

# **Niagara CAER Group Chemical Companies**

**National Emissions Reduction  
Masterplan (NERM)**

**2009 Report for 2008 Emissions**

# **Member Companies**

**Chemtrade Logistics Inc.**

**CYTEC Canada Inc.**

**Durez Canada**

**Kemira Chemicals Canada Inc.**

**Mancuso Chemicals Limited**

**Oxy Vinyls Canada Inc.**

# Niagara CAER Group Chemical Companies

## 2009 NERM Report

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## **Member Companies Contact Names**

<b>Company</b>	<b>Contact Name and Number</b>	
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<b>CYTEC Canada Inc.</b>	<b>Martin Lehman</b>	<b>905-374-5844</b>
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<b>Kemira Chemicals Canada Inc.</b>	<b>Bruno Montpetit</b>	<b>905-688-6470</b>
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<b>Mancuso Chemicals</b>	<b>Robert Patel</b>	<b>905-357-3626</b>
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## Introduction

Global and Canadian economics are having profound impacts on the survival of the Canadian Chemical industry in Canada. Two of our former member companies, Lubrizol Canada Limited and PolyOne Canada Inc. have closed their operations during 2009 and several other companies are operating at severely reduced rates.

This report is issued by the Niagara CAER Group Chemical Companies as part of their commitment to being open to the public and to operating their businesses according to the principles of **Responsible Care**<sup>®</sup>, an initiative of **The Canadian Chemical Producers' Association**. This is the **Seventeenth year** of its publication.

Results are presented as Charts with accompanying explanations. Data is presented at the end of the report in the form of tables. Persons wishing to obtain more information are asked to contact the company directly at the numbers listed in this report, or to send an e-mail with their questions to: [pcollee@cogeco.ca](mailto:pcollee@cogeco.ca).

Operating the chemical plants with the absolute minimum impact on the health, safety and environmental well being of the communities in which we operate and live, continues to be our top priority. As may be seen from the graphs, we are continue to make progress on our commitment.

## Summary

In 2008, Chemical Emissions were reduced by 14.7% from 2007 levels. Most of this reduction can be attributed to reduced production levels of as much as 31% at three plants. Production volumes in 2008 were 6% lower than in 2007 with 2009 estimates showing a further 38% decrease. Waste generation is sporadic but as Chart No. 4 shows, the long term trend is generally down. Combustion emissions were higher due to the operation of some high carbon dioxide emitting equipment which will not be on a permanent basis.

## **Explanations**

### **Chemical Emissions**

In 2008 the Niagara CAER Group Companies continued their exemplary performance of operating with very low chemical emissions. However, production reductions of 20 to 31% at three plants, for an overall reduction of 6%, was largely responsible for a 14.7% reduction in emissions. For 2009 we are estimating a further reduction of emissions by 2% as production levels are reduced another 38%.

