Appendix 4

2009 RPPR Annual Report

Summary of 2009 Materials Accounting Data

Dioxins and Dioxin-like Compounds

Appendix to the
Community Right To Know
and Release and Pollution Prevention Report
for Reporting Year 2009
and
An Analysis of Materials Accounting Data
for Reporting Years 2000 to 2009

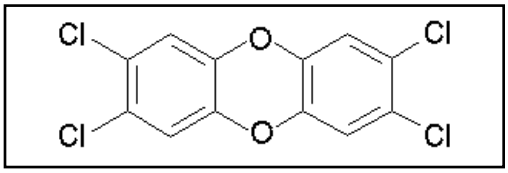
New Jersey Department of Environmental Protection
Environmental Regulation
Division of Environmental Safety and Health
Office of Pollution Prevention and Right To Know
P.O. Box 443
Trenton, NJ 08625-0443
(609) 777-0518

www.state.nj.us/dep/opppc

Summary

Polychlorinated dibenzo-para(p)-dioxins (CDDs) and polychlorinated dibenzofurans (CDFs) constitute a group of Persistent, Bioaccumulative, Toxic (PBT) substances that are termed "dioxin-like." The term "dioxin-like" refers to the fact that these compounds have similar chemical structures, similar physical-chemical properties, and invoke a common array of toxic responses. An important aspect of this definition is that the CDDs and CDFs must have chlorine substitution of hydrogen atoms at the 2, 3, 7, and 8 positions on the benzene rings.[1]

The term "dioxin" refers to a large family of compounds that for RPPR regulatory purposes includes 17 compounds (7 CDDs and 10 CDFs) of particular interest because it is thought that these compounds have similar mechanisms of toxicity. Nevertheless, the toxicity of dioxins varies greatly, with the most toxic compound estimated to be 10,000 times more potent than the least toxic. Dioxins occur as complex mixtures of family member compounds. See the last page of this Appendix for a list of the 17 chemicals regulated as "dioxin and dioxin-like compounds." "Dioxin" is a shortened version of the technical chemical name given to some of the family member compounds. These compounds contain two oxygen atoms in their chemical structure, hence "di" refers to two and "ox" refers to oxygen. The figure below shows the structure of the most toxic form of dioxin, 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (the numbers indicate the locations of chlorine atoms in the molecule).



Chemical structure of 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)

Dioxins are an unwanted by-product of incineration, uncontrolled burning and certain industrial processes. As dioxin emissions from industry decline, unregulated sources such as backyard barrel burning of garbage and residential wood burning rise in significance as contributors to dioxin emissions. Currently, the uncontrolled burning of residential waste is thought to be the largest source of dioxins to the environment in the United States. [2] New Jersey's air pollution regulations do not permit backyard burning of residential waste.

The dioxin compounds category is the one unique group on the substance list that is reported in grams, or fractions of a gram, per year. As with the other PBTs, the data are presented with four significant figures to the right of the decimal place where facilities felt that their estimation techniques and the underlying data could support such data accuracy. There were 7 facilities that reported dioxins for RY 2009. Most dioxins were reported as brought on site in raw materials, mixtures, etc. as opposed to being manufactured at the facilities. Dioxins were not reported as consumed in processes; however, a small amount was reported as shipped as (or in) product. These quantities were predominantly shipped as impurities in the reporting facilities' products.

The materials accounting data show that 2009 NPO was about 91.2% of Use. The largest amounts of dioxin NPO for 2009 were reported as sent off site for recycling (49.3%) and sent off site for energy recovery (26.7%), however these are most likely a misinterpretation of the categories. Since dioxins are

[1] USEPA, Emergency Planning and Community Right-To-Know Act – Section 313: Guidance for Reporting Toxic Chemicals within the Dioxin and Dioxin-like Compounds Category; EPA-745-B00-021, December 2000.

[2] http://www.cfsan.fda.gov/~lrd/dioxinqa.html#g8

reported in grams per year, first they are small quantities. Who would want to recycle and reuse them? Secondly, these amounts have insignificant Btu content for fuel value. The remainder of NPO was off-site transfers for disposal (18.1%) followed by stack air emissions (3.9%), and lastly fugitive air emissions (0.3%).

