

PANABRASIVE INC.

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TOXICS REDUCTION ACT TOXIC SUBSTANCE REDUCTION PLAN SUMMARIES 2012

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PANABRASIVE INC.

JANUARY 03, 2013

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1. PLAN SUMMARY – MANGANESE (AND ITS COMPOUNDS)

Name and CASRN of Substance	Manganese (and its compounds)	Not Applicable
Substances for which other plans have been prepared	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 -TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0

1.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

1.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the use, and release of Manganese (and its compounds) in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for

PanAbrasive; they will continue to evaluate all options available to achieve this.

1.3 Reduction Objectives

PanAbrasive's goal is to reduce the use and release of Manganese (and its compounds) where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

1.4 Description of Substance

Manganese is found in the scrap metal purchased by the facility. Manganese is also used as an alloying agent for its elemental characteristics for steelmaking.

1.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of Manganese (and its compounds).

1.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for Manganese (and its compounds), prepared on behalf of PanAbrasive, and dated December 19, 2012.

1.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

2. PLAN SUMMARY – HEXACHLOROBENZENE

Name and CASRN of Substance	Hexachlorobenzene	118-74-1
Substances for which other plans have been prepared	PCCD/F	Not Applicable
	2,3,7,8 –TCCD	1746-01-6
	1,2,3,7,8 – PeCDD	40321-76-4
	1,2,3,4,7,8 – HxCDD	39227-28-6
	1,2,3,6,7,8 – HxCDD	57653-85-7
	1,2,3,7,8,9 – HxCDD	19408-74-3
	1,2,3,4,6,7,8 – HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 – TCDF	51207-31-9
	2,3,4,7,8 – PeCDF	57117-31-4
	1,2,3,7,8 – PeCDF	57117-41-6
	1,2,3,4,7,8 – HxCDF	70648-26-9
	1,2,3,7,8,9 – HxCDF	72918-21-9
	1,2,3,6,7,8 – HxCDF	57117-44-9
	2,3,4,6,7,8 – HxCDF	60851-34-5
	1,2,3,4,6,7,8 – HpCDF	67562-39-4
	1,2,3,4,7,8,9 – HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable

2.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

2.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of Hexachlorobenzene in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this.

2.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of Hexachlorobenzene where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. Furthermore, since emissions of Hexachlorobenzene are zero at the facility there are no feasible options that could further reduce emissions.

2.4 Description of Substance

Hexachlorobenzene is believed to be created when melting scrap metal due to the presence of chlorinated substances contaminating the scrap. There is insufficient documentation in the published literature to indicate that this is always the case. Furthermore, the PanAbrasive facility does not routinely accept or process scrap contaminated by plastics or other chlorinated compounds.

2.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the creation and release of Hexachlorobenzene.

2.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for Hexachlorobenzene, prepared on behalf of PanAbrasive, and dated December 19, 2012.

2.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

3. PLAN SUMMARY – Polychlorinated Dibenzo-P-Dioxins & Polychlorinated Dibenzofurans (PCCD/F)

Name and CASRN of Substance	PCCD/F	Not Applicable
Substances for which other plans have been prepared	2,3,7,8 –TCDD	1746-01-6
	1,2,3,7,8 – PeCDD	40321-76-4
	1,2,3,4,7,8 – HxCDD	39227-28-6
	1,2,3,6,7,8 – HxCDD	57653-85-7
	1,2,3,7,8,9 – HxCDD	19408-74-3
	1,2,3,4,6,7,8 – HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 – TCDF	51207-31-9
	2,3,4,7,8 – PeCDF	57117-31-4
	1,2,3,7,8 – PeCDF	57117-41-6
	1,2,3,4,7,8 – HxCDF	70648-26-9
	1,2,3,7,8,9 – HxCDF	72918-21-9
	1,2,3,6,7,8 – HxCDF	57117-44-9
	2,3,4,6,7,8 – HxCDF	60851-34-5
	1,2,3,4,6,7,8 – HpCDF	67562-39-4
	1,2,3,4,7,8,9 – HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1

3.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

3.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to

reduce the creation, and release of PCDD/F in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to evaluate all options available to achieve this.

3.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of PCDD/Fs where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

3.4 Description of Substance

PCDD/Fs are formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

3.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of PCDD/F.