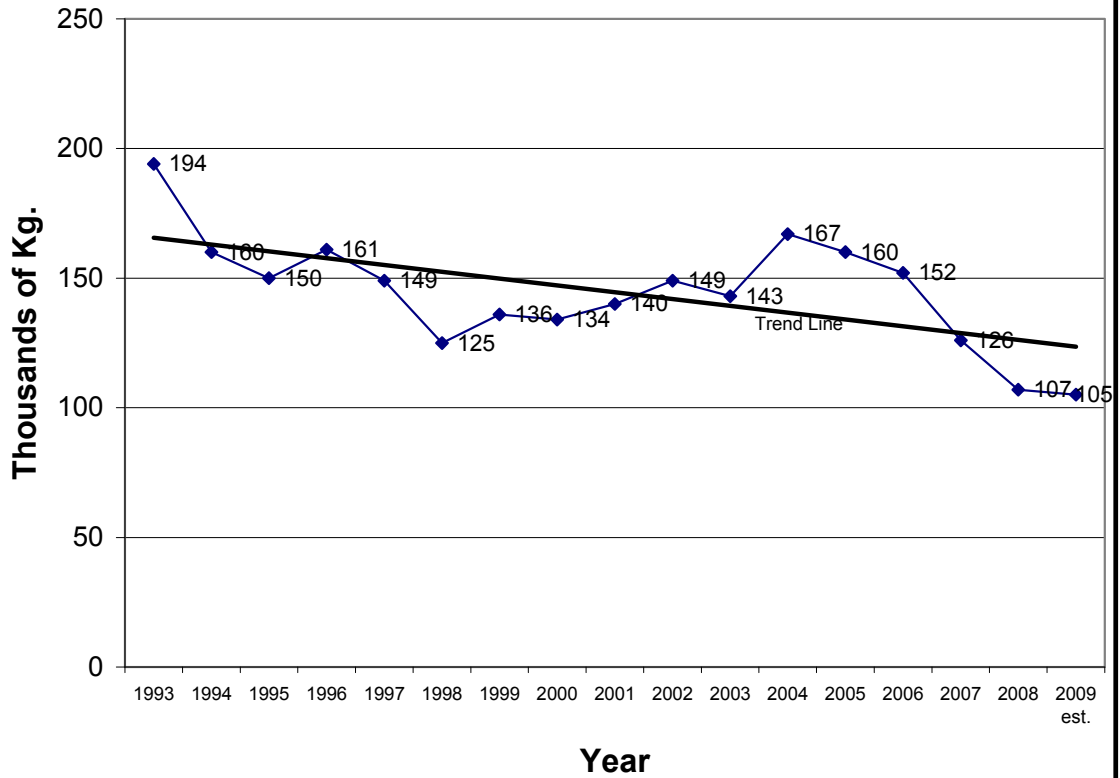
### **Chemical Wastes**

Due to intermittent shipping of Wastes being sent to recycling operations, the reporting of Waste generation is quite cyclic. For example, in 2008 we are reporting a Chemical Waste reduction of 38% and for 2009, an increase of 12.8%. However the long term trend line on Chart No. 4 shows that Waste production is being reduced over time. The reduction in Production levels will speed up this reduction in the near future.

### **Combustion Emissions**

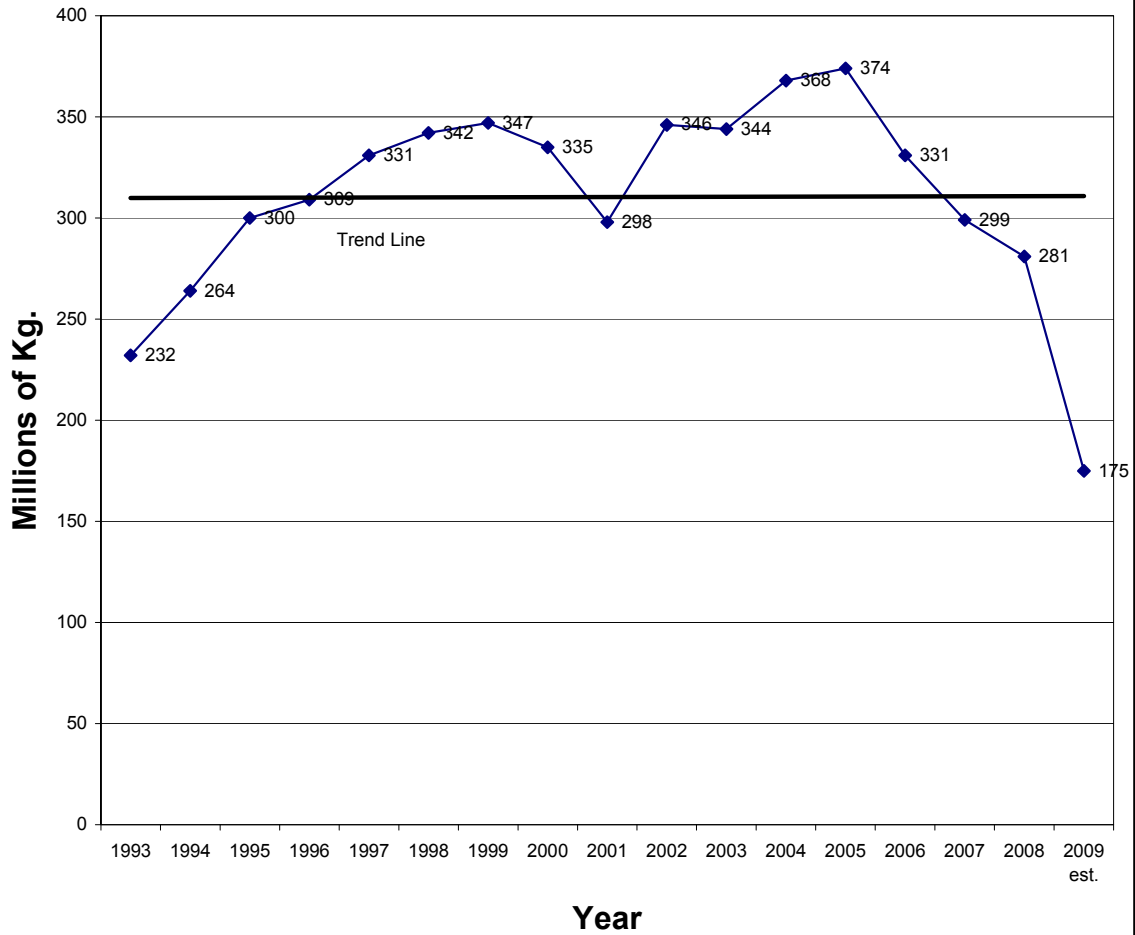
The reduction in Greenhouse Gases has been a real success story at the chemical plants. During 2008 one plant was required to operate some equipment that had high carbon dioxide emissions. This skewed the results for 2008 resulting in unusually high combustion emissions for 2008 only. Emission levels will be back to normal for 2009 and this along with the closure of two plants will result in a 25% reduction in Combustion Emissions.