Statewide Materials Accounting Summary[1] – 2009 RPPR
Dioxins and Dioxin-like Compounds

	2009
Number of Facilities	7
Number of Substance Reports	7
Starting Inventory	2.4030
Starting Inventory as NPO	0.4960
Produced On Site	27.5257
Brought On Site	106.6950
Brought on Site as Recycled	106.6950
Consumed	0.0000
Shipped as (or in) Product	11.0250
Ending Inventory	2.2130
Ending Inventory as NPO	0.4000
Nonproduct Output	123.2587
On-Site Releases	5.1545
Stack Air Emissions	4.7458
Fugitive Air Emissions	0.4087
Surface Water Discharge	0.0000
Ground Water Discharge	0.0000
Land Disposal On Site	0.0000
On-Site Management	0.0000
Recycled & Re-Used On Site	0.0000
Energy Recovered On Site	0.0000
Destroyed On Site	0.0000
End Inv. (as NPO) minus Start Inv. (as NPO)	-0.0960
Off-Site Transfers	118.2002
POTW Discharge	2.2250
Waste Transfer - Recycling	60.7750
Waste Transfer - Energy Recovery	32.8600
Waste Transfer - Treatment	0.0080
Waste Transfer - Disposal	22.3322
Total Substance USE or Throughput	134.2837

1. All quantities are reported in grams per year, except for "# of Facilities" and "# of Reports"

Throughput Data Summary[1] by County – 2009 RPPR Dioxins

			INPUTS				OUTPUTS				
COUNTY	Number of Facilities	Number of Reports	Starting Inventory	Produced On Site	Brought On Site	Recycled & Re-Used On Site	Consumed	Shipped as (or in) Product	Ending Inventory	Nonproduct Output	USE
BERGEN	1	1	0.2130	0.0000	106.6950	0.0000	0.0000	11.0250	0.0230	95.7640	**106.7890**
CAMDEN	1	1	0.4000	18.4327	0.0000	0.0000	0.0000	0.0000	0.4000	18.4327	**18.4327**
GLOUCESTER	1	1	0.0000	0.3000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3000	**0.3000**
HUDSON	1	1	0.0000	0.1380	0.0000	0.0000	0.0000	0.0000	0.0000	0.1380	**0.1380**
MERCER	1	1	0.0000	0.1250	0.0000	0.0000	0.0000	0.0000	0.0000	0.1250	**0.1250**
MIDDLESEX	1	1	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.0000	**3.0000**
UNION	1	1	1.7900	5.5300	0.0000	0.0000	0.0000	0.0000	1.7900	5.4990	**5.4990**
SUM:	**7**	**7**	**2.4030**	**27.5257**	**106.6950**	**0.0000**	**0.0000**	**11.0250**	**2.2130**	**123.2587**	**134.2837**

Throughput Data Summary[1] by NAICS Code – 2009 RPPR Dioxins

			INPUTS				OUTPUTS				
NAICS CODE	# of Facilities	# of Reports	Starting Inventory	Produced On Site	Brought On Site	Recycled & Re-Used On Site	Consumed	Shipped as (or in) Products	Ending Inventory	Nonproduct Output	USE
221	**2**	**2**	0.0000	0.2630	0.0000	0.0000	0.0000	0.0000	0.0000	0.2630	**0.2630**
322	**1**	**1**	0.2130	0.0000	106.6950	0.0000	0.0000	11.0250	0.0230	95.7640	**106.7890**
324	**2**	**2**	1.7900	5.8300	0.0000	0.0000	0.0000	0.0000	1.7900	5.7990	**5.7990**
331	**2**	**2**	0.4000	21.4327	0.0000	0.0000	0.0000	0.0000	0.4000	21.4327	**21.4327**
SUM:	**7**	**7**	**2.4030**	**27.5257**	**106.6950**	**0.0000**	**0.0000**	**11.0250**	**2.2130**	**123.2587**	**134.2837**

