 Albert Street City: Ottawa Province/Territory: Ontario Postal Code: K1R 7X7 Country: Canada

## Permits

Number or Permit Number:	8-5085-95-006
Government Department, Agency, or Program Name:	Ontario MOE - Certificate of Approval (Air)
Number or Permit Number:	ON0076801
Government Department, Agency, or Program Name:	Ontario MOE - Hazardous Waste Generator Number

## Contacts Details

Contact Type	Technical Contact
Name:	Mark Hammond
Position:	Manager Environmental Health & Safety
Telephone:	7055287122
Email:	mark.hammond@raytheon.com

Contact Type	Certifying Official, Highest Ranking Employee
Name:	Katharine Rowe-Bailey
Position:	Director of Operations
Telephone:	7055287104
Fax:	7055287175
Email:	katharine.rowe-bailey@raytheon.com

Contact Type	Person who prepared the report, Contractor Contact
Name:	Matthew Griffin
Position:	Engineer
Telephone:	5193403794
Fax:	5198840525
Email:	mgriffin@croworld.com
Independent contractor/consultant company name:	GHD

## General Information

Number of employees:	537
Activities for Which the 20,000-Hour Employee Threshold Does Not Apply:	None of the above
Activities Relevant to Reporting Dioxins, Furans and Hexachlorobenzene:	None of the above
Activities Relevant to Reporting of Polycyclic Aromatic Hydrocarbons (PAHs):	Wood preservation using creosote: No
Does this facility release less than the reporting threshold for each Part 4 substance AND have one or more light or medium crude oil batteries with a total oil throughput for the battery components of the facility of $\geq 1,900$ m <sup>3</sup> per year?	No
Did the facility operate one or more electricity generation units that had a capacity of 25 MW or more and that distributed or sold to the grid 33% or more of its potential electrical output in the calendar year?	No

Is this the first time the facility is reporting to the NPRI (under current or past ownership):

No

Is the facility controlled by another Canadian company or companies:

Yes

Did the facility report under other environmental regulations or permits?

No

Does this facility solely consist of compression equipment in the oil and gas extraction sector?

No

Is the facility required to report one or more NPRI Part 4 substances (Criteria Air Contaminants):

Yes

Was the facility shut down for more than one week during the year:

No

Operating Schedule - Days of the Week:

Mon, Tue, Wed, Thu, Fri, Sat, Sun

Usual Number of Operating Hours per day:

24

Usual Daily Start Time (24h) (hh:mm):

00:00

## Substance List

CAS RN	Substance Name	Releases	Releases (Speciated VOCs)	Disposals	Recycling	Unit
NA - 08	Lead (and its compounds)	N/A	N/A	N/A	N/A	kg
NA - 12	Selenium (and its compounds)	3.201000	N/A	62.503000	N/A	kg
NA - M16	Volatile Organic Compounds (VOCs)	14.617000	N/A	N/A	N/A	tonnes

## Applicable Programs

CAS RN	Substance Name	NPRI	ON MECP TRA	First report for this substance to the ON MECP TRA
NA - 08	Lead (and its compounds)	Yes		
NA - 12	Selenium (and its compounds)	Yes	Yes	No
NA - M16	Volatile Organic Compounds (VOCs)	Yes	No	No

## General Information about the Substance - Releases and Transfers of the Substance

CAS RN	Substance Name	Was the substance released on-site	The substance will be reported as the sum of releases to all media (total of 1 tonne or less)	1 tonne or more of a Part 5 Substance (Speciated VOC) was released to air
NA - 08	Lead (and its compounds)	No	No	No
NA - 12	Selenium (and its compounds)	Yes	No	No
NA - M16	Volatile Organic Compounds (VOCs)		No	No

## General Information about the Substance - Disposals and Off-site Transfers for Recycling

CAS RN	Substance Name	Was the substance disposed of (on-site or off-site), or transferred for treatment prior to final disposal	Is the facility required to report on disposals of tailings and waste rock for the selected reporting period	Was the substance transferred off-site for recycling
NA - 08	Lead (and its compounds)	No	No	No
NA - 12	Selenium (and its compounds)	Yes	No	No
NA - M16	Volatile Organic Compounds (VOCs)			

## General Information about the Substance - Nature of Activities

CAS RN	Substance Name	Manufacture the Substance	Process the Substance	Otherwise Use of the Substance
NA - 08	Lead (and its compounds)	For on-site use/processing		
NA - 12	Selenium (and its compounds)	For on-site use/processing	As a reactant	As a physical or chemical processing aid
NA - M16	Volatile Organic Compounds (VOCs)			