**Chart No. 1  
Chemical Emissions**



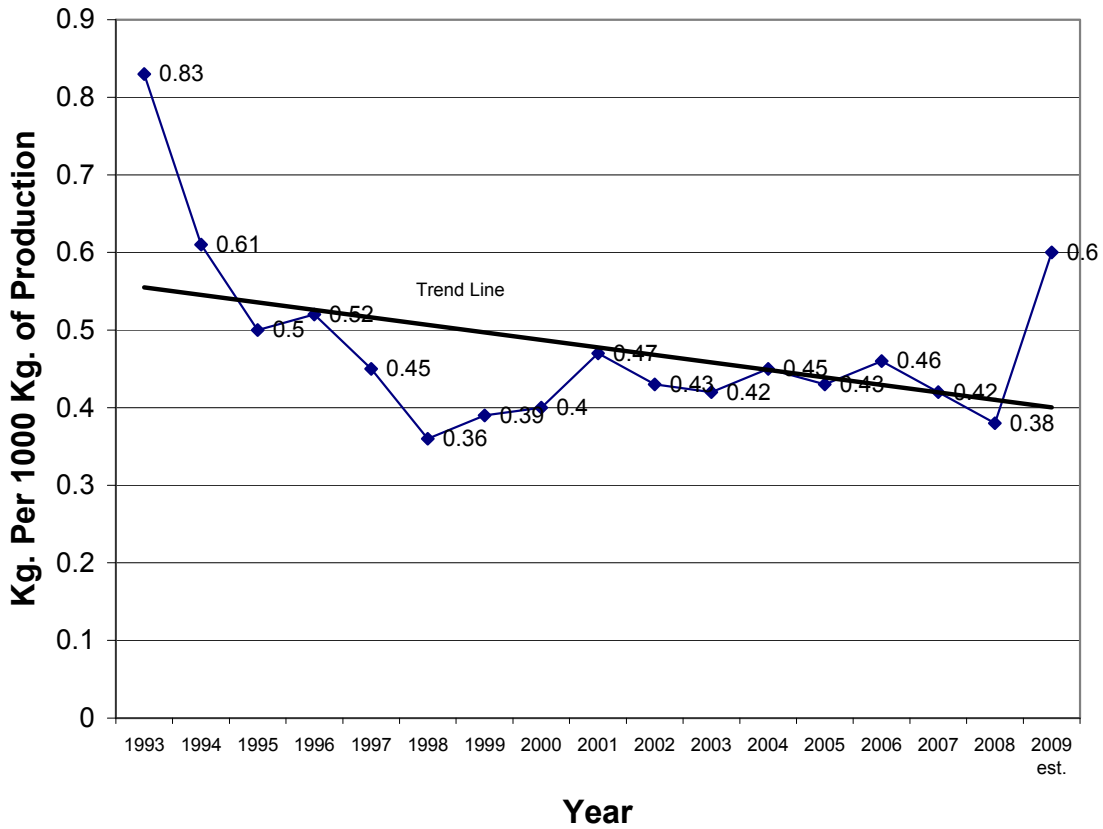
Overall Chemical Emissions were reduced by 14.7% from 2007 levels. Most of this reduction may be attributed to reduced production levels of from 20 to 31% at three plants. A continued sluggish Canadian and worldwide economy has further slowed production in 2009 which will be reflected in lower emissions in 2009.

