2022

ANNUAL EMISSIONS REPORTING

FACILITY REPORT

An Assessment for the Reporting of the National Pollutant Release Inventory (NPRI) and other Emissions Reporting Programs

Prepared for:

Devtek Aerospace Inc.
1665 Highland Road West
Kitchener, ON N2N 3K5

Project No.: 23ELC006

ENVIROLUM CONSULTING INC.
KITCHENER, ON
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1.0 Introduction

Envirolum Consulting Inc. (*Envirolum*) was retained by Devtek Aerospace Inc. to assess the 2022 National Pollutant Release Inventory (*NPRI*), Environment Canada's Greenhouse Gas Emissions (*Federal GHG*), and Ontario Greenhouse Gas Emissions reporting program requirements for their facility located at 1665 Highland Road West in Kitchener, Ontario.

The facility manufactures landing gear and structural parts for the aerospace industry. Processes include precision machining and assembly. The assessment of substances manufactured, processed, or otherwise used (*MPO*) is based on purchasing data of raw material provided by Devtek Aerospace Inc. for the 2022 calendar year. Overall metals (aluminum, carbon steel, and titanium) purchased has decreased from 554,170 kg in 2021 to 547,620 kg during the 2022 calendar year.

The total amount of scrap metal recycled has decreased from 3,515,339 kg in 2021 to 597,573 kg in 2022.

A summary of the assessment for this facility for each applicable reporting program for the year 2022 is provided in this report.

2.0 National Pollutant Release Inventory

The NPRI is a federal initiative directed by Environment Canada under the Canadian Environmental Protection Act, 1999 (*CEPA*) that is triggered when specific facility and processing criteria are met. If the reporting criteria for this initiative are met, then reporting for releases to air, water, and land; waste transfers; waste disposals; and transfers for recycling is required.

A report on the air emissions of the substance(s) manufactured, processed, or otherwise used that triggered the reporting threshold must be submitted before June 1, 2023. Details of the NPRI assessment of the materials purchased at the facility are provided in Appendix A.

All volatile organic compounds are assumed to be released to air at 100%. The total VOCs calculated from the 2022 chemical inventory shows that quantity used/purchased triggers the reporting threshold. Therefore, total VOCs must be reported for the 2022 year. No speciated VOCs listed under Part 5 meet the reporting threshold of 1000 kg and therefore is not required to report. No metal contaminants meet the reporting threshold. Detailed emission calculations are provided in Appendix E.

A summary of air emissions for the reportable substance(s) is shown in Table 1.

Table 1: Summary of NPRI Release to Air

Substance	CAS	2022 Total Air Emissions (tonnes)	Substance Group
VOCs	NA – M16	16.449	Part 4

3.0 Environment Canada's GHG Reporting

Environment and Climate Change Canada (*ECCC*) requires reporting of GHG emissions by major emitters. The ECCC has revised the requirement by lowering the reporting threshold from 50,000 tonnes to 10,000 tonnes of carbon dioxide equivalent (CO_2e) beginning with the 2017 calendar year. Facilities that release more than 10,000 tonnes of CO_2e per year must report their emissions by June 1, 2023.

A screening level assessment of GHG emissions for this program indicating the facility does not meet reporting criteria is included in Appendix B of this report. As per the *Technical Guidance on Reporting GHG Emissions 2017*, only direct emissions are evaluated for this program (i.e., indirect emissions from electricity generation are not evaluated and therefore this assessment should not be considered a completed GHG inventory in accordance with ISO 14064 or the World Resource Institute's GHG Protocol).

4.0 Ontario GHG Reporting

Effective August 1, 2018, this requirement is regulated under the Environmental Protection Act as the Greenhouse Gas Emissions: Quantification, Reporting, and Verification Regulation 390/18. The regulation requires facilities to report by June 1 annually for all regulated sources that emit 10,000 tonnes of carbon dioxide equivalent (CO_2e) or more per year.

A screening level assessment of GHG emissions for this program indicating the facility does not meet reporting criteria is included in Appendix C of this report.

5.0 Conclusions

This report summarizes the assessment of the NPRI, Federal GHG, and provincial GHG reporting program requirements for the 2022 operating year.

The data as it was submitted to Environment Canada can be viewed online through the SWIM system at any time (https://ec.ss.ec.gc.ca/). A copy of the Confirmation of Submission is included in Appendix F. As well, a hardcopy of the data can also be printed through the SWIM online system.

APPENDIX A

NPRI Assessment Summary

NPRI - SUMMARY 2022

Part 1A: Core Substances

Nothing to report

Part 1B: Other Substances

Nothing to report

Part 2: Polycyclic Aromatic Hydrocarbons

Nothing to report

Part 3: Hexachlorobenzene and Dioxins / Furans

Nothing to report

Part 4: Criteria Air Contaminants

Substance	CAS	2022 Total Emissions (tonnes)	2021 Total Emissions (tonnes)	% Change in Total Emissions	Comments
VOCs	NA-M16	16.449	18.037	-8.8%	no significant change.