Substances added to/removed from the report

CAS RN	Substance Name	Added/Removed	Reason
NA - 08	Lead (and its compounds)	Added	Met NPRI reporting threshold

TRA Quantifications

CAS RN	Substance Name	Use, Creation, Contained in Product	Quantity	Use ranges for public reporting
NA - 12	Selenium (and its compounds)	Use	104.761 kg	Yes
NA - 12	Selenium (and its compounds)	Creation	0 kg	Yes
NA - 12	Selenium (and its compounds)	Contained in Product	39.056 kg	Yes

TRA Quantifications - Others

CAS RN	Substance Name	Change in Method of Quantification	Reasons for Change	Description of how the change impact tracking and quantification of the substance	Description of how an incident(s) affected quantifications	Significant Process Change	Reason for the significant process change
NA - 12	Selenium (and its compounds)					No	

On-site Releases - Releases to air

CAS RN	Substance Name	Category	Basis of Estimate	Detail Code	Quantity
NA - 12	Selenium (and its compounds)	Fugitive Releases	C - Mass Balance		3.201 kg
NA - M16	Volatile Organic Compounds (VOCs)	Fugitive Releases	C - Mass Balance		14.617 tonnes

On-site Releases - Releases to air - Total

CAS RN	Substance Name	Total - Releases to Air
NA - 12	Selenium (and its compounds)	3.201 kg
NA - M16	Volatile Organic Compounds (VOCs)	14.617 tonnes

On-site Releases - Total

CAS RN	Substance Name	Total releases
NA - 12	Selenium (and its compounds)	3.201 kg

On-site Releases - Quarterly Breakdown of Annual Releases

CAS RN	Substance Name	Quarter 1	Quarter 2	Quarter 3	Quarter 4
NA - 12	Selenium (and its compounds)	25	25	25	25

On-site Releases - Monthly Breakdown of Annual Releases

CAS RN	Substance Name	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
NA - M16	Volatile Organic Compounds (VOCs)	8.33	8.33	8.34	8.33	8.33	8.34	8.33	8.33	8.34	8.33	8.33	8.34

On-site Releases - Reasons for Changes in Quantities Released from Previous Year

CAS RN	Substance Name	Reasons for Changes in Quantities from Previous Year	Comments
NA - 08	Lead (and its compounds)	No significant change (i.e. <10% or no change)	
NA - 12	Selenium (and its compounds)	Decrease in production levels	
NA - M16	Volatile Organic Compounds (VOCs)	No significant change (i.e. <10% or no change)	

Disposals - Off-site Disposal (excluding Tailings and Waste Rock)

CAS RN	Substance Name	Category	Basis of Estimate	Detail Code	Quantity
NA - 12	Selenium (and its compounds)	Landfill	C - Mass Balance		62.503 kg

## Disposals - Off-site Disposal (excluding Tailings and Waste Rock) - Total

CAS RN	Substance Name	Total - Off-site Disposals
NA - 12	Selenium (and its compounds)	62.503 kg

## Disposals - Off-site Disposal (excluding Tailings and Waste Rock) - By Facilities

CAS RN	Substance Name	Category	Off-site Name	Off-site Address	Quantity
NA - 12	Selenium (and its compounds)	Landfill	Newalta Corp. - Barrie	1131 Snow Valley Rd., Barrie, ON, Canada	62.503 kg

## Disposals - Total Quantity Disposed (All Media)

CAS RN	Substance Name	Total Quantity Disposed (All Media)
NA - 12	Selenium (and its compounds)	62.503 kg

## Disposals - Reasons and Comments

CAS RN	Substance Name	Reasons Why Substance Was Disposed	Reasons for Changes in Quantities from Previous Year	Comments
NA - 08	Lead (and its compounds)		No significant change (i.e. <10% or no change)	
NA - 12	Selenium (and its compounds)	Unusable parts or discards	Increase in production levels	

## Recycling - Reasons and Comments

CAS RN	Substance Name	Reasons Why Substance Was Recycled	Reasons for Changes in Quantities Recycled from Previous Year	Comments
NA - 08	Lead (and its compounds)		No significant change (i.e. <10% or no change)	
NA - 12	Selenium (and its compounds)		No significant change (i.e. <10% or no change)	