**Chart No. 2  
Production Volume**



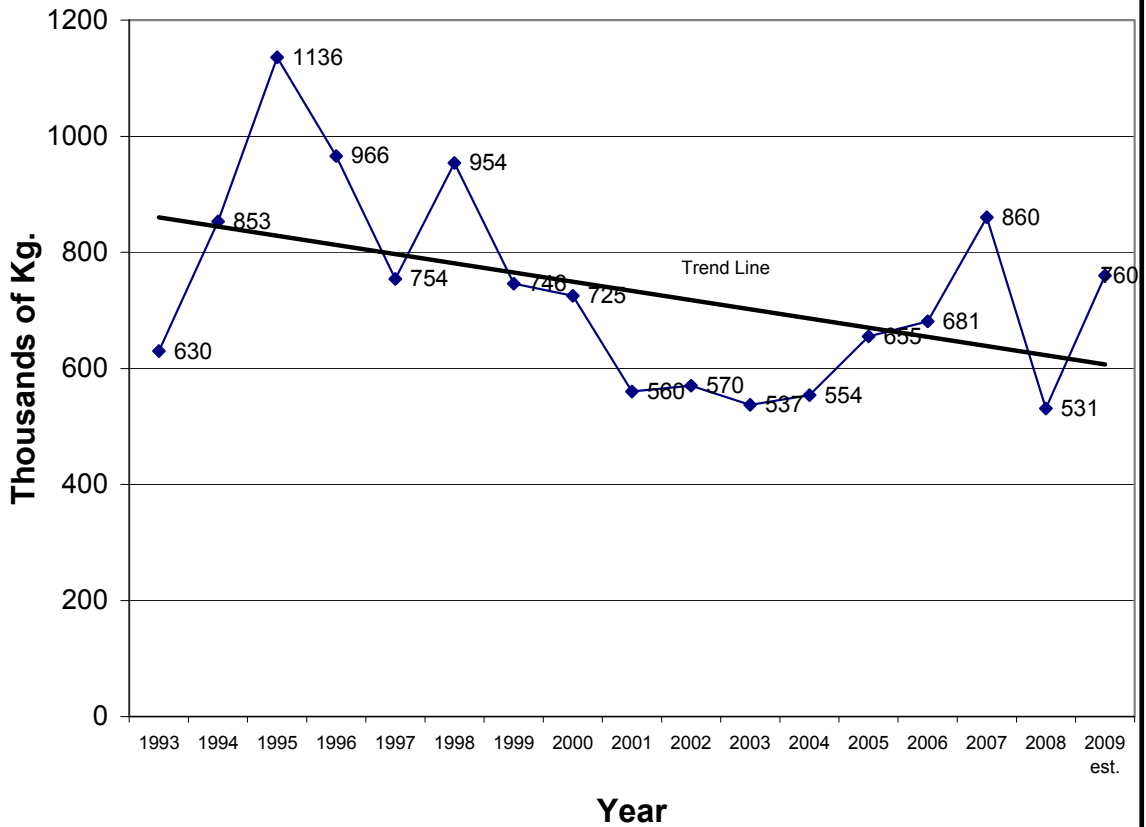
This chart shows the continued effects of the sluggish economy on production output. Production levels in 2008 were 6% lower than they were in 2007 and 25% lower than our best year which was 2005. With two manufacturing plants closed in 2009, production is expected to drop by a further 38% from 2008 to the lowest levels ever recorded in this report.