3.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for PCDD/F, prepared on behalf of PanAbrasive, and dated December 19, 2012.

3.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

4. PLAN SUMMARY – 2,3,7,8 -TCCD

Name and CASRN of Substance	2,3,7,8 –TCCD	1746-01-6
Substances for which other plans have been prepared	1,2,3,7,8 – PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable

4.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

4.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 2,3,7,8 – TCCD in full compliance with all federal and

provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to evaluate all options available to achieve this.

4.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 2,3,7,8 - TCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

4.4 Description of Substance

2,3,7,8 -TCCD is a polychlorinated dibenzo-p-dioxin (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

4.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 2,3,7,8 -TCCD.

4.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 2,3,7,8 -TCCD, prepared on behalf of PanAbrasive, and dated December 19, 2012.

4.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

5. PLAN SUMMARY – 1,2,3,7,8 - PeCDD

Name and CASRN of Substance	1,2,3,7,8 - PeCDD	40321-76-4
Substances for which other plans have been prepared	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 - TCCD	1746-01-6

5.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

5.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,7,8 – PeCDD in full compliance with all federal and

provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to evaluate all options available to achieve this.

5.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,7,8 - PeCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

5.4 Description of Substance

1,2,3,7,8 - PeCDD is a polychlorinated dibenzo-p-dioxin (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

5.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,7,8 - PeCDD.

5.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,7,8 - PeCDD, prepared on behalf of PanAbrasive, and dated December 19, 2012.

5.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

6. PLAN SUMMARY – 1,2,3,4,7,8 - HxCDD

Name and CASRN of Substance	1,2,3,4,7,8 – HxCDD	39227-28-6
Substances for which other plans have been prepared	1,2,3,6,7,8 – HxCDD	57653-85-7
	1,2,3,7,8,9 – HxCDD	19408-74-3
	1,2,3,4,6,7,8 – HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 – TCDF	51207-31-9
	2,3,4,7,8 – PeCDF	57117-31-4
	1,2,3,7,8 – PeCDF	57117-41-6
	1,2,3,4,7,8 – HxCDF	70648-26-9
	1,2,3,7,8,9 – HxCDF	72918-21-9
	1,2,3,6,7,8 – HxCDF	57117-44-9
	2,3,4,6,7,8 – HxCDF	60851-34-5
	1,2,3,4,6,7,8 – HpCDF	67562-39-4
	1,2,3,4,7,8,9 – HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 – TCCD	1746-01-6
	1,2,3,7,8 – PeCDD	40321-76-4

6.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

6.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,4,7,8 – HxCDD in full compliance with all federal and

provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to evaluate all options available to achieve this.

6.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,4,7,8 - HxCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

6.4 Description of Substance

1,2,3,4,7,8 - HxCDD is a polychlorinated dibenzo-p-dioxin (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

6.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,4,7,8 - HxCDD.

6.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,4,7,8 - HxCDD, prepared on behalf of PanAbrasive, and dated December 19, 2012.

6.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

7. PLAN SUMMARY – 1,2,3,6,7,8 - HxCDD

Name and CASRN of Substance	1,2,3,6,7,8 – HxCDD	57653-85-7
Substances for which other plans have been prepared	1,2,3,7,8,9 – HxCDD	19408-74-3
	1,2,3,4,6,7,8 – HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 – TCDF	51207-31-9
	2,3,4,7,8 – PeCDF	57117-31-4
	1,2,3,7,8 – PeCDF	57117-41-6
	1,2,3,4,7,8 – HxCDF	70648-26-9
	1,2,3,7,8,9 – HxCDF	72918-21-9
	1,2,3,6,7,8 – HxCDF	57117-44-9
	2,3,4,6,7,8 – HxCDF	60851-34-5
	1,2,3,4,6,7,8 – HpCDF	67562-39-4
	1,2,3,4,7,8,9 – HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 – TCCD	1746-01-6
	1,2,3,7,8 – PeCDD	40321-76-4
1,2,3,4,7,8 – HxCDD	39227-28-6	

7.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

7.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,6,7,8 – HxCDD in full compliance with all federal and

provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to evaluate all options available to achieve this.

7.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,6,7,8 - HxCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

7.4 Description of Substance

1,2,3,6,7,8 - HxCDD is a polychlorinated dibenzo-p-dioxin (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

7.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,6,7,8 - HxCDD.