Part 5: Speciated Volatile Organic Compounds

Nothing to report

Part 1A / B

2022/24 Gazette Number	Substance	CAS	NPRI Part #	Threshold Value	Reporting Unit	Total MPO	Report?
1	Acetaldehyde	75-07-0	1A	10	tonnes	0.00	No
2	Acetonitrile	75-05-8	1A	10	tonnes	0.00	No
3	Acetophenone	98-86-2	1A	10	tonnes	0.00	No
4	Acrolein	107-02-8	1A	10	tonnes	0.00	No
5	Acrylamide	79-06-1	1A	10	tonnes	0.00	No
6	Acrylic acid (and its salts)	79-10-7	1A	10	tonnes	0.00	No
7	Allyl alcohol	107-18-6	1A	10	tonnes	0.00	No
8	Aluminum (fume or dust only)	7429-90-5	1A	10	tonnes	0.00	No
9	Aluminum oxide (fibrous forms only)	1344-28-1	1A	10	tonnes	0.00	No
10	Ammonia (total)	NA-16	1A	10	tonnes	0.00	No
11	Aniline (and its salts)	62-53-3	1A	10	tonnes	0.00	No
12	Antimony (and its compounds)	NA-1	1A	10	tonnes	0.00	No
13	Asbestos (friable form only)	1332-21-4	1A	10	tonnes	0.00	No
14	Benzene	71-43-2	1A	10	tonnes	0.00	No
15	Benzoyl chloride	98-88-4	1A	10	tonnes	0.00	No
16	Benzoyl peroxide	94-36-0	1A	10	tonnes	0.00	No
17	Benzyl chloride	100-44-7	1A	10	tonnes	0.00	No
18	Biphenyl	92-52-4	1A	10	tonnes	0.00	No
19	Bis(2-ethylhexyl) adipate	103-23-1	1A	10	tonnes	0.00	No
20	Bis(2-ethylhexyl) phthalate	117-81-7	1A	10	tonnes	0.00	No
21	Boron trifluoride	7637-07-2	1A	10	tonnes	0.00	No
22	Bromine	7726-95-6	1A	10	tonnes	0.00	No
23	Bromomethane	74-83-9	1A	10	tonnes	0.00	No
24	1,3-Butadiene	106-99-0	1A	10	tonnes	0.00	No
25	2-Butoxyethanol	111-76-2	1A	10	tonnes	0.00	No
26	Butyl acrylate	141-32-2	1A	10	tonnes	0.00	No
27	i-Butyl alcohol	78-83-1	1A	10	tonnes	0.00	No
28	n-Butyl alcohol	71-36-3	1A	10	tonnes	0.00	No
29	sec-Butyl alcohol	78-92-2	1A	10	tonnes	0.00	No
30	tert-Butyl alcohol	75-65-0	1A	10	tonnes	0.00	No
31	Butyl benzyl phthalate	85-68-7	1A	10	tonnes	0.00	No
32	1,2-Butylene oxide	106-88-7	1A	10	tonnes	0.00	No
33	Butyraldehyde	123-72-8	1A	10	tonnes	0.00	No
34	C.I. Basic Green 4	569-64-2	1A	10	tonnes	0.00	No
35	Calcium fluoride	7789-75-5	1A	10	tonnes	0.00	No
36	Carbon disulphide	75-15-0	1A	10	tonnes	0.00	No
37	Carbon tetrachloride	56-23-5	1A	10	tonnes	0.00	No
38	Carbonyl sulphide	463-58-1	1A	10	tonnes	0.00	No
39	Catechol	120-80-9	1A	10	tonnes	0.00	No
40	CFC-11	75-69-4	1A	10	tonnes	0.00	No
41	CFC-114	76-14-2	1A	10	tonnes	0.00	No
42	CFC-115	76-15-3	1A	10	tonnes	0.00	No
43	CFC-12	75-71-8	1A	10	tonnes	0.00	No
44	CFC-13	75-72-9	1A	10	tonnes	0.00	No
45	Chlorine	7782-50-5	1A	10	tonnes	0.00	No
46	Chlorine dioxide	10049-04-4	1A	10	tonnes	0.00	No
47	Chloroacetic acid (and its salts)	79-11-8	1A	10	tonnes	0.00	No
48	Chlorobenzene	108-90-7	1A	10	tonnes	0.00	No
49	Chloroethane	75-00-3	1A	10	tonnes	0.00	No
50	Chloroform	67-66-3	1A	10	tonnes	0.00	No
51	Chloromethane	74-87-3	1A	10	tonnes	0.00	No
52	Chromium (and its compounds)	NA-4	1A	10	tonnes	0.00	No
53	Copper (and its compounds)	NA-6	1A	10	tonnes	2.22	No
54	Cresol (all isomers, and their salts)	1319-77-3	1A	10	tonnes	0.00	No
55	Cumene	98-82-8	1A	10	tonnes	0.00	No

2022/24 Gazette Number	Substance	CAS	NPRI Part #	Threshold Value	Reporting Unit	Total MPO	Report?
56	Cumene hydroperoxide	80-15-9	1A	10	tonnes	0.00	No
57	Cyanides (ionic)	NA-7	1A	10	tonnes	0.00	No
58	Cyclohexane	110-82-7	1A	10	tonnes	0.00	No
59	Cyclohexanol	108-93-0	1A	10	tonnes	0.00	No
60	Dibutyl phthalate	84-74-2	1A	10	tonnes	0.00	No
61	o-Dichlorobenzene	95-50-1	1A	10	tonnes	0.00	No
62	p-Dichlorobenzene	106-46-7	1A	10	tonnes	0.00	No
63	3,3'-Dichlorobenzidine dihydrochloride	612-83-9	1A	10	tonnes	0.00	No
64	1,2-Dichloroethane	107-06-2	1A	10	tonnes	0.00	No
65	Dichloromethane	75-09-2	1A	10	tonnes	0.00	No
66	2,4-Dichlorophenol	120-83-2	1A	10	tonnes	0.00	No
67	1,2-Dichloropropane	78-87-5	1A	10	tonnes	0.00	No
68	Dicyclopentadiene	77-73-6	1A	10	tonnes	0.00	No
69	Diethanolamine (and its salts)	111-42-2	1A	10	tonnes	0.00	No
70	Diethyl phthalate	84-66-2	1A	10	tonnes	0.00	No
71	Diethyl sulphate	64-67-5	1A	10	tonnes	0.00	No
72	Dimethyl phthalate	131-11-3	1A	10	tonnes	0.00	No
73	Dimethyl sulphate	77-78-1	1A	10	tonnes	0.00	No
74	Dimethylamine	124-40-3	1A	10	tonnes	0.00	No
75	N,N,-Dimethylaniline (and its salts)	121-69-7	1A	10	tonnes	0.00	No
76	N,N,-Dimethylformamide	68-12-2	1A	10	tonnes	0.00	No
77	4,6-Dinitro-o-cresol	534-52-1	1A	10	tonnes	0.00	No
78	2,4-Dinitrotoluene	121-14-2	1A	10	tonnes	0.00	No
79	Di-n-octyl phthalate	117-84-0	1A	10	tonnes	0.00	No
80	1,4-Dioxane	123-91-1	1A	10	tonnes	0.00	No
81	Diphenylamine	122-39-4	1A	10	tonnes	0.00	No
82	2,6-Di-t-butyl-4-methylphenol	128-37-0	1A	10	tonnes	0.00	No
83	Epichlorohydrin	106-89-8	1A	10	tonnes	0.00	No
84	2-Ethoxyethanol	110-80-5	1A	10	tonnes	0.00	No
85	2-Ethoxyethyl acetate	111-15-9	1A	10	tonnes	0.00	No
86	Ethyl acrylate	140-88-5	1A	10	tonnes	0.00	No
87	Ethylbenzene	100-41-4	1A	10	tonnes	0.00	No
88	Ethylene	74-85-1	1A	10	tonnes	0.00	No
89	Ethylene glycol	107-21-1	1A	10	tonnes	0.00	No
90	Ethylene oxide	75-21-8	1A	10	tonnes	0.00	No
91	Ethylene thiourea	96-45-7	1A	10	tonnes	0.00	No
92	Fluorine	7782-41-4	1A	10	tonnes	0.00	No
93	Formaldehyde	50-00-0	1A	10	tonnes	0.00	No
94	Formic acid	64-18-6	1A	10	tonnes	0.00	No
95	Halon 1211	353-59-3	1A	10	tonnes	0.00	No
96	Halon 1301	75-63-8	1A	10	tonnes	0.00	No
97	HCFC-122 (all isomers)	41834-16-6	1A	10	tonnes	0.00	No
98	HCFC-123 (all isomers)	34077-87-7	1A	10	tonnes	0.00	No
99	HCFC-124 (all isomers)	63938-10-3	1A	10	tonnes	0.00	No
100	HCFC-141b	1717-00-6	1A	10	tonnes	0.00	No
101	HCFC-142b	75-68-3	1A	10	tonnes	0.00	No
102	HCFC-22	75-45-6	1A	10	tonnes	0.00	No
103	Hexachlorophene	70-30-4	1A	10	tonnes	0.00	No
104	n-Hexane	110-54-3	1A	10	tonnes	0.00	No
105	Hydrochloric acid	7647-01-0	1A	10	tonnes	0.00	No
106	Hydrogen cyanide	74-90-8	1A	10	tonnes	0.00	No
107	Hydrogen fluoride	7664-39-3	1A	10	tonnes	0.00	No
108	Hydrogen sulphide	7783-06-4	1A	10	tonnes	0.00	No
109	Hydroquinone (and its salts)	123-31-9	1A	10	tonnes	0.00	No
110	Iron pentacarbonyl	13463-40-6	1A	10	tonnes	0.00	No
111	Isobutyraldehyde	78-84-2	1A	10	tonnes	0.00	No
112	Isophorone diisocyanate	4098-71-9	1A	10	tonnes	0.00	No
113	Isopropyl alcohol	67-63-0	1A	10	tonnes	0.00	No