**Chart No. 3**  
**Chemical Emissions Per 1000 Kg. Of Production**



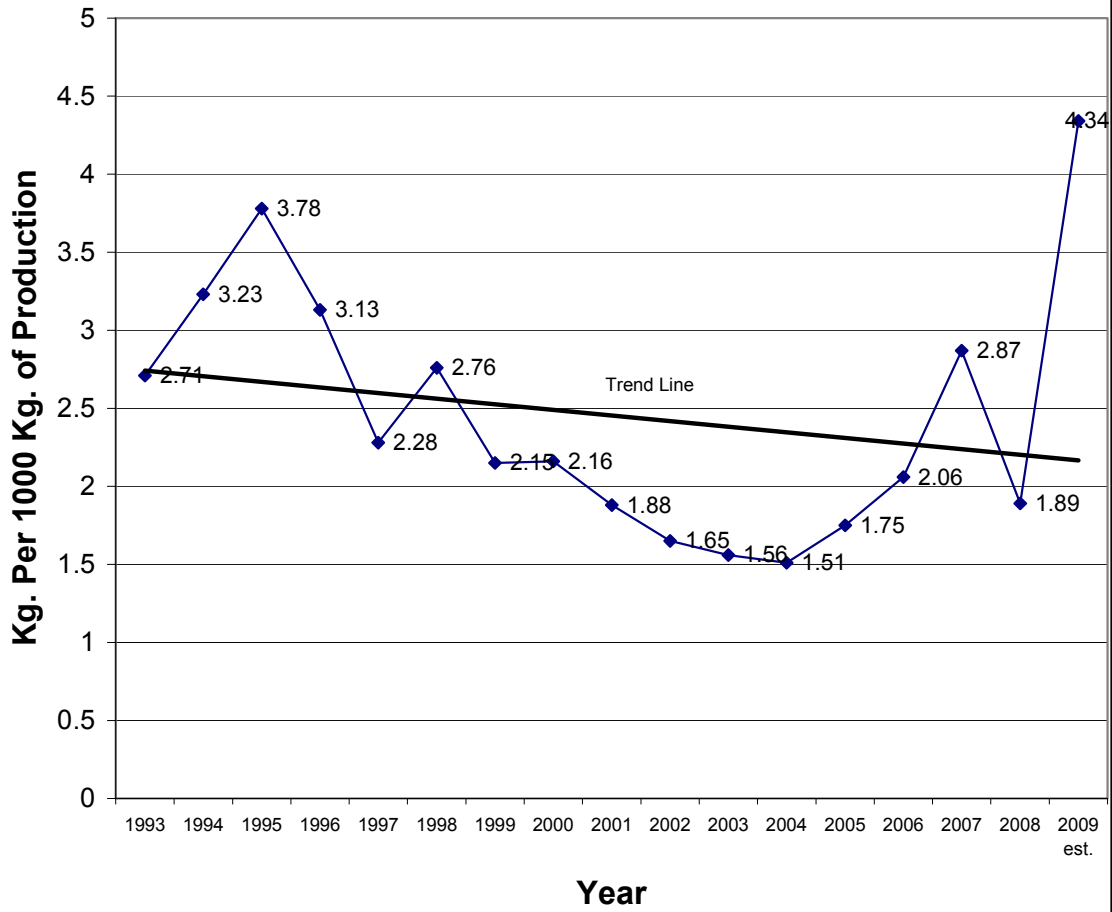
The trend to lower emission levels per thousand kilograms of production continued in 2008 thanks to a 17% reduction in emissions. However, with some emissions fixed, declining production levels in 2009 will result in a 58% increase in emissions per thousand kilograms of production. Efforts to reduce these fixed emissions will be explored.

**Chart No. 4  
Chemical Wastes**



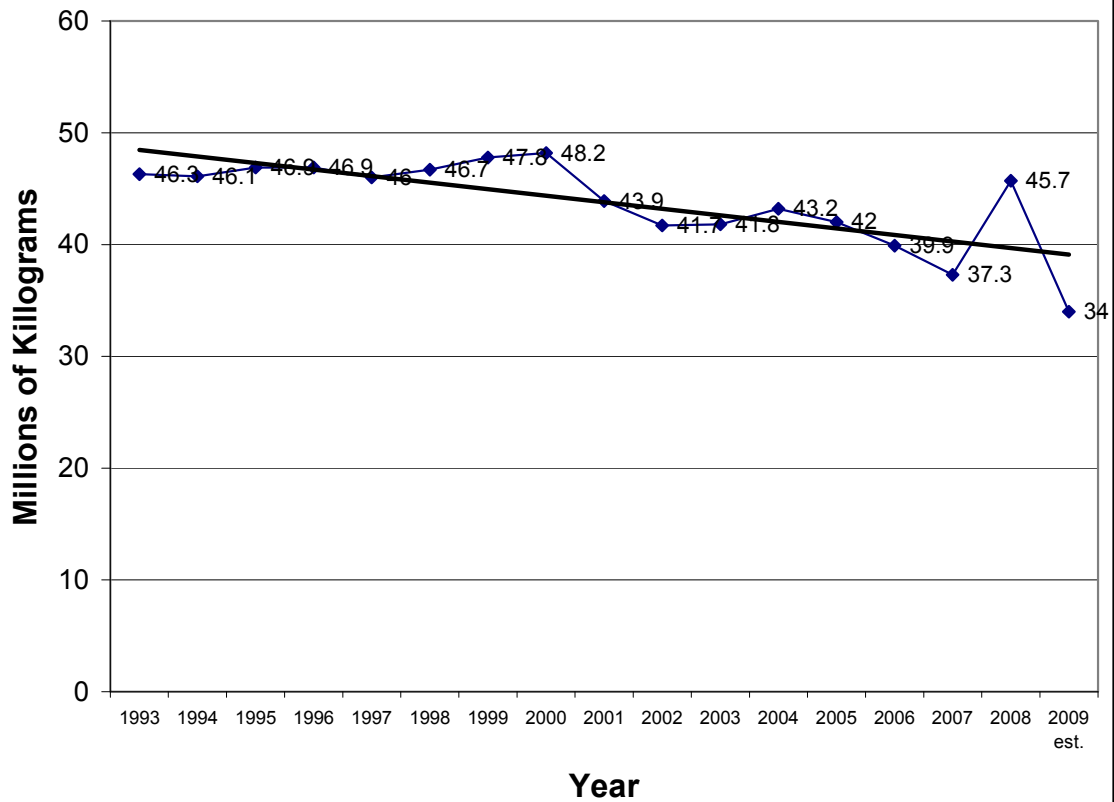
Chemical Wastes are accumulated over time and periodically shipped out for treatment. As a result, depending on the shipping dates, there can be big swings in "apparent" generation of wastes. Such was the case from 2007 to 2008 when there was a reduction of 38% in wastes, while 2009 will see an increase of 12.8%. As may be seen by the long term "Trend Line" on the above chart, the generation of wastes is on a continued downward trend.