7.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,6,7,8 - HxCDD, prepared on behalf of PanAbrasive, and dated December 19, 2012.

7.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

8. PLAN SUMMARY – 1,2,3,7,8,9 - HxCDD

Name and CASRN of Substance	1,2,3,7,8,9 - HxCDD	19408-74-3
Substances for which other plans have been prepared	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 - TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
1,2,3,6,7,8 - HxCDD	57653-85-7	

8.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

8.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,7,8,9 – HxCDD in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this.

8.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,7,8,9 - HxCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

8.4 Description of Substance

1,2,3,7,8,9 - HxCDD is a polychlorinated dibenzo-p-dioxin (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

8.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,7,8,9 - HxCDD.

8.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,7,8,9 - HxCDD, prepared on behalf of PanAbrasive, and dated December 19, 2012.

8.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

9. PLAN SUMMARY – 1,2,3,4,6,7,8 - HpCDD

Name and CASRN of Substance	1,2,3,4,6,7,8 - HpCDD	35822-46-9
Substances for which other plans have been prepared	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 -TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
1,2,3,7,8,9 - HxCDD	19408-74-3	

9.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

9.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,4,6,7,8 – HpCDD in full compliance with all federal and

provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to evaluate all options available to achieve this

9.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,4,6,7,8 - HpCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

9.4 Description of Substance

1,2,3,4,6,7,8 - HpCDD is a polychlorinated dibenzo-p-dioxin (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

9.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,4,6,7,8 - HpCDD.

9.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,4,6,7,8 - HpCDD, prepared on behalf of PanAbrasive, and dated December 19, 2012.

9.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

10. PLAN SUMMARY – OCDD

Name and CASRN of Substance	OCDD	3268-87-9
Substances for which other plans have been prepared	2,3,7,8 – TCDF	51207-31-9
	2,3,4,7,8 – PeCDF	57117-31-4
	1,2,3,7,8 – PeCDF	57117-41-6
	1,2,3,4,7,8 – HxCDF	70648-26-9
	1,2,3,7,8,9 – HxCDF	72918-21-9
	1,2,3,6,7,8 – HxCDF	57117-44-9
	2,3,4,6,7,8 – HxCDF	60851-34-5
	1,2,3,4,6,7,8 – HpCDF	67562-39-4
	1,2,3,4,7,8,9 – HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 – TCCD	1746-01-6
	1,2,3,7,8 – PeCDD	40321-76-4
	1,2,3,4,7,8 – HxCDD	39227-28-6
	1,2,3,6,7,8 – HxCDD	57653-85-7
	1,2,3,7,8,9 – HxCDD	19408-74-3
	1,2,3,4,6,7,8 – HpCDD	35822-46-9

10.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

10.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of OCDD in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to

evaluate all options available to achieve this

10.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of OCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

10.4 Description of Substance

OCDD is a polychlorinated dibenzo-p-dioxin (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

10.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of OCDD.

10.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for OCDD, prepared on behalf of PanAbrasive, and dated December 19, 2012.

10.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

11. PLAN SUMMARY – 2,3,7,8 - TCDF

Name and CASRN of Substance	2,3,7,8 - TCDF	51207-31-9
Substances for which other plans have been prepared	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 - TCDD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9

11.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

11.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive's corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 2,3,7,8 – TCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

11.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 2,3,7,8 - TCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

11.4 Description of Substance

2,3,7,8 - TCDF is a polychlorinated dibenzofuran (PCDF). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

11.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 2,3,7,8 - TCDF.

11.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 2,3,7,8 - TCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

11.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

12. PLAN SUMMARY – 2,3,4,7,8 - PeCDF

Name and CASRN of Substance	2,3,4,7,8 - PeCDF	57117-31-4
Substances for which other plans have been prepared	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 -TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9

12.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

12.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive's corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 2,3,4,7,8 – PeCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

12.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 2,3,4,7,8 - PeCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

12.4 Description of Substance

2,3,4,7,8 - PeCDF is a polychlorinated dibenzofuran (PCDF). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

12.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 2,3,4,7,8 - PeCDF.