2022/24 Gazette Number	Substance	CAS	NPRI Part #	Threshold Value	Reporting Unit	Total MPO	Report?
114	Lithium carbonate	554-13-2	1A	10	tonnes	0.00	No
115	Maleic anhydride	108-31-6	1A	10	tonnes	0.00	No
116	Manganese (and its compounds)	NA-9	1A	10	tonnes	0.00	No
117	2-Mercaptobenzothiazole	149-30-4	1A	10	tonnes	0.00	No
118	Methanol	67-56-1	1A	10	tonnes	0.00	No
119	2-Methoxyethanol	109-86-4	1A	10	tonnes	0.00	No
120	2-(2-Methoxyethoxy)ethanol	111-77-3	1A	10	tonnes	0.00	No
121	2-Methoxyethyl acetate	110-49-6	1A	10	tonnes	0.00	No
122	Methyl acrylate	96-33-3	1A	10	tonnes	0.00	No
123	Methyl ethyl ketone	78-93-3	1A	10	tonnes	0.00	No
124	Methyl isobutyl ketone	108-10-1	1A	10	tonnes	0.00	No
125	Methyl methacrylate	80-62-6	1A	10	tonnes	0.00	No
126	Methyl tert-butyl ether	1634-04-4	1A	10	tonnes	0.00	No
127	N-Methyl-2-pyrrolidone	872-50-4	1A	10	tonnes	0.00	No
128	p,p'-Methylenebis(2-chloroaniline)	101-14-4	1A	10	tonnes	0.00	No
129	1,1-Methylenebis(4-isocyanatocyclohexane)	5124-30-1	1A	10	tonnes	0.00	No
130	Methylenebis(phenylisocyanate)	101-68-8	1A	10	tonnes	0.34	No
131	p,p'-Methylenedianiline	101-77-9	1A	10	tonnes	0.00	No
132	N-Methylolacrylamide	924-42-5	1A	10	tonnes	0.00	No
133	Michler's ketone (and its salts)	90-94-8	1A	10	tonnes	0.00	No
134	Molybdenum trioxide	1313-27-5	1A	10	tonnes	0.00	No
135	Naphthalene	91-20-3	1A	10	tonnes	0.00	No
136	Naphthenic acid fraction compounds (and thei	NA - 47	1A	10	tonnes	0.72	No
137	Nickel (and its compounds)	NA-11	1A	10	tonnes	0.00	No
138	Nitrate ion	NA-17	1A	10	tonnes	0.00	No
139	Nitric acid	7697-37-2	1A	10	tonnes	0.00	No
140	Nitrilotriacetic acid (and its salts)	139-13-9	1A	10	tonnes	0.00	No
141	Nitroglycerin	55-63-0	1A	10	tonnes	0.00	No
142	2-Nitropropane	79-46-9	1A	10	tonnes	0.00	No
143	N-Nitrosodiphenylamine	86-30-6	1A	10	tonnes	0.00	No
144	Octylphenol and its ethoxylates	NA-21	1A	10	tonnes	0.00	No
145	Peracetic acid (and its salts)	79-21-0	1A	10	tonnes	0.00	No
146	Phenol (and its salts)	108-95-2	1A	10	tonnes	0.00	No
147	p-Phenylenediamine (and its salts)	106-50-3	1A	10	tonnes	0.00	No
148	Phosgene	75-44-5	1A	10	tonnes	0.00	No
149	Phosphorus (total)	NA-22	1A	10	tonnes	0.00	No
150	Phosphorus (yellow or white only)	7723-14-0	1A	10	tonnes	0.00	No
151	Phthalic anhydride	85-44-9	1A	10	tonnes	0.00	No
152	Polymeric diphenylmethane diisocyanate	9016-87-9	1A	10	tonnes	0.75	No
153	Potassium bromate	7758-01-2	1A	10	tonnes	0.00	No
154	Propionaldehyde	123-38-6	1A	10	tonnes	0.00	No
155	Propylene	115-07-1	1A	10	tonnes	0.00	No
156	Propylene oxide	75-56-9	1A	10	tonnes	0.00	No
157	Pyridine (and its salts)	110-86-1	1A	10	tonnes	0.00	No
158	Silver (and its compounds)	NA-13	1A	10	tonnes	0.00	No
159	Sodium fluoride	7681-49-4	1A	10	tonnes	0.00	No
160	Sodium nitrite	7632-00-0	1A	10	tonnes	0.00	No
161	Styrene	100-42-5	1A	10	tonnes	0.00	No
162	Sulphuric acid	7664-93-9	1A	10	tonnes	0.00	No
163	1,1,2,2-Tetrachloroethane	79-34-5	1A	10	tonnes	0.00	No
164	1,1,1,2-Tetrachloroethane	630-20-6	1A	10	tonnes	0.00	No
165	Tetrachloroethylene	127-18-4	1A	10	tonnes	0.00	No
166	Thiourea	62-56-6	1A	10	tonnes	0.00	No
167	Thorium dioxide	1314-20-1	1A	10	tonnes	0.00	No
168	Titanium tetrachloride	7550-45-0	1A	10	tonnes	0.00	No
169	Toluene	108-88-3	1A	10	tonnes	0.00	No
170	Total reduced sulphur (expressed as hydrogen	NA-M14	1A	10	tonnes	0.00	No
171	1,2,4-Trichlorobenzene	120-82-1	1A	10	tonnes	0.00	No

2022/24 Gazette Number	Substance	CAS	NPRI Part #	Threshold Value	Reporting Unit	Total MPO	Report?
172	1,1,2-Trichloroethane	79-00-5	1A	10	tonnes	0.00	No
173	Trichloroethylene	79-01-6	1A	10	tonnes	0.00	No
174	Triethylamine	121-44-8	1A	10	tonnes	0.00	No
175	1,2,4-Trimethylbenzene	95-63-6	1A	10	tonnes	0.00	No
176	2,2,4-Trimethylhexamethylene diisocyanate	16938-22-0	1A	10	tonnes	0.00	No
177	Vanadium (and its compounds)	NA-40	1A	10	tonnes	0.00	No
178	Vinyl acetate	108-05-4	1A	10	tonnes	0.00	No
179	Vinyl chloride	75-01-4	1A	10	tonnes	0.00	No
180	Xylene (all isomers)	1330-20-7	1A	10	tonnes	0.00	No
181	Zinc (and its compounds)	NA-14	1A	10	tonnes	4.71	No
182	Acrylonitrile	107-13-1	1B	1000	kg	0.00	No
183	Arsenic (and its compounds)	NA-2	1B	50	kg	0.00	No
184	Azo disperse dyes	NA - 46	1B	10	kg	0.00	No
185	1,4-Benzenediamine, N,N'-mixed phenyl and to	68953-84-4	1B	50	kg	0.00	No
186	Bisphenol A	80-05-7	1B	100	kg	0.00	No
187	Cadmium (and its compounds)	NA-3	1B	5	kg	0.00	No
188	Chlorhexidine (and its salts)	55-56-1	1B	100	kg	0.00	No
189	Chlorinated alkanes, long-chain, CnHxCl(2n+2–	NA - 39	1B	1000	kg	0.00	No
190	Chlorinated alkanes, medium-chain, CnHxCl(2n	NA - 38	1B	1000	kg	0.00	No
191	Cobalt (and its compounds)	NA-5	1B	50	kg	0.00	No
192	Hexavalent chromium	NA-19	1B	50	kg	0.00	No
193	Hydrazine (and its salts)	302-01-2	1B	1000	kg	0.00	No
194	Isoprene	78-79-5	1B	100	kg	0.00	No
195	Lead (and its compounds)	NA-8	1B	50	kg	0.00	No
196	Mercury (and its compounds)	NA-10	1B	5	kg	0.00	No
197	Nonylphenol and its ethoxylates	NA-20	1B	1000	kg	108.20	No
198	2-Propanone, reaction products with diphenyla	68412-48-6	1B	50	kg	0.00	No
199	Selenium (and its compounds)	NA-12	1B	100	kg	0.00	No
200	Tetraethyl lead	78-00-2	1B	50	kg	0.00	No
201	Thallium (and its compounds)	NA-37	1B	100	kg	0.00	No
202	Toluene-2-4,-diisocyanate	584-84-9	1B	100	kg	0.00	No
203	Toluene-2-6,-diisocyanate	91-08-7	1B	100	kg	0.00	No
204	Toluenediisocyanate (mixed isomers)	26471-62-5	1B	100	kg	0.00	No