## Comparison Report - Enters, Creation, Contained in Product

CAS RN	Substance Name	Is Breakdown	Category	Quantity	Last Reported Quantity	Reporting Period of Last Reported Quantity	Change	% Change
NA - 12	Selenium (and its compounds)	No	Enters the facility (Use)	104.761 kg	508.534 kg	2019	-403.773	-79.40
NA - 12	Selenium (and its compounds)	No	Creation	0 kg	0 kg	2019	0	
NA - 12	Selenium (and its compounds)	No	Contained in Product	39.056 kg	416.094 kg	2019	-377.038	-90.61

## Comparison Report - Enters, Creation, Contained in Product : Reason(s) for Change

CAS RN	Substance Name	Reason(s) for Change	Other Reason
NA - 12	Selenium (and its compounds)	No reasons - quantities approximately the same	

## Comparison Report - On-site Releases

CAS RN	Substance Name	Is Breakdown	Category	Quantity	Last Reported Quantity	Reporting Period of Last Reported Quantity	Change	% Change
NA - 12	Selenium (and its compounds)	No	Total Releases to Air	3.201 kg	15.549 kg	2019	-12.348	-79.41
NA - 12	Selenium (and its compounds)	No	Total Releases to Water	0 kg	0 kg	2019	0	
NA - 12	Selenium (and its compounds)	No	Total Releases to Land	0 kg	0 kg	2019	0	
NA - 12	Selenium (and its compounds)	No	Total Releases to All Media	0 kg	0 kg	2019	0	

## Comparison Report - On-site Releases - Reason(s) for Change

CAS RN	Substance Name	Reason(s) for Change	Other Reason
NA - 12	Selenium (and its compounds)	Increase in production levels	

## Comparison Report - Disposals On-site, Off-site and Tailings and Waste Rock

CAS RN	Substance Name	Is Breakdown	Category	Quantity	Last Reported Quantity	Reporting Period of Last Reported Quantity	Change	% Change
NA - 12	Selenium (and its compounds)	No	Total On-site Disposals	0 kg	0 kg	2019	0	
NA - 12	Selenium (and its compounds)	No	Total Off-site Disposals	62.503 kg	76.891 kg	2019	-14.388	-18.71
NA - 12	Selenium (and its compounds)	No	Total Off-site transfer for treatment Prior to Final Disposal	0 kg	0 kg	2019	0	
NA - 12	Selenium (and its compounds)	No	Total On-site Disposal of Tailings and Waste Rock	0 kg	0 kg	2019	0	
NA - 12	Selenium (and its compounds)	No	Total Off-site Disposal of Tailings and Waste Rock	0 kg	0 kg	2019	0	

### Comparison Report - Disposals On-site, Off-site and Tailings and Waste Rock - Reason(s) for Change

CAS RN	Substance Name	Reason(s) for Change	Other Reason
NA - 12	Selenium (and its compounds)	No reasons - quantities approximately the same	

### Pollution Prevention

Does the facility have a documented pollution prevention plan?

No

Did the facility complete any pollution prevention activities in the current NPRI reporting year

No

If no, please select all applicable reasons from the list below:

Activities were implemented in a previous year; additional activities are either unnecessary or unfeasible at this time

### Progress on TRA Plan - Objectives

CAS RN	Substance Name	Objectives
NA - 12	Selenium (and its compounds)	The objective of this Plan is to identify and evaluate a variety of toxics substance reduction options to reduce the use, disposal and release to air of selenium at the Facility. Further, this plan will determine the technical and economic feasibility of each option to determine which, if any, are viable for implementation at this time.

### Progress on TRA Plan - Use Targets

CAS RN	Substance Name	Quantity	Years	Description of Target
NA - 12	Selenium (and its compounds)	No quantity target	No timeline target	

### Progress on TRA Plan - Creation Targets

CAS RN	Substance Name	Quantity	Years	Description of Target
NA - 12	Selenium (and its compounds)	No quantity target	No timeline target	

### Progress on TRA Plan - Additional Actions

CAS RN	Substance Name	Were there any additional actions outside the plan taken during the reporting period to reduce the use and/or creation of the substance?	Describe any additional actions that were taken during the reporting period to achieve the plan's objectives	Provide a public summary of the description of the additional action taken
NA - 12	Selenium (and its compounds)	No		