12.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 2,3,4,7,8 - PeCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

12.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

13. PLAN SUMMARY – 1,2,3,7,8 - PeCDF

Name and CASRN of Substance	1,2,3,7,8 - PeCDF	57117-41-6
Substances for which other plans have been prepared	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 -TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4

13.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

13.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,7,8 – PeCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

13.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,7,8 - PeCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

13.4 Description of Substance

1,2,3,7,8 - PeCDF is a polychlorinated dibenzofuran (PCDF). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

13.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,7,8 - PeCDF.

13.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,7,8 - PeCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

13.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

14. PLAN SUMMARY – 1,2,3,4,7,8 - HxCDF

Name and CASRN of Substance	1,2,3,4,7,8 - HxCDF	70648-26-9
Substances for which other plans have been prepared	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 - TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6

14.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

14.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive's corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,4,7,8 – HxCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

14.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,4,7,8 - HxCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

14.4 Description of Substance

1,2,3,4,7,8 - HxCDF is a polychlorinated dibenzofuran (PCDF). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

14.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,4,7,8 - HxCDF.

14.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,4,7,8 - HxCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

14.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

15. PLAN SUMMARY – 1,2,3,7,8,9 - HxCDF

Name and CASRN of Substance	1,2,3,7,8,9 - HxCDF	72918-21-9
Substances for which other plans have been prepared	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 - TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
1,2,3,4,7,8 - HxCDF	70648-26-9	

15.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

15.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive's corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,7,8,9 – HxCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

15.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,7,8,9 - HxCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

15.4 Description of Substance

1,2,3,7,8,9 - HxCDF is a polychlorinated dibenzofuran (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

15.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,7,8,9 - HxCDF.

15.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,7,8,9 - HxCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

15.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

16. PLAN SUMMARY – 1,2,3,6,7,8 - HxCDF

Name and CASRN of Substance	1,2,3,6,7,8 – HxCDF	57117-44-9
Substances for which other plans have been prepared	2,3,4,6,7,8 – HxCDF	60851-34-5
	1,2,3,4,6,7,8 – HpCDF	67562-39-4
	1,2,3,4,7,8,9 – HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 – TCCD	1746-01-6
	1,2,3,7,8 – PeCDD	40321-76-4
	1,2,3,4,7,8 – HxCDD	39227-28-6
	1,2,3,6,7,8 – HxCDD	57653-85-7
	1,2,3,7,8,9 – HxCDD	19408-74-3
	1,2,3,4,6,7,8 – HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 – TCDF	51207-31-9
	2,3,4,7,8 – PeCDF	57117-31-4
	1,2,3,7,8 – PeCDF	57117-41-6
	1,2,3,4,7,8 – HxCDF	70648-26-9
	1,2,3,7,8,9 – HxCDF	72918-21-9

16.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

16.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,6,7,8 – HxCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

16.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,6,7,8 - HxCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

16.4 Description of Substance

1,2,3,6,7,8 - HxCDF is a polychlorinated dibenzofuran (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

16.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,6,7,8 - HxCDF.

16.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,6,7,8 - HxCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

16.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

17. PLAN SUMMARY – 2,3,4,6,7,8 - HxCDF

Name and CASRN of Substance	2,3,4,6,7,8 - HxCDF	60851-34-5
Substances for which other plans have been prepared	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 - TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
1,2,3,6,7,8 - HxCDF	57117-44-9	

17.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

17.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 2,3,4,6,7,8 – HxCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

17.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 2,3,4,6,7,8 - HxCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

17.4 Description of Substance

2,3,4,6,7,8 - HxCDF is a polychlorinated dibenzofuran (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

17.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 2,3,4,6,7,8 - HxCDF.

17.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 2,3,4,6,7,8 - HxCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

17.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

18. PLAN SUMMARY – 1,2,3,4,6,7,8 - HpCDF

Name and CASRN of Substance	1,2,3,4,6,7,8 - HpCDF	67562-39-4
Substances for which other plans have been prepared	1,2,3,4,7,8,9 - HpCDF	55673-89-7
	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 -TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5

18.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

18.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,4,6,7,8 – HpCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

18.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,4,6,7,8 - HpCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

18.4 Description of Substance

1,2,3,4,6,7,8 - HpCDF is a polychlorinated dibenzofuran (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

18.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,4,6,7,8 - HpCDF.