Part 2: PAHs

Substance	CAS #	Release Threshold (kg/yr)	Annual Emission Rate (Air) (kg/yr)	Estimation Method	Reportable? (Yes/No)
No Reportable Part 2 Substances (i.e. company not engaged in identified activities)*					

Part 3: Dioxins/Furans

Substance	CAS #	Annual Emission Rate (g TEQ/yr)	Estimation Method
No Reportable Part 3 Substances (i.e. company not engaged in identified activities)*			

*identified activities - as listed in "Guide for Reporting to the National Pollutant Release Inventory"

Part 4: Criteria Air Contaminants

Part 4 Summary

CAS	Substance	Total Emissions (kg)	Threshold (kg)	Report?
630-08-0	Carbon Monoxide	175	20,000	No
11104-93-1	Nitrogen Oxides	208	20,000	No
7446-09-5	Sulphur Dioxide	1.25	20,000	No
N/A - M10	PM-2.5	3.95	300	No
N/A - M09	PM-10	3.95	500	No
N/A - M08	Total PM-100	404	20,000	No
N/A - M16	VOCs	16,449	10,000	Yes

Natural Gas Combustion

Natural Gas Used: 130038 m^3

CAS	Substance	Emission Factor ($lb/10^6$ scf)	Emission Factor ($kg/10^6 m^3$)	Emissions from Nat Gas (kg)
630-08-0	Carbon Monoxide	84	1,344	174.8
11104-93-1	Nitrogen Oxides	100	1,600	208.1
N/A - M10	PM-2.5	1.9	30	4.0
N/A - M09	PM-10	1.9	30	4.0
7446-09-5	Sulphur Dioxide	0.6	10	1.2
N/A - M08	Total PM-100	1.9	30	4.0
N/A - M16	VOCs	5.5	88	11.4

Part 5: Speciated VOCs

2022/24 Gazette Number	Substance	CAS	NPRI Part	Threshold	Threshold Units	Total Releases (tonnes/yr)	Estimation Method	Report?
261	Acetylene	74-86-2	5	1	tonne	0.000	NA	No
262	Analytically unresolved hydrocarbons (C10 to C1	NA-44	5	1	tonne	0.000	NA	No
263	Benzene	71-43-2	5	1	tonne	0.000	NA	No
264	1,3-Butadiene	106-99-0	5	1	tonne	0.000	NA	No
265	Butane (all isomers)	NA-24	5	1	tonne	0.000	NA	No
266	Butene (all isomers)	25167-67-3	5	1	tonne	0.000	NA	No
267	2-Butoxyethanol	111-76-2	5	1	tonne	0.000	NA	No
268	Butyl Acetate	NA-41	5	1	tonne	0.000	NA	No
269	Cycloheptane (all isomers)	NA-25	5	1	tonne	0.000	NA	No
270	Cyclohexane (all isomers)	NA-26	5	1	tonne	0.000	NA	No
271	Cyclooctane (all isomers)	NA-27	5	1	tonne	0.000	NA	No
272	Decane (all isomers)	NA-28	5	1	tonne	0.000	NA	No
273	p-Dichlorobenzene	106-46-7	5	1	tonne	0.000	NA	No
274	1,2-Dichloroethane	107-06-2	5	1	tonne	0.000	NA	No
275	Dimethylether	115-10-6	5	1	tonne	0.000	NA	No
276	Ethyl alcohol	64-17-5	5	1	tonne	0.000	NA	No
277	Ethyl acetate	141-78-6	5	1	tonne	0.000	NA	No
278	Ethylene	74-85-1	5	1	tonne	0.000	NA	No
279	Ethyltoluene (all isomers)	NA-42	5	1	tonne	0.000	NA	No
280	Formaldehyde	50-00-0	5	1	tonne	0.000	NA	No
281	Furfuryl alcohol	98-00-0	5	1	tonne	0.000	NA	No
282	Heavy aromatic solvent naphtha	64742-94-5	5	1	tonne	0.000	NA	No
283	Heptane (all isomers)	NA-31	5	1	tonne	0.000	NA	No
284	n-Hexane	110-54-3	5	1	tonne	0.000	NA	No
285	Hexane	NA-32	5	1	tonne	0.000	NA	No
286	Hexene (all isomers)	25264-93-1	5	1	tonne	0.000	NA	No
287	Hydrotreated heavy naphtha	64742-48-9	5	1	tonne	0.000	NA	No
288	Hydrotreated light distillate	64742-47-8	5	1	tonne	0.000	NA	No
289	Isopropyl alcohol	67-63-0	5	1	tonne	**0.001**	NA	No
290	Light aromatic solvent naphtha	64742-95-6	5	1	tonne	0.000	NA	No
291	d-Limonene	5989-27-5	5	1	tonne	0.000	NA	No
292	Methanol	67-56-1	5	1	tonne	0.000	NA	No
293	Methyl ethyl ketone	78-93-3	5	1	tonne	0.000	NA	No
294	Methyl isobutyl ketone	108-10-1	5	1	tonne	0.000	NA	No
295	Methylcyclopentane	96-37-7	5	1	tonne	0.000	NA	No
296	Mineral spirits	64475-85-0	5	1	tonne	0.000	NA	No
297	Myrcene	123-35-3	5	1	tonne	0.000	NA	No
298	Naphtha	8030-30-6	5	1	tonne	0.000	NA	No
299	Nonane (all isomers)	NA-33	5	1	tonne	0.000	NA	No
300	Octane (all isomers)	NA-34	5	1	tonne	0.000	NA	No
301	Other glycol ethers and acetates (and their isom	NA-45	5	1	tonne	0.000	NA	No
302	Pentane (all isomers)	NA-35	5	1	tonne	0.000	NA	No
303	Pentene (all isomers)	NA-36	5	1	tonne	0.000	NA	No
304	beta-Phellandrene	555-10-2	5	1	tonne	0.000	NA	No
305	alpha-Pinene	80-56-8	5	1	tonne	0.000	NA	No
306	beta-Pinene	127-91-3	5	1	tonne	0.000	NA	No
307	Propane	74-98-6	5	1	tonne	0.000	NA	No
308	Propyl acetate (all isomers)	NA-43	5	1	tonne	0.000	NA	No
309	n-Propyl alcohol	71-23-8	5	1	tonne	0.000	NA	No
310	Propylene	115-07-1	5	1	tonne	0.000	NA	No
311	Propylene glycol methyl ether acetate (all isome	108-65-6	5	1	tonne	0.000	NA	No
312	Solvent naphtha light aliphatic	64742-89-8	5	1	tonne	0.000	NA	No
313	Solvent naphtha medium aliphatic	64742-88-7	5	1	tonne	0.000	NA	No
314	Stoddard solvent	8052-41-3	5	1	tonne	0.000	NA	No
315	Styrene	100-42-5	5	1	tonne	0.000	NA	No
316	Tetrahydrofuran	109-99-9	5	1	tonne	0.000	NA	No
317	Toluene	108-88-3	5	1	tonne	0.000	NA	No
318	1,2,4-Trimethylbenzene	95-63-6	5	1	tonne	0.000	NA	No
319	Trimethylbenzene	25551-13-7	5	1	tonne	0.000	NA	No
320	Vinyl acetate	108-05-4	5	1	tonne	0.000	NA	No