### Progress on TRA Plan - Reductions due to additional actions taken

CAS RN	Substance Name	Reductions due to additional actions taken	Quantity
NA - 12	Selenium (and its compounds)	The amount of reduction in <b>use</b> of the substance at the facility during the reporting period that resulted due to the additional actions.	
NA - 12	Selenium (and its compounds)	The amount of reduction in <b>creation</b> of the substance at the facility during the reporting period that resulted due to the additional actions.	
NA - 12	Selenium (and its compounds)	The amount of reduction in the substance <b>contained in product</b> at the facility during the reporting period that resulted due to the additional actions.	
NA - 12	Selenium (and its compounds)	The amount of reduction in <b>release to air</b> of the substance at the facility during the reporting period that resulted due to the additional actions.	
NA - 12	Selenium (and its compounds)	The amount of reduction in <b>release to water</b> of the substance at the facility during the reporting period that resulted due to the additional actions.	

CAS RN	Substance Name	Reductions due to additional actions taken	Quantity
NA - 12	Selenium (and its compounds)	The amount of reduction in <b>release to land</b> of the substance at the facility during the reporting period that resulted due to additional actions.	
NA - 12	Selenium (and its compounds)	The amount of reduction in the substance <b>disposed on-site</b> (including tailings and waste rocks) at the facility during the reporting period that resulted due to the additional actions.	
NA - 12	Selenium (and its compounds)	The amount of reduction in the substance <b>disposed off-site</b> (including tailings and waste rocks) at the facility during the reporting period that resulted due to the additional actions.	
NA - 12	Selenium (and its compounds)	The amount of reduction in the substance <b>recycled off-site</b> at the facility during the reporting period that resulted due to the additional actions.	

## Progress on TRA Plan - Amendments

CAS RN	Substance Name	Were any amendments made to the toxic substance reduction plan during the reporting period	Description any amendments that were made to the toxic substance reduction plan during the reporting period	Provide a public summary of the description of any amendments that were made to the toxic substance reduction plan during the reporting period
NA - 12	Selenium (and its compounds)	No		

## Feedback

Comments on the Reporting System

Satisfied. Few technical issues and they were easily resolved.

## Report Submission and Electronic Certification

### NPRI - Electronic Statement of Certification

Specify the language of correspondence

English

Comments (optional)

I hereby certify that I have exercised due diligence to ensure that the submitted information is true and complete. The amounts and values for the facility(ies) identified below are accurate, based on reasonable estimates using available data. The data for the facility(ies) that I represent are hereby submitted to the programs identified below using the Single Window Reporting Application.

I also acknowledge that the data will be made public.

Note: Only the person identified as the Certifying Official or the authorized delegate should submit the report(s) identified below.

Company Name

Raytheon Canada Limited

Certifying Official (or authorized delegate)

Katharine Rowe-Bailey

Report Submitted by

Katharine Rowe-Bailey

I, the Certifying Official or authorized delegate, agree with the statements above and acknowledge that by pressing the "Submit Report(s)" button, I am electronically certifying and submitting the facility report(s) for the identified company to its affiliated programs.

### ON MECP TRA - Electronic Certification Statement

#### Annual Report Certification Statement

As of 2021-09-30, I, Katharine Rowe-Bailey, certify that I have read the reports on the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the information contained in the reports is factually accurate and the reports comply with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

#### TRA Substance List\*

CAS RN

Substance Name

NA - 12

Selenium (and its compounds)

Company Name

Raytheon Canada Limited

Highest Ranking Employee

Katharine Rowe-Bailey

Report Submitted by

Katharine Rowe-Bailey

Website address

I, the highest ranking employee, agree with the certification statement(s) above and acknowledge that by checking the box I am electronically



signing the statement(s). I also acknowledge that by pressing the 'Submit Report(s)' button I am submitting the facility record(s)/report(s) for the identified facility to the Director under the Toxics Reduction Act, 2009. I also acknowledge that the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 provide the authority to the Director under the Act to make certain information as specified in subsection 27(5) of Ontario Regulation 455/09 available to the public.

## Submitted Report

Period	Submission Date	Facility Name	Province	City	Programs
2020	2021-09-30	Raytheon ELCAN Optical Technologies	Ontario	Midland	NPRI, ON MECP TRA

Note: If there is a change in the contact information for the facility, a change in the owner or operator of the facility, if operations at the facility are terminated, or if information submitted for any previous year was mistaken or inaccurate, please update this information through SWIM or by contacting the National Pollutant Release Inventory directly.

Version: 3.18.12



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