18.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,4,6,7,8 - HpCDF, prepared on behalf of PanAbrasive, and dated December 19, 2012.

18.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

19. PLAN SUMMARY – 1,2,3,4,7,8,9 - HpCDF

Name and CASRN of Substance	1,2,3,4,7,8,9 - HpCDF	55673-89-7
Substances for which other plans have been prepared	OCDF	39001-02-0
	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 -TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4

19.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

19.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of 1,2,3,4,7,8,9 – HpCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will

continue to evaluate all options available to achieve this

19.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of 1,2,3,4,7,8,9 - HpCDD where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

19.4 Description of Substance

1,2,3,4,7,8,9 - HpCDF is a polychlorinated dibenzofuran (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

19.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of 1,2,3,4,7,8,9 - HpCDF.

19.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for 1,2,3,4,7,8,9 - HpCDF, prepared on behalf of PanAbrasive, and dated DECEMBER 19, 2012.

19.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

20. PLAN SUMMARY – OCDF

Name and CASRN of Substance	OCDF	39001-02-0
Substances for which other plans have been prepared	Manganese (and its compounds)	Not Applicable
	Hexachlorobenzene	118-74-1
	PCCD/F	Not Applicable
	2,3,7,8 -TCCD	1746-01-6
	1,2,3,7,8 - PeCDD	40321-76-4
	1,2,3,4,7,8 - HxCDD	39227-28-6
	1,2,3,6,7,8 - HxCDD	57653-85-7
	1,2,3,7,8,9 - HxCDD	19408-74-3
	1,2,3,4,6,7,8 - HpCDD	35822-46-9
	OCDD	3268-87-9
	2,3,7,8 - TCDF	51207-31-9
	2,3,4,7,8 - PeCDF	57117-31-4
	1,2,3,7,8 - PeCDF	57117-41-6
	1,2,3,4,7,8 - HxCDF	70648-26-9
	1,2,3,7,8,9 - HxCDF	72918-21-9
	1,2,3,6,7,8 - HxCDF	57117-44-9
	2,3,4,6,7,8 - HxCDF	60851-34-5
	1,2,3,4,6,7,8 - HpCDF	67562-39-4
	1,2,3,4,7,8,9 - HpCDF	55673-89-7

20.1 Basic Facility Information

Basic facility information has been included in Section 21 of this document.

20.2 Toxic Reduction Policy Statement of Intent

Eco-citizenship is an integral part of PanAbrasive’s corporate ethics. They strive to use natural resources efficiently and respect their environment by minimizing waste generation and impacts on the air, water and land. From the first step of their manufacturing process, they use a recovered material, scrap.

PanAbrasive respects the environment in their process and products by sorting and reusing production wastes, by very tight management of their supply chain, by being as near as possible to their customers, and by offering green services to their clients.

PanAbrasive is committed to achieving operational excellence by continuously improving on existing business processes. Whenever technically and economically feasible they intend to reduce the creation, and release of OCDF in full compliance with all federal and provincial regulations. Toxic use reduction will be an ongoing effort for PanAbrasive; they will continue to

evaluate all options available to achieve this

20.3 Reduction Objectives

PanAbrasive's goal is to reduce the creation and release of OCDF where technically and economically feasible. Based on currently available information and technologies, there are no technically and economically reduction options currently available for this substance. The facility will continue to monitor technological advancements to ensure that reduction options that are both technological and financially viable are implemented at our facility.

20.4 Description of Substance

OCDF is a polychlorinated dibenzofuran (PCDD/F). The substance is formed via *de novo* synthesis by the combustion of non-chlorinated organic matter such as polystyrene, coal and particulate carbon in the presence of chlorine donors (specifically metals such as copper or iron). Many of these substances are contained in trace concentrations in the steel scrap or are process raw materials such as injected carbon. Formations take place at temperatures between 250°C and 500°C in the presence of oxygen. High temperatures and contributing factors such as oxygen concentrations, gas exiting temperatures and scrap metal content have been factors for creating dioxins.

20.5 Toxic Substance Reduction Option to be Implemented

There are currently no options identified for implementation to reduce the use and release of OCDF.

20.6 Plan Summary Statement

This plan accurately reflects the content of the toxic substance reduction plan for OCDF, prepared on behalf of PanAbrasive, and dated DECEMBER 19, 2012.