2022/24 Gazette Number	Substance	CAS	NPRI Part	Threshold	Threshold Units	Total Releases (tonnes/yr)	Estimation Method	Report?
321	VM & P naphtha	8032-32-4	5	1	tonne	0.000	NA	No
322	Xylene (all isomers)	1330-20-7	5	1	tonne	0.000	NA	No

MB - Mass NA - Not Applicable
E - Published Emission Factors
M - Monitoring or Direct Measurement
O - Engineering Estimate

APPENDIX B

EC's GHG Screening Assessment Summary

EC s. 46 Greenhouse Gas Emissions Reporting
Emissions Reporting
Reporting Threshold (10,000 tonnes of CO2 equivalent)

Devtek Aerospace Inc. - Kitchener
Year: 2022

Note: A person submitting a report in respect of a facility that meets the emission criteria shall use quantification methods for estimating emissions that are consistent with the guidelines approved for use by the United Nations Framework Convention on Climate Change (UNFCCC) for the preparation of National Greenhouse Gas Inventories.

	Source Categories					
Substance	**Stationary Combustion Emissions (tonnes/yr)**	**Industrial Process Emissions (tonnes/yr)**	**Wastewater Emissions (tonnes/yr)**	**On-Site Transportation Emissions (tonnes/yr)**	**Global Warming Potentials (GWP)**	**CO2 Equivalents (tonnes/yr)**
Carbon Dioxide (CO_2)	244.3192	n/a - see below	n/a - see below	0.0000	1	244
Nitrous Oxide (N_2O)	0.0043	n/a - see below	n/a - see below	0.0000	265	1
Methane (CH_4)	0.0048	n/a - see below	n/a - see below	0.0000	28	0.13
Emission Method	Emission Factor	n/a	n/a	n/a	**CO2 Eq:**	**246**

Threshold: **10,000**
Reportable? **No**

Source:	**Stationary Fuel Combustion**					
Method:	Standard Quantification Method ON.20; Guideline for Quantification, Reporting and Verification of GHG Emissions, Ontario MECP					
Basis:	Global warming potentials - Canada.ca					
Natural Gas Use:	**130,038**	m^3 in reporting year	**Data Source:**	Purchasing		

APPENDIX C

Ontario's GHG Screening Assessment Summary

ONTARIO REGULATION 390/18 (replaces 143/16)
Quantification, Reporting and Verification of Greenhouse Gas Emissions
Reporting Threshold (10,000 tonnes of CO2 equivalent)

Devtek Aerospace Inc. - Kitchener
Year: 2022

GHG Source:	General stationary combustion (ON.20)

Annual greenhouse gas emissions in tonnes

Substance List from Table 1 of O. Reg. 452/09	**Emissions From Fossil Fuels (tonnes/yr)**	**Emissions from Biomass (Wood) Fuels (tonnes/yr)**					**Global Warming Potentials (GWP)**	**CO2 Equivalents (tonnes/yr)**
Carbon Dioxide (CO_2)	244.3192	0.0000	--	--	--	--	1	244.3
Methane (CH_4)	0.0048	0.0000	--	--	--	--	28	0.13
Nitrous Oxide (N_2O)	0.0043	0.0000	--	--	--	--	265	1.1
Emission Method	Emission Factors	Emission Factors					**CO2 Eq:**	**246**

Threshold:	**10,000**
Reportable?	**No**

Annual Fuel Consumption

Natural Gas Use:	**130,000**	m^3 in reporting year	**Data Source:**	Purchasing Department

APPENDIX D

Facility and Material Usage Details

Devtek Aerospace Inc. - Héroux-Devtek Landing Gear Division	
NPRI and Other Reporting Programs	2022

SITE DETAILS			
Company	Devtek Aerospace Inc.	Parent Company	n/a
Site Name	Devtek Aerospace Inc.	% Ownership	n/a
Address	1665 Highland Road West Kitchener, ON N2N 3K5 Canada	Address	
Coordinates, Easting	535577	D&B D-U-N-S No.	n/a
Coordinates, Northing	4807619	Federal Business No.	n/a
Zone	17	NPRI ID	7643
NAICS Code (2 digits)	31-33 - Manufacturing	MOE ID	n/a
NAICS Code (4 digits)	3366		
NAICS Code (6 digits)	336410 - Aerospace Product and Parts Manufacturing		

ONTACT INFORMATION			
Technical Contact	Miro Jarnjevic	Certifying Official Contact	Peter Wiebe
Position	Operations Cell Leader	Position	General Manager
Address	1665 Highland Road West Kitchener, ON N2N 3K5 Canada	Address	1665 Highland Road West Kitchener, ON N2N 3K5 Canada
Phone	519-576-8910 x2709	Phone	519-576-8910 x2751
Fax	519-576-5119	Fax	519-576-5119
Email	mjarnjevic@herouxdevtek.com	Email	peter.wiebe@herouxdevtek.com
Facility Public Contact	Robert Cadieux	Company Coordinator	Miro Jarnjevic
Position	Environment, Director	Position	Operations Cell Leader
Address	1111, Saint-Charles Street West Suite 600, West Tower Longueuil, Québec J4K 5G4	Address	1665 Highland Road West Kitchener, ON N2N 3K5 Canada
Phone	450-679-5450 x 4828	Phone	519-576-8910 x2709
Fax		Fax	519-576-5119
Email	Robert.cadieux@herouxdevtek.com	Email	mjarnjevic@herouxdevtek.com

TYPICAL FACILITY OPERATION IN REPORTING YEAR			
Days of Operation	☑ Monday ☑ Tuesday ☑ Wednesday ☑ Thursday ☑ Friday ☑ Saturday ☑ Sunday		
Hours of Operation	☑ 24 hr ☐ 16 hr ☐ 8 hr ☐ Other	If Other:	Start Time: n/a
Shutdowns > 1 week (incl. start/end date)	no shutdown		

Emission Inventory Data Inputs

Heroux Devtek Kitchener

Site Information

Number of Employees:	113	
Total Annual Hours - Laser Cutting:		
Operating Days Per Year:	251	
Periods of Extended Shut down (Greater than 1 week) :	From	To
	none	