1. All quantities are reported in grams per year, except for "# of Facilities" and "# of Reports"

Releases and Transfers Data Summary[1] by County – 2009 RPPR Dioxins

	On-Site Releases						Off-Site Transfers						
COUNTY	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	Ground Water Discharge	Land Disposal On Site	On-Site Releases (sum)	POTW Discharges	Waste Transfer Recycling	Waste Transfer Energy Recovery	Waste Transfer Treatment	Waste Transfer Disposal	Off-Site Transfers (sum)	COUNTY
BERGEN	0.0	0.0	0.0	0.0	0.0	**0.0**	2.2250	60.7750	32.8600	0.0000	0.0000	**95.8600**	BERGEN
CAMDEN	1.1818	0.3687	0.0	0.0	0.0	**1.5505**	0.0000	0.0000	0.0000	0.0000	16.8822	**16.8822**	CAMDEN
GLOUCESTER	0.3000	0.0	0.0	0.0	0.0	**0.3000**	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	GLOUCESTER
HUDSON	0.1380	0.0	0.0	0.0	0.0	**0.1380**	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	HUDSON
MERCER	0.1250	0.0	0.0	0.0	0.0	**0.1250**	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	MERCER
MIDDLESEX	3.0000	0.0	0.0	0.0	0.0	**3.0000**	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	MIDDLESEX
UNION	0.0010	0.0400	0.0	0.0	0.0	**0.0410**	0.0000	0.0000	0.0000	0.0080	5.4500	**5.4580**	UNION
SUM:	**4.7458**	**0.4087**	**0.0**	**0.0**	**0.0**	5.1545	**2.2250**	**60.7750**	**32.8600**	**0.0080**	**22.3322**	**118.2002**	

Releases and Transfers Data Summary[1] by NAICS Code – 2009 RPPR Dioxins

	On-Site Releases						Off-Site Transfers						
NAICS CODE	Stack Air Emissions	Fugitive Air Emissions	Surface Water Discharge	Ground Water Discharge	Land Disposal On Site	On-Site Releases (sum)	POTW Discharge	Waste Transfer Recycling	Waste Transfer Energy Recovery	Waste Transfer Treatment	Waste Transfer Disposal	Off-Site Transfers (sum)	NAICS CODE
221	0.2630	0.0000	0.0000	0.0000	0.0000	**0.2630**	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	**221**
322	0.0000	0.0000	0.0000	0.0000	0.0000	**0.0000**	2.2250	60.7750	32.8600	0.0000	0.0000	**95.8600**	**322**
324	0.3010	0.0400	0.0000	0.0000	0.0000	**0.3410**	0.0000	0.0000	0.0000	0.0080	5.4500	**5.4580**	**324**
331	4.1818	0.3687	0.0000	0.0000	0.0000	**4.5505**	0.0000	0.0000	0.0000	0.0000	16.8822	**16.8822**	**331**
SUM:	**4.7458**	**0.4087**	**0.0000**	**0.0000**	**0.0000**	5.1545	**2.2250**	**60.7750**	**32.8600**	**0.0080**	**22.3322**	**118.2002**	

1. All quantities are reported in grams per year, except for "# of Facilities" and "# of Reports"

Number of Facilities and Reports by NAICS[1] Code – 2009 RPPR Dioxins

NAICS CODE	Description	# of Facilities	# of Reports
221	Electrical Utilities	2	2
322	Paper Manufacturing	1	1
324	Petroleum & Coal Products Manufacturing	2	2
331	Primary Metal Manufacturing	2	2
	Total:	7	7

1. NAICS – North American Industry Classification System

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Chemical Use, Shipped as (or in) Product, Nonproduct Output & On-Site Releases Summary[2] by 3-Digit NAICS[3] Group – 2009 RPPR Dioxins
(in descending order by Use)

NAICS CODE	Number of Facilities	Number of Reports	USE (grams)	Shipped as (or in) Product (grams)	Nonproduct Output (grams)	On-Site Releases (grams)
322	1	1	106.7890	11.0250	95.7640	0.0000
331	2	2	21.4327	0.0000	21.4327	4.5505
324	2	2	5.7990	0.0000	5.7990	0.3410
221	2	2	0.2630	0.0000	0.2630	0.2630
SUM:	**7**	**7**	**134.2837**	**11.0250**	**123.2587**	**5.1545**

2. All quantities are reported in grams per year, except for "# of Facilities" and "# of Reports"
3. NAICS – North American Industry Classification System