20.7 Copy of Plan Certification

A copy of the plan certification is presented in Section 22 of this document.

21. BASIC FACILITY INFORMATION

Facility Identification and Site Address		
Company Name	PanAbrasive Inc.	
Facility Name	PanAbrasive Inc.	
Facility Address	Physical Address:	Mailing Address
	650 Rusholme Road Welland, ON L3B 5N7	650 Rusholme Road Welland, ON L3B 5N7
Spatial Coordinates (UTM)	645669.68	4758822
Datum	WGS84	
Number of Employees	69	
NPRI ID	11118	
ON MOE ID		
Parent Company Information		
Parent Company Name & Address	PanAbrasive Inc. 650 Rusholme Road Welland, ON L3B 5N7	
Percent Ownership	100%	
Primary North American Industrial Classification System Code (NAICS)		
2 Digit NAICS Code	31-33 Manufacturing	
4 Digit NAICS Code	3279 - All other non-metallic mineral product manufacturing	
6 Digit NAICS Code	327910 - Abrasive product manufacturing	
Company Contact Information		
Facility Public Contact	Brett Evans Environmental & Quality Manager	Contact Address 650 Rusholme Road Welland, ON L3B 5N7
	Brett.Evans@@PanAbrasive.com	PanAbrasive Inc. 650 Rusholme Road Welland, ON L3B 5N7
	Phone: (905) 735-4691	
	Fax: 416 621-3119	

22. COPY OF PLAN CERTIFICATION

Rationale Statement – Highest Ranking Employee


Submission of the required plan summaries and certification statements via the Environment Canada Single Window Information Manager (SWIM) system has been delayed as a result of the investigation and assessment of reduction options taking longer than anticipated to complete. Rather than compromise the integrity of the report and results by rushing the assessment to meet the deadline, we have chosen to take the time to properly evaluate all options we believe to be currently available for our operations. As such, submission of the required elements of the toxic substance reduction plans could not be made by the regulatory deadline.

Confirmation by the Highest Ranking Employee

As of January 4, 2013, I, Jeff Glaser, confirm that I have read the toxic substance reduction plans for the toxic substances referred to below and am familiar with their contents, and to my knowledge the plans are factually accurate and, with the exception of the regulatory deadline, comply with the Toxics Reduction Act, 2009 and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substances:

Manganese (and its compounds)	2,3,4,7,8-PeCDF	2,3,4,6,7,8-HxCDF
PCDD & PCDF	1,2,3,7,8-PeCDF	1,2,3,4,6,7,8-HpCDF
2,3,7,8-TCDD	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8,9-HpCDF
1,2,3,7,8-PeCD	1,2,3,7,8,9-HxCDF	OCDF
1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDF	Hexachlorobenzene
1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD
OCDD	2,3,7,8-TCDF	


_____, January 4, 2013
Jeff Glaser
VP North American Operations
PanAbrasive Inc.



Confirmation by Licensed Planner

As of January 3, 2013, I, Tim Logan confirm that I am familiar with the processes at PanAbrasive's Welland facility that use or create the toxic substances referred to below, that I agree with the estimates referred to in subparagraphs 7 iii, iv and v of subsection 4 (1) of the Toxics Reduction Act, 2009 that are set out in the plans dated December 19, 2012 and, with the exception of the regulatory deadline, that the plans comply with that Act and Ontario Regulation 455/09 (General) made under that Act.

Toxic Substances:

Manganese (and its compounds)	2,3,4,7,8-PeCDF	2,3,4,6,7,8-HxCDF
PCDD & PCDF	1,2,3,7,8-PeCDF	1,2,3,4,6,7,8-HpCDF
2,3,7,8-TCDD	1,2,3,4,7,8-HxCDF	1,2,3,4,7,8,9-HpCDF
1,2,3,7,8-PeCD	1,2,3,7,8,9-HxCDF	OCDF
1,2,3,4,7,8-HxCDD	1,2,3,6,7,8-HxCDF	Hexachlorobenzene
1,2,3,6,7,8-HxCDD	1,2,3,7,8,9-HxCDD	1,2,3,4,6,7,8-HpCDD
OCDD	2,3,7,8-TCDF	



, January 3, 2013

Tim Logan (License No. TSRP0003)
President
O2E Inc. Environmental Consultants