Pollution Prevention Plan (P2 Plan)

Does the Facility have a P2 Plan? (Yes or NO)	

Fuels

Natural Gas	Equipment	Capacity	Fuel Use	Units
		-	130038	m^3

Propane (excluding fuel used for vehicles (i.e. Forklifts)	Equipment	Capacity	Fuel Use	Units
	Forklifts		5040	kg
			0	

RAW MATERIAL/PRODUCT INPUTS AND OUTPUTS

Production Area Inputs	Raw Material	Used	Unit	Specific Gravity	Total (kg)	Comments
Metals	Aluminum Alloys	88,830	kg	-	88,830.0	Linked to Metal by Part worksheet
	Carbon and Alloy Steels	447,070	kg	-	447,070.0	Linked to Metal by Part worksheet
	Titanium	11,720	kg	-	11,720.0	Linked to Metal by Part worksheet
Production Materials						
	683-3-20 Skydrol Resistant Clear Polyurethane TC	2.00	kits	1.07	2.1	unit is 1.5QT Kit
	73xNW Black marking ink	16.00	oz	1.00	0.5	16 oz
	73xNW white marking ink	16.00	oz	1.00	0.5	
	Aeroshell 33 Grease	60.00	oz	1.00	1.8	
	Cimstar Qual star LF	3,536.00	L	1.02	3,606.7	
	CIMClean 40	57.00	L	1.03	58.9	
	EnSolv-5408	16,640.00	L	1.0	16,640.0	
	EQO - MAX 759	5,865.00	L	0.91	5,337.2	
	Hydraulic 32	3,900.00	L	0.87	3,373.5	
	Instapak component A - 250kgs	624.00	L	1.20	748.8	
	Instapak component B - 213.63kgs	416.00	L	1.10	457.6	
	Proseal 870 B-1/2 Part B	24.00		1.50	36.0	unit is 2 oz tubes
	EPIBOND EPB1536ABQT	3.00			0.0	unit is QT each
	NYCOTE 7-11	1.00			0.0	unit is PT
	BMX10-79 TYPE 3 PRIMER	1.00			0.0	unit is 3/4 gal 1QT cure 1 QT thinner
	03-102512-94 NEUTRALIZER	2.00	L		0.0	
	X4R-416 ELECTROLYTE	2.00	L		0.0	
	X4R-417 ELECTROLYTE	2.00	L		0.0	
	PR 1776 B2 SEALANT	22.00			0.0	unit is 6 oz tube
	PR 148 ADHESION PROMOTER	3.00			0.0	unit is 16 oz bottle
Welding	E6013	0.00	kg		0.0	confirmed zero usage in 2020
	E7018	0.00	kg		0.0	confirmed zero usage in 2020
	E70S	0.00	kg		0.0	confirmed zero usage in 2020

Production Area Outputs	Type of Metal	Total Recycled	Unit	Total (kg)	Recycling Contractor	Comments
Scrap Metals	Aluminum	30,820	lb	13,980	Gerdau	
	Carbon and Alloy Steels	33,106	lb	15,017	Gerdau	
	Titanium	21,958	lb	9,960	Gerdau	
	Nickels	1,231,540	lb	558,617	Gerdau	

MANUFACTURING EQUIPMENT OPERATING RATES

Source ID	Source Description	Flow Rate	Operating Hours (hrs/day)	Operating Hours (day/week)	Data Source
	Deburring Process	3.4	15	6	Planning

Operating Data

Month	Production Days	Monthly %	Quarterly %
January	21	8.37%	25%
February	19	7.57%	
March	23	9.16%	
April	21	8.37%	26%
May	22	8.76%	
June	22	8.76%	
July	20	7.97%	25%
August	23	9.16%	
September	21	8.37%	
October	20	7.97%	24%
November	22	8.76%	
December	17	6.77%	
Total	251	100%	

		1A		-		-		-		-		-		1A		-	
	VOC?:	Y		Y		Y		Y		N		N		N		N	
Year 2022	**Total**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**
Material Used	**Usage**	Methylene (bisphenyl isocyanate		Triethanolamine		n-propyl bromide		Monoethanolamine		Hexahydro-1,3,5-tris(2-hydroxylethyl)		Sodium metasilicate		Aluminum (fume or dust)		Magnesium	
		101-68-8		102-71-6		106-94-5		141-43-5		4719-04-4		6834-92-0		7429-90-5		7439-95-4	
683-3-20 Skydrol Resistant Clear Polyurethane TC	2.14		-		-		-		-		-		-		-		-
73xNW Black marking ink	0.47		-		-		-		-		-		-		-		-
Aeroshell 33 Grease	1.77		-		-		-		-		-		-		-		-
Aluminum	88,830.00		-		-		-		-		-		-	93.0	82,611.90	2.8	2,487.24
Carbon and Alloy Steel	447,070.00		-		-		-		-		-		-		-		-
Cimstar Qual star LF	3,606.72		-	3.0	108.20		-	5.0	180.34	3.0	108.20		-		-		-
CIMClean 40	58.94		-		-		-	5.0	2.95	7.5	4.42	2.0	1.18		-		-
EnSolv-5408	16,640.00		-		-	95.0	15,808.00		-		-		-		-		-
EQO - MAX 759	5,337.15		-		-		-		-		-		-		-		-
Hydraulic 32	3,373.50		-		-		-		-		-		-		-		-
Instapak component A - 250kgs	748.80	45.0	336.96		-		-		-		-		-		-		-
Instapak component B - 213.63kgs	457.60		-		-		-		-		-		-		-		-
Proseal 870 B-1/2 Part B	36.00		-		-		-		-		-		-		-		-
Titanium	11,720.00		-		-		-		-		-		-		-		-
TOTALS	**577,883**																
Total MPO (kg)			336.96		108.20		15808.00		183.28		112.62		1.18		0.00		2487.24
Total VOCs (kg)	**16,437**		337		108		15808		183		n/a		n/a		n/a		n/a
			VOC		VOC		VOC		VOC		-		-		-		-

Year 2022	1A		-		1A		-		1A		1A		1A		-	
	N		N		N		N		N		N		N		N	
	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)
Material Used	Manganese		Molybdenum		Nickel		Silicon		Chromium		Copper		Zinc		Parrafin wax	
	NA - 09		7439-98-7		NA - 11		7440-21-3		NA - 04		NA - 06		NA - 14		8002-74-2	
683-3-20 Skydrol Resistant Clear Polyurethane TC		-		-		-		-		-		-		-		
73xNW Black marking ink		-		-		-		-		-		-		-		
Aeroshell 33 Grease		-		-		-		-		-		-		-		
Aluminum	0.5	-		-	0.0	-	0.2	-	0.2	-	2.5	2,220.75	5.3	4,707.99	20.0	0
Carbon and Alloy Steel	0.8	-	0.5	-	0.995	-	0.5	-	0.6	-		-		-		
Cimstar Qual star LF		-		-		-		-		-		-		-		-
CIMClean 40		-		-		-		-		-		-		-		
EnSolv-5408		-		-		-		-		-		-		-		
EQO - MAX 759		-		-		-		-		-		-		-		
Hydraulic 32		-		-		-		-		-		-		-		
Instapak component A - 250kgs		-		-		-		-		-		-		-		
Instapak component B - 213.63kgs		-		-		-		-		-		-		-		
Proseal 870 B-1/2 Part B		-		-		-		-		-		-		-		
Titanium		-		-		-		-		-		-		-		
TOTALS												-		-		
Total MPO (kg)		0.00		0.00		0.00		0.00		0.00		2220.75		4707.99		0.00
Total VOCs (kg)		n/a		n/a		n/a		n/a		n/a		n/a		n/a		n/a
		-		-		-		-		-		-		-		-