All Facilities for Dioxins Used in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	USE (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	106.7890	79.52 %
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	18.4327	13.73 %
CONOCOPHILLIPS CO (LINDEN)	UNION	5.4990	4.10 %
GERDAU AMERISTEEL SAYREVILLE INC (SAYREVILLE)	MIDDLESEX	3.0000	2.23 %
VALERO REFINING COMPANY NEW JERSEY (GREENWICH TWP)	GLOUCESTER	0.3000	0.22 %
PSEG FOSSIL LLC (JERSEY CITY)	HUDSON	0.1380	0.10 %
PSEG FOSSIL LLC (HAMILTON TWP)	MERCER	0.1250	0.09 %
	Sum of All:	**134.2837**	**100.00 %**

All Facilities for Dioxins Produced On Site in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Produced On Site (grams)	% of Total
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	18.4327	66.97 %
CONOCOPHILLIPS CO (LINDEN)	UNION	5.5300	20.09 %
GERDAU AMERISTEEL SAYREVILLE INC (SAYREVILLE)	MIDDLESEX	3.0000	10.90 %
VALERO REFINING COMPANY NEW JERSEY (GREENWICH TWP)	GLOUCESTER	0.3000	1.09 %
PSEG FOSSIL LLC (JERSEY CITY)	HUDSON	0.1380	0.50 %
PSEG FOSSIL LLC (HAMILTON TWP)	MERCER	0.1250	0.45 %
	Sum of All:	**27.5257**	**100.00 %**

All Facilities for Dioxins Brought On Site in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Brought On Site (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	106.6950	100.00 %

All Facilities for Dioxins Shipped as (or in) Product in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Shipped as (or in) Product (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	11.0250	100.00 %

All Facilities for Dioxin Nonproduct Output in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Nonproduct Output (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	95.7640	77.69 %
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	18.4327	14.95 %
CONOCOPHILLIPS CO (LINDEN)	UNION	5.4990	4.46 %
GERDAU AMERISTEEL SAYREVILLE INC (SAYREVILLE)	MIDDLESEX	3.0000	2.43 %
VALERO REFINING COMPANY NEW JERSEY (GREENWICH TWP)	GLOUCESTER	0.3000	0.24 %
PSEG FOSSIL LLC (JERSEY CITY)	HUDSON	0.1380	0.11 %
PSEG FOSSIL LLC (HAMILTON TWP)	MERCER	0.1250	0.10 %
	Sum of All:	**123.2587**	**100.00 %**

All Facilities for Dioxin On-Site Releases in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	On-Site Releases (grams)	% of Total
GERDAU AMERISTEEL SAYREVILLE INC (SAYREVILLE)	MIDDLESEX	3.0000	58.20 %
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	1.5505	30.08 %
VALERO REFINING COMPANY NEW JERSEY (GREENWICH TWP)	GLOUCESTER	0.3000	5.82 %
PSEG FOSSIL LLC (JERSEY CITY)	HUDSON	0.1380	2.68 %
PSEG FOSSIL LLC (HAMILTON TWP)	MERCER	0.1250	2.43 %
CONOCOPHILLIPS CO (LINDEN)	UNION	0.0410	0.80 %
	Sum of All:	**5.1545**	**100.00 %**

All Facilities for Dioxin Total Air Emissions in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Total Air Emissions (grams)	% of Total
GERDAU AMERISTEEL SAYREVILLE INC (SAYREVILLE)	MIDDLESEX	3.0000	58.20 %
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	1.5505	30.08 %
VALERO REFINING COMPANY NEW JERSEY (GREENWICH TWP)	GLOUCESTER	0.3000	5.82 %
PSEG FOSSIL LLC (JERSEY CITY)	HUDSON	0.1380	2.68 %
PSEG FOSSIL LLC (HAMILTON TWP)	MERCER	0.1250	2.43 %
CONOCOPHILLIPS CO (LINDEN)	UNION	0.0410	0.80 %
	Sum of All:	**5.1545**	**100.00 %**

All Facilities for Dioxin Stack Air Emissions in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Stack Air Emissions (grams)	% of Total
GERDAU AMERISTEEL SAYREVILLE INC (SAYREVILLE)	MIDDLESEX	3.0000	63.21 %
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	1.1818	24.90 %
VALERO REFINING COMPANY NEW JERSEY (GREENWICH TWP)	GLOUCESTER	0.3000	6.32 %
PSEG FOSSIL LLC (JERSEY CITY)	HUDSON	0.1380	2.91 %
PSEG FOSSIL LLC (HAMILTON TWP)	MERCER	0.1250	2.63 %
CONOCOPHILLIPS CO (LINDEN)	UNION	0.0010	0.02 %
	Sum of All:	**4.7458**	**100.00 %**