**Chart No. 5**  
**Chemical Wastes Per 1000 Kg. of Production**



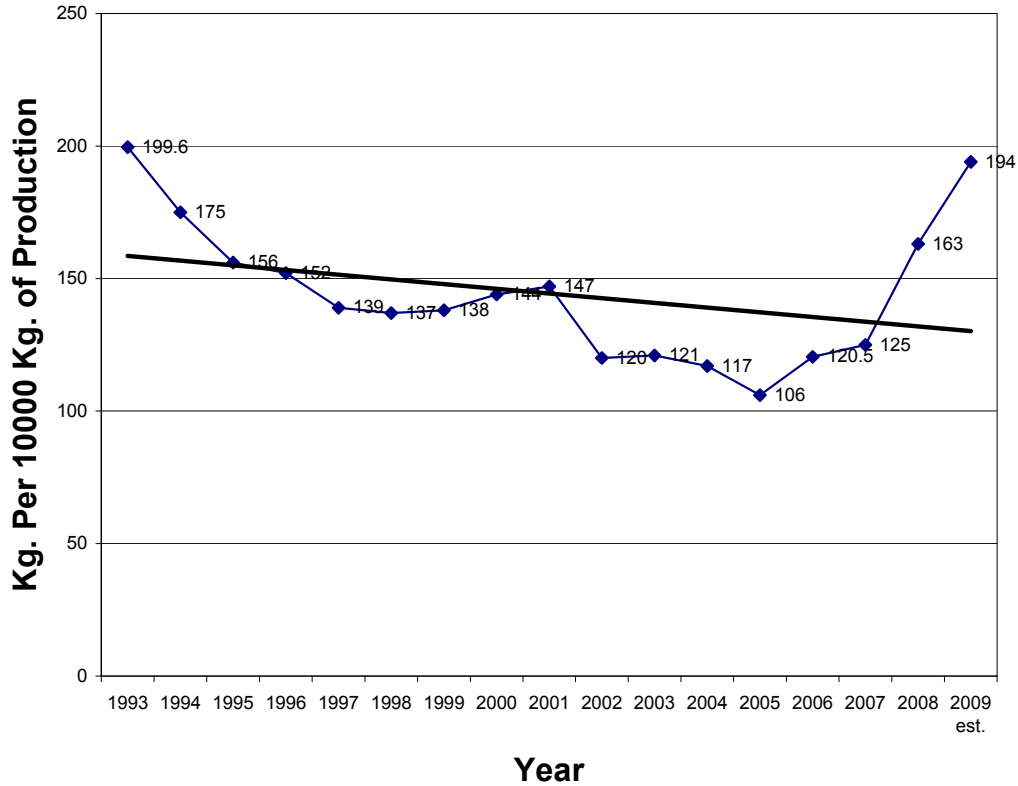
Continued lower production volumes will result in an increase in this value. Extra efforts will have to be applied to reduce wastes - which is just good business.

**Chart No. 6  
Combustion Emissions**



Combustion Emissions increased by 22.5% over 2007 due to the operation of some equipment at one plant that substantially increased Carbon Dioxide emissions. For 2009, it is estimated that emissions will return to previous low levels and we are expecting they will decrease by 8.8% over 2007 levels. Also, reduced production levels will result in reduced steam consumption and combustion emissions.

**Chart No. 7**  
**Combustion Emissions per 10000 Kg. of Production**



As the result of a 22.5% increase in Combustion Emissions coupled with a 6% reduction in Production Output, Combustion Emissions per Thousand Kilograms of Production in 2008 increased by 30% over 2007 levels. When the Manufacturing plants are forced to operate at reduced levels, it is still necessary to heat the buildings and equipment during the winter. This has an adverse effect on the operating efficiency of our plants as it applies to combustion equipment operation.