Year 2022	1B		1A		-		-		-		-		-		-	
	N		N		N		N		N		N		N		N	
	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)	%	mass (kg)
Material Used	Nonylphenol ethoxylate		Polyurethane prepolymer		Titanium dioxide		2-ethylhexyl palmitate		Mineral Oil		Hydrotreated heavy naphthenic		Solvent refined paraffinic oil		Paraffin oils	
	9016-45-9		9016-87-9		13463-67-7		29806-73-3		64741-88-4		64742-52-5		64742-54-7		64742-71-8	
683-3-20 Skydrol Resistant Clear Polyurethane TC		-		-		-		-		-		-		-		-
73xNW Black marking ink		-		-		-		-		-		-		-		-
Aeroshell 33 Grease		-		-		-		-		-		-		-		-
Aluminum		-		-		-		-		-		-		-		-
Carbon and Alloy Steel		-		-		-		-		-		-		-		-
Cimstar Qual star LF	3.0	108.20		-		-		-		-	20.0	721.34		-		-
CIMClean 40		-		-		-		-		-		-		-		-
EnSolv-5408		-		-		-		-		-		-		-		-
EQO - MAX 759		-		-		-	50.0	2,668.58		-		-	7.5	400.29	15.0	800.57
Hydraulic 32		-		-		-		-	92.5	3,120.49		-		-		-
Instapak component A - 250kgs		-	100.0	748.80		-		-		-		-		-		-
Instapak component B - 213.63kgs		-		-		-		-		-		-		-		-
Proseal 870 B-1/2 Part B		-		-	5.0	1.80		-		-		-		-		-
Titanium		-		-	99.0	11,602.80		-		-		-		-		-
TOTALS																
Total MPO (kg)		108.20		748.80		11604.60		2668.58		3120.49		721.34		400.29		800.57
Total VOCs (kg)		n/a		n/a		n/a		n/a		n/a		n/a		n/a		n/a
		-		-		-		-		-		-		-		-

Year 2022	-		-		-		-		-	
	N		N		N		N		N	
Material Used	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**	**%**	**mass (kg)**
	Severely Treated Petroleum Distillate		Pentene, 2,4,4-trimethyl-sulfurized		Sodium alkylaryl sulfonate		Synthetic sodium sulfonate		1H-Benzotriazole-1-Methanamine,n,n-	
	64742-62-7		68515-88-8		78330-12-8		93820-59-8		94270-86-7	
683-3-20 Skydrol Resistant Clear Polyurethane TC		-		-		-		-		-
73xNW Black marking ink		-		-		-		-		-
Aeroshell 33 Grease		-		-		-		-		-
Aluminum		-		-		-		-		-
Carbon and Alloy Steel		-		-		-		-		-
Cimstar Qual star LF		-		-	3.0	108.20	3.0	108.20		-
CIMClean 40		-		-		-		-		-
EnSolv-5408		-		-		-		-		-
EQO - MAX 759		-	1.0	53.37		-		-	0.5	-
Hydraulic 32	7.5	253.01		-		-		-		-
Instapak component A - 250kgs		-		-		-		-		-
Instapak component B - 213.63kgs		-		-		-		-		-
Proseal 870 B-1/2 Part B		-		-		-		-		-
Titanium		-		-		-		-		-
TOTALS										
Total MPO (kg)		253.01		53.37		108.20		108.20		0.00
Total VOCs (kg)		n/a		n/a		n/a		n/a		n/a
		-		-		-		-		-

APPENDIX E

Emission Calculations

Consumable Welding Emissions

Description: Consumable welding is the process by which 2 different metal parts are joined by heating the parts at contact and forming a new connection with a consumable electrode. The facility conducts maintenance welding.

Process Operating Conditions

Welding type: GMAW
Electrode type: GMAW - E70S
Electrode Usage: 0.0 kg/yr
Name of Electrode: E70S

Emission Estimation Methodology

- Total annual electrode usage data provided by Devtek Aerospace

-The closest wire/rod chemistry was selected from US EPA AP-42, "Electric Arc Welding", Chapter 12.19, 1995. Emissions for individual components on the MSDS with no emission factors were determined by multiplying the US EPA emission factor for total fume emissions by the maximum percent composition of the individual component.

-Particulate Matter emissions were determined based on the US EPA emission factor for total fume emissions for the specific wire/rod selected.

Contaminant	CAS #	Emission Factor (g/kg of Electrode Consumed)	Avg. Wt. Percent	Annual Emission Rate (kg/yr)	Emission Estimation Technique	Data Quality
USEPA						
Chromium	7440-47-3	0.001	-	0.00E+00	EF	AA
Cobalt	7440-48-4	0.001	-	0.00E+00	EF	AA
Manganese	7439-96-5	0.318	-	0.00E+00	EF	AA
Nickel	7440-02-0	0.001	-	0.00E+00	EF	AA
Particulate Matter	NA - M10	5.2	-	0.00E+00	EF	AA
MSDS						
Carbon	7440-44-0	5.2	0.11%	0.00E+00	EF	AA
Copper	7440-50-8	5.2	0.5%	0.00E+00	EF	AA
Iron	7439-89-6	5.2	94.0%	0.00E+00	EF	AA
Phosphorus	7723-14-0	5.2	0.025%	0.00E+00	EF	AA
Sulphur	7704-34-9	5.2	0.035%	0.00E+00	EF	AA
Molybdenum	7439-98-7	5.2	0.50%	0.00E+00	EF	AA
Silicon	7440-21-3	5.2	0.78%	0.00E+00	EF	AA
Titanium	7440-32-6	5.2	0.1%	0.00E+00	EF	AA
Aluminum	7429-90-5	5.2	0.1%	0.00E+00	EF	AA
Zirconium	7440-67-7	5.2	0.07%	0.00E+00	EF	AA

EF: Emission Factor AA: Above Average Data Quality

Sample Calculations

Chromium Emission Rate = Feedrate x Emission Factor x Percent Emitted
= 5 kg/yr x 0.001 g/kg ÷ 1000 g/kg x 100 %
= 0.000000 kg/yr

Iron Emission Rate = Feedrate x Emission Factor x Avg. Wt. Percent x Percent Emitted
= 5 kg/yr x 5.2 g/kg x 94% ÷ 1000 g/kg x 100 %
= 0.000 kg/yr

References

1) US EPA AP-42 Metallurgical Industry, Electric Arc Welding, Chapter 12.19, January 1995. <http://www.epa.gov/ttn/chief/ap42/ch12/final/c12s19.pdf>.

Consumable Welding Emissions

Description: Consumable welding is the process by which 2 different metal parts are joined by heating the parts at contact and forming a new connection with a consumable electrode. The facility performs maintenance welding.