All Facilities for Dioxin Fugitive Air Emissions in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Fugitive Air Emissions (grams)	% of Total
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	0.3687	90.21 %
CONOCOPHILLIPS CO (LINDEN)	UNION	0.0400	9.79 %
	Sum of All:	**0.4087**	**100.00 %**

All Facilities for Dioxin Off-Site Transfers in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Off-Site Transfers (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	95.8600	81.10 %
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	16.8822	14.28 %
CONOCOPHILLIPS CO (LINDEN)	UNION	5.4580	4.62 %
	Sum of All:	**118.2002**	**100.00 %**

All Facilities for Dioxin POTW Discharges in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	POTW Discharges (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	2.2250	100.00 %

All Facilities for Dioxin Off-Site Transfers for Recycling in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Off-Site Recycling (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	60.7750	100.00 %

All Facilities for Dioxin Destroyed through Off-Site Energy Recovery in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Off-Site Energy Recovery (grams)	% of Total
MARCAL MANUFACTURING, LLC (ELMWOOD PARK)	BERGEN	32.8600	100.00 %

All Facilities for Dioxin Destroyed through Off-Site Treatment in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Off-Site Treatment (grams)	% of Total
CONOCOPHILLIPS CO (LINDEN)	UNION	0.0080	100.00 %

All Facilities for Dioxin Off-Site Transfers for Disposal in 2009 (grams per year)

FACILITY NAME (CITY)	COUNTY	Off-Site Disposal (grams)	% of Total
STATE METAL INDUSTRIES INC (CAMDEN)	CAMDEN	16.8822	75.60 %
CONOCOPHILLIPS CO (LINDEN)	UNION	5.4500	24.40 %
	Sum of All:	**22.3322**	**100.00 %**

Members of the Dioxin and Dioxin-like Compounds Category [1]

CAS Number	Chemical Name	Abbreviated Name
CDDs		
1746-01-6	2,3,7,8- tetrachlorodibenzo-p-dioxin	2,3,7,8-TCDD
40321-76-4	1,2,3,7,8-pentachlorodibenzo-p-dioxin	1,2,3,7,8-PeCDD
39227-28-6	1,2,3,4,7,8-hexachlorodibenzo-p-dioxin	1,2,3,4,7,8-HxCDD
57653-85-7	1,2,3,6,7,8-hexachlorodibenzo-p-dioxin	1,2,3,6,7,8- HxCDD
19408-74-3	1,2,3,7,8,9-hexachlorodibenzo-p-dioxin	1,2,3,7,8,9- HxCDD
35822-46-9	1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin	1,2,3,4,6,7,8- HpCDD
3268-87-9	1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin	1,2,3,4,6,7,8,9-OCDD
CDFs		
51207-31-9	2,3,7,8- tetrachlorodibenzofuran	2,3,7,8-TCDF
57117-41-6	1,2,3,7,8-pentachlorodibenzofuran	1,2,3,7,8-PeCDF
57117-31-4	2,3,4,7,8-pentachlorodibenzofuran	2,3,4,7,8-PeCDF
70648-26-9	1,2,3,4,7,8-hexachlorodibenzofuran	1,2,3,4,7,8-HxCDF
57117-44-9	1,2,3,6,7,8-hexachlorodibenzofuran	1,2,3,6,7,8- HxCDF
72918-21-9	1,2,3,7,8,9-hexachlorodibenzofuran	1,2,3,7,8,9- HxCDF
60851-34-5	2,3,4,6,7,8-hexachlorodibenzofuran	2,3,4,6,7,8- HxCDF
67562-39-4	1,2,3,4,6,7,8-heptachlorodibenzofuran	1,2,3,4,6,7,8- HpCDF
55673-89-7	1,2,3,4,7,8,9-heptachlorodibenzofuran	1,2,3,4,7,8,9- HpCDF
39001-02-0	1,2,3,4,6,7,8,9-octachlorodibenzofuran	1,2,3,4,6,7,8,9-OCDF

1. Reportable pursuant to the requirements of the federal Toxic Chemical Release Inventory (TRI) and the NJ Release and Pollution Prevention Report (RPPR).