## Chemical Emissions to Air and Water

### Year 2008 Emissions and Comparisons with 2007 results

#### Table 1

Plant No.	Chemical Name	Amount Released in 2008 Kilograms		Total 2008 kg.	Total 2007 kg.	% Change From 2007	Estimate 2009 kg.
		Waterway	Air				
4	Nitrogenous Material	1,361		1,361	842	+62	900
1,4,5	Ammonia	2,126	14,957	17,083	26,229	-35	17,000
4,5,7,9	Methanol		519	519	569	-8.8	628
4	Iso Octane		5,992	5,992	4,750	+26.1	3,000
4	Vinyl Chloride	48	520	568	715	-20.6	500
1,9	Toluene		143	143	135	+5.9	139
7,2	Kerosene Type Solvents		1,751	1,751	2,858	-38.7	2,050
5	Ethyl Alcohol		25,847	25,847	52,822	-51.0	26,200
1,4	Nitrate Ion	48,704		48,704	29,870	+63.0	50,600
1,7	Isopropanol		206	206	83	+148	202
4,5	Phenol*	3	3,425	3,428	4,905	-30.1	1,800
1,5	Formaldehyde		49	49	61	-19.6	30
9	Xylene		147	147	136	+8.0	140
4	Oil and Grease	644		644	1095	-41.2	1,000
4	Phosphorus Salts	347		347	308	+12.7	301
4	Aluminum Ion	138		138	100	+38	110
7	Acetic acid		181	181	117	+54.7	200
				0	0		0
	Emissions less than 100 kg./yr.**		156	156	176	-11.4	109
	Total Emissions, kg.	53,371	53,893	107,264 (-14.7% vs. 2007)	125,771	-14.7	104,909 (-2% vs.2007)

Identification of Companies: (1) Cytec (2) Lubrizol (4) Oxy Vinyls (5) Durez (6) Chemtrade Logistics (7) Kemira Chemicals (8) PolyOne (9) Mancuso Chemicals Number (3) was CYRO, now shut down. The numbering system has been maintained to allow comparison with previous years.

\* Phenol emissions reported are now based on a new Government Certificate of Approval calculation. Emissions have NOT increased, the "calculated" emission number has.

\*\*Includes: zinc; 2,6,di-t-butyl-4-methyl phenol; antimony; DEHP; HCFC; cyanide; calcium hydroxide; ferric oxide; carbon black; naphthalene; 1,2,4-trimethyl benzene; furfuryl alcohol; ethyl benzene; gasoline.

## Chemical Emissions Per 1000 Kg. of Production, 1993 to 2008

**Kg. of Emissions Per 1000 Kg. of Production**

**Table 2**

	1993 Base Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009 Estimate
<b>Production Volume MM Kg</b>	232	264	300	309	331	342	347	335	298	346	344	368	374	331	299	281	175
<b>% Change from Base Year*</b>		+ 13.8	+ 29.5	+ 33	+42.8	+47.4	+ 49.6	+ 44.4	+ 28.6	+49.3	+48	+58.6	+61.3	+42.6	+29	-6% vs. 2007)	-38% vs. 2008)
<b>Chemical Emissions M Kg.</b>	194	160	150	161	149	125	136	134	140	149	143	167	160	152	126	107	105
<b>% Change from Base Year*</b>		- 18	- 22	- 17	- 23	- 36	- 30	- 31	- 28	-24	-26	-13.8	-17.5	-21.6	-35	-45	-46
<b>Chemical Emissions: Kg. per 1000 Units of Production</b>	0.83	0.61	0.50	0.52	0.45	0.36	0.39	0.40	0.47	0.43	0.42	0.45	0.43	0.46	0.42	0.38	0.6
<b>% Change from Base Year, 1993</b>		- 27	- 40	-37	- 46	- 57	- 53	- 52	- 43	-48	-49.4	-45.8	-48.5	-44.6	-49.6	-54	-28

\*Base Year – 1993 is the year against which plant performance is being compared.

**Chemical Wastes**  
**Year 2008 Data and Comparisons with 2007 and 2009 Estimates**  
**Table 3**

Plant No.	Chemical Name	Amount Transferred in 2008 Kilograms		Total 2008 kg.	Total 2007 kg.	% Change From 2007	Estimate 2009 kg.
		Landfill	Recycled/Treated				
1	Tributyl-Phosphine Sulfide	42,850	0	42,850	73,255	-41	50,000
5	Phenol*	1,176	50,499	51,675	2,420	+2035	84,000
1,2,7	Liquid Industrial Waste (Oils, etc.)	0	239,041	239,041	299,870	-22.8	306,040
2	Zinc	0	198	198	290	-31.7	200
4	Vinyl Resins & Compounds	130,908	0	130,908	165,372	-20.8	40,000
1,2	Phosphorus Salts	0	2,910	2,910	2,049	+42	2,200
1,4,7	Waste Misc. Haz. Prod. & Rinses	350	61,337	61,687	151,565	-59.3	114,500
5	Formaldehyde*	150	1,486	1,636	0		2,660
2	2,6-Di-t-butyl-4-methylphenol	0	110	110	0		0
2	Contaminated Soil (oil)	0	0	0	138,243	-100	0
8	Antimony	153	0	153	119	+28	0
4	Ammonia			0	5,350	-100	0
2	Amyl Alcohol			0	170	-100	0
2	Alkylated Phenol			0	200	-100	0
Chemicals with wastes of 100 Kg. or less per year **		0	22	22	81	-73	35
Total Chemical Wastes		175,587	355,603	531,190 (-36.6% vs. 2007)	838,984	-36.6	599,635 (+12.8% vs. 2008)