Process Operating Conditions

Welding type: SMAW
Electrode type: SMAW - E6013

Electrode Usage: 0.0 kg/yr
Name of Electrode: E6013

Emission Estimation Methodology

- Total annual electrode usage data provided by Devtek Aerspace Inc.
-The closest wire/rod chemistry was selected from US EPA AP-42, "Electric Arc Welding", Chapter 12.19, 1995. Emissions for individual components on the MSDS with no emission factors were determined by multiplying the US EPA emission factor for total fume emissions by the maximum percent composition of the individual component.
-Particulate Matter emissions were determined based on the US EPA emission factor for total fume emissions for the specific wire/rod selected.

Contaminant	CAS #	Emission Factor (g/kg of Electrode Consumed)	Avg. Wt. Percent	Annual Emission Rate (kg/yr)	Emission Estimation Technique	Data Quality
USEPA						
Manganese	7439-96-5	0.945	-	0.00E+00	EF	AA
Particulate Matter	NA - M10	19.7	-	0.00E+00	EF	AA
MSDS						
Aluminum silicate	12141-46-7	19.7	1%	0.00E+00	EF	AA
Calcium carbonate	1317-65-3	19.7	1%	0.00E+00	EF	AA
Potassium silicate	1312-76-1	19.7	1%	0.00E+00	EF	AA
Potassium titanate	12030-97-6	19.7	1%	0.00E+00	EF	AA
Sodium silicate	1344-09-8	19.7	1%	0.00E+00	EF	AA
Zirconium silicate	1214-23-4	19.7	1%	0.00E+00	EF	AA
Magnesium carbonate	546-93-0	19.7	2%	0.00E+00	EF	AA
Aluminum oxide	1344-28-1	19.7	5%	0.00E+00	EF	AA
Cellulose	65996-61-4	19.7	5%	0.00E+00	EF	AA
Mica	12001-26-2	19.7	5%	0.00E+00	EF	AA
Titanium dioxide	13463-67-7	19.7	10%	0.00E+00	EF	AA
Iron	7439-89-6	19.7	80%	0.00E+00	EF	AA

EF: Emission Factor AA: Above Average Data Quality

Sample Calculations

Manganese Emission Rate = Feedrate x Emission Factor
= 2 kg/yr x 0.945 g/kg ÷ 1000 g/kg
= 0.00000 kg/yr

Iron Emission Rate = Feedrate x Emission Factor x Avg. Wt. Percent
= 2 kg/yr x 18.7 g/kg x 80% ÷ 1000 g/kg
= 0.0000 kg/yr

Consumable Welding Emissions

Description: Consumable welding is the process by which 2 different metal parts are joined by heating the parts at contact and forming a new connection with a consumable electrode. The facility performs maintenance welding.

Process Operating Conditions

Welding type: SMAW
Electrode type: SMAW - E7018

Electrode Usage: 0.0 kg/yr
Name of Electrode: E7018

Emission Estimation Methodology

- Total annual electrode usage data provided by Devtek Aerospace Inc.
-The closest wire/rod chemistry was selected from US EPA AP-42, "Electric Arc Welding", Chapter 12.19, 1995. Emissions for individual components on the MSDS with no emission factors were determined by multiplying the US EPA emission factor for total fume emissions by the maximum percent composition of the individual component.
-Particulate Matter emissions were determined based on the US EPA emission factor for total fume emissions for the specific wire/rod selected.

Contaminant	CAS #	Emission Factor (g/kg of Electrode Consumed)	Avg. Wt. Percent	Annual Emission Rate (kg/yr)	Emission Estimation Technique	Data Quality
USEPA						
Manganese	7439-96-5	1.03	-	0.00E+00	EF	A
Particulate Matter	NA - M10	18.4	-	0.00E+00	EF	A
MSDS						
Iron oxide	1309-37-1	18.4	0.5%	0.00E+00	EF	A
Zinc oxide	1314-13-2	18.4	0.5%	0.00E+00	EF	A
Molybdenum	7439-98-7	18.4	1%	0.00E+00	EF	A
Phosphorus	7723-14-0	18.4	1%	0.00E+00	EF	A
Sulfur	7704-34-9	18.4	1%	0.00E+00	EF	A
Vanadium	7440-62-2	18.4	1%	0.00E+00	EF	A
Silicon	7440-21-3	18.4	2%	0.00E+00	EF	A
Cellulose	65996-61-4	18.4	5%	0.00E+00	EF	A
Aluminum oxide	1344-28-1	18.4	5%	0.00E+00	EF	A
Sodium silicate	1344-09-8	18.4	5%	0.00E+00	EF	A
Calcium fluoride	7789-75-5	18.4	10%	0.00E+00	EF	A
Kaolin	1332-58-7	18.4	10%	0.00E+00	EF	A
Titanium dioxide	13463-67-7	18.4	8%	0.00E+00	EF	A
Calcium carbonate	1317-65-3	18.4	15%	0.00E+00	EF	A
Iron	7439-89-6	18.4	27%	0.00E+00	EF	A

EF: Emission Factor A: Average Data Quality

Sample Calculations

Manganese Emission Rate = Feedrate x Emission Factor
= 3 kg/yr x 1.03 g/kg ÷ 1000 g/kg
= 0.00000 kg/yr

Iron Emission Rate = Feedrate x Emission Factor x Avg. Wt. Percent
= 3 kg/yr x 18.4 g/kg x 27% ÷ 1000 g/kg
= 0.0000 kg/yr

References

1) US EPA AP-42 Metallurgical Industry, Electric Arc Welding, Chapter 12.19, January 1995.

Deburring Emissions

Description: The facility uses grinding wheels and discs and grinding rolls to remove excess burrs from the steel, aluminum, and titanium. The deburring process is serviced by a dust collector. The grit size of the wheels/discs and rolls varies from 40 to 240 grit.

Process Operating Conditions

Actual operating times: 5.5 hrs/day, 6 days/week, 49 weeks/yr
Total operating hours: 1617 hrs/yr
Exhaust flow rate: 3.4 m^3/s

Emission Estimation Methodology

The MOE's baghouse emission factor (20 mg/m3) was used in conjunction with the exhaust flow rate to determine emissions of particulate matter. As the grit size of the grinding media increases, the resulting particulate emissions decrease in size. Using a grit size of 240, particulate emissions will be in the range of 45 to 57 microns.

Contaminant	CAS #	Annual Emission Rate (kg/yr)	Emission Estimation Technique	Data Quality
Total Particulate Matter	NA - M08	396	EF	A

EF: Emission Factor A: Average Data Quality

Sample Calculations

PM Emission Rate = Emission Factor x Exhaust Flow Rate x Operating time/yr
= 20 mg/m^3 x 3.4 m^3/s ÷ 1000000 mg/kg x 3600 s/hr x 16 hrs/day x 6 days/week x 49 weeks/yr
= 396 kg/yr

APPENDIX F

Confirmation of Submission

Government of Canada Gouvernement du Canada

National Pollutant Release Inventory
Summary Report

General Information

NPRI ID

7643

Company Legal Name

Heroux Devtek Landing Gear Division

Facility Name

West Heights Manufacturing/Devtek Aerospace Inc

Facility Address

1665 Highland Road West, Kitchener, Ontario, N2N 3K5, Canada

Report Details

Report Year

2022

Programs

NPRI

Report Types

NPRI Inventory

Report Status

Submitted

Substances

CAS RN	Substance Name	Releases	Disposals	Recycling	Unit
NA - M16	Volatile Organic Compounds (total)	16.449			tonnes

Version: 4.1.14.700-009