Identification of Companies: (1) Cytec (2) Lubrizol (4) Oxy Vinyls (5) Durez (6) Chemtrade Logistics (7) Kemira Chemicals (8) PolyOne (9) Mancuso Chemical

\*Amounts shown does not include material recycled into a customer's process stream and converted into a finished product.

\*\* Includes: Mercury and Batteries.

**Chemical Wastes per 1000 Units of Production, 1993 to 2008**  
**Kg. of Wastes per 1000 Kg. of Production**  
**Table 4**

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009 Estimate
Production Volume M M Kg	232	264	300.5	308.6	331.3	342	347	335	298.41	346.3	344.3	368	374.3	330.9	299	281	175
% Change from Base Year, 1993		+ 13.8	+ 29.5	+ 33	+42.8	+47.4	+ 49.6	+44.4	+28.6	+49.3	+48.4	+58.6	+61.3	+42.6	+29	+21	-25
Chemical Wastes M Kg	630	853	1,136	966	754	954	746	725	560	570	537	514	655	681	860	531	760
% Change from Base Year, 1993		+ 35.4	+ 80.4	+ 53.5	+ 19.8	+ 51.4	+ 18.4	+15.1	-11.1	-9.4	-14.7	-12	+4	+8.1	+36	-16	+21
Chemical Wastes: Kg. per 1000 Kg. of Production	2.71	3.23	3.78	3.13	2.28	2.76	2.15	2.16	1.88	1.65	1.56	1.51	1.75	2.06	2.87	1.89	4.34
% Change from Base Year, 1993		+ 19.3	+ 39.5	+ 15.5	- 15.9	+ 1.8	- 21.0	-20.3	-30.6	-39.2	-42.4	-44.3	-35.4	-24	+6	-30	+60

**Combustion Emissions**  
**Burning Fuel For Steam Generation And Drying**  
**Emissions for 2008 and 2007 and Estimates for 2009**  
**Table 5**

Combustion Product Component	Amount Released		
	2008	2007	2009 Estimate
Carbon Dioxide      MM kg	45.62	37.25	33.98
Nitrogen Dioxide      M kg	38.7	33.14	28.2
Carbon Monoxide      M kg	28.4	25.65	23.6
Sulfur Oxides      M kg	1.06	1.92	1.56
Methane      M kg	1.75	1.03	1.13
Volatile Organic Carbon      M kg	7.79	2.13	3.11
Totals      Millions of kg	45.7 (+22.5% vs. 2007)	37.3	34

## Combustion Emissions Per 1000 Kilograms of Production, 1993 to 2008

**Table 6**

	1993 Base Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009 Estimate
Production Volumes Millions of Kg.	232	264	300.5	308.7	331.2	342	347	335	298.4	346.3	344.3	368	374.3	330.9	299	281	175
% Change from Base Year 1993		+ 13.8	+ 29.5	+ 33	+ 42.8	+ 47.4	+ 49.6	+ 44.4	+28.6	+49.3	+48.4	+56.6	+61.3	+42.6	+29	+21	-24.5
Combustion Emissions Millions of Kg.	56.3	57.4	60.4	60.4	59	58.5	60.9	62.3	55.8	53.1	53.1	54.8	42	39.9	37.3	45.7	34
% Change from Base Year 1993		+ 1.9	+ 7.3	+ 7.3	+ 4.8	+ 3.9	+ 8.2	+ 10.7	- 1.0	-5.7	-5.7	-2.7	-25.4	-29.1	-34	-19	-40
Combustion Emissions Kg. Per 1000 Kg. Of Production	242.6	217.3	201	195.7	178.1	172.2	175.5	186	186.4	153.3	154.1	148.8	106	120.5	124.5	162.6	194.3
% Change from Base Year 1993		- 10.4	- 17.1	- 19.3	- 26.6	- 29	- 27.7	- 23.3	- 23.0	-36.8	-36.5	-38.7	-56.3	-50.3	-48.7	-33	-20