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RE: Toxics Use Reduction planning at Pacific Steel Casting

As I have previously stated,[1] Toxics Use Reduction (TUR) is a pollution prevention strategy that focuses on industrial activities to promote safer and cleaner production processes and enhance economic viability. As compared to strategies that rely on a trigger of health *risk* as the basis for implementing changes in industrial activity, TUR is based on the assumption that the release of certain toxic materials into densely populated urban environments is *inherently* problematic, or unsustainable, and that the spectrum of long-term health risks associated with these emissions cannot be adequately captured using quantitative risk assessment models. TUR is therefore oriented toward *identifying*, *prioritizing*, and *mitigating* toxic industrial pollutants at their source, rather than *measuring* their potential effects in a population.

TUR typically utilizes six strategies:

- toxic chemical substitution
- production process modification
- finished product reformulation
- production modernization
- improvements in operations and maintenance
- in-process recycling of production materials

In some cases, the only available solution to address emissions for a particular process may be to implement emission *control* technologies, such as “scrubbers” and workplace ventilation systems; this may be the case with some processes at PSC. Knowing this, however, requires that an independent evaluation be conducted in order to assess (1) production practices at the plant, (2) a list of prevention and control priorities, (3) technologies available for production practices that are producing hazardous emissions, (4) “best practices” within the industry, and so forth.

[1] City of Berkeley, Councilmember Linda Maio (http://www.ci.berkeley.ca.us/council1/images/TURA_ltr.doc)

A. Characterizing the problems

PSC faces two key problems that, on the current trajectory, are likely to worsen over time. These are the public health implications of the plant's emissions and the fact that these emissions (particularly in light of increases in recent years) are inconsistent with the west Berkeley plan and Berkeley's Sustainable Development Initiative. Despite the positive steps PSC has taken in its recent settlement agreement with BAAQMD, the problems described below will persist.

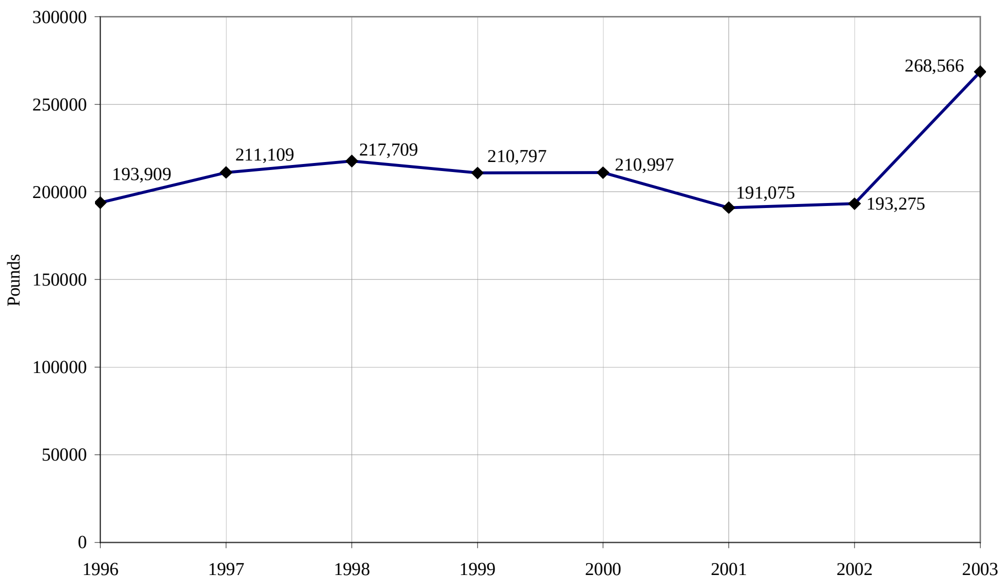
1. There is evidence that PSC is emitting a growing quantity of toxic materials into densely populated areas of Berkeley and surrounding communities.

In data reported by PSC to the Bay Area Air Quality Management District (BAAQMD), total emissions of toxic air contaminants and criteria air pollutants from the plant increased about 40% between 2002 to 2003, from 193,275 pounds in 2002 to 268,566 pounds in 2003 (Figure 1). These emissions reflect an increase in production at the plant. Emissions have probably continued to increase since 2003; however, there are data available only as recent as 2003. Between 2002 and 2003, emissions of criteria air pollutants increased 38%, while emissions of toxic air contaminants increased 84% (Figure 2). (See Attachment 1 for raw data.)

Figure 1. Total pounds of criteria air pollutants and toxic air contaminants emitted from Pacific Steel Casting plants 187, 703 and 1603 from 1996 to 2003, the latest year for which data are available.[2] ***(See attached Addendum for corrected data.)***

[2] California Air Resources Board, Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588, Connelly) (http://www.arb.ca.gov/ab2588/overview.htm) (accessed March 23, 2006) Facility Search Tool for PSC among 10,000 facilities in California, updated by ARB February 27, 2006. http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php?dd= (accessed March 23, 2006).

Pounds of criteria air pollutants and toxic air contaminants released by PSC, 1996-2003



Between 2002 to 2003, PSC produced a 40% increase in total emissions. (http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php)

Figure 2. Pounds of criteria air pollutants and toxic air contaminants emitted from Pacific Steel Casting plants 187, 703 and 1603 for 2002 and 2003. ***(See attached Addendum for corrected data.)***

Criteria air pollutants	**2002**	**2003**	**Percent increase**
Total organic gases (TOG)	67,000	105,400	57%
Reactive organic gases (ROG)	48,400	74,000	53%
Carbon monoxide (CO)	1,400	1,800	29%
Oxides of nitrogen (NOx)	10,200	14,200	39%
Oxides of sulfur (SOx)	0	0	n/a
Particulate matter	24,800	26,600	7%
Particulate matter (10 um)	21,000	22,800	9%
Particulate matter (2.5um)	18,000	19,200	7%
Total criteria air pollutants, pounds	190,800	264,000	38%
Toxic air contaminants	**2002**	**2003**	**Percent increase**
Benzene	302	598	98%
Copper	5	10	96%
Cresols	241	486	102%
Formaldehyde	321	709	121%
Lead	13	22	68%
Manganese	456	483	6%
Nickel	37	39	6%
Phenol	1,079	2,176	102%
Zinc	22	43	97%
Total toxic air pollutants, pounds	2,475	4,566	84%
Total pollutants, pounds	**193,275**	**268,566**	**39%**

2. PSC emissions are of public health significance.

The air contaminants reported by PSC to the BAAQMD consist of substances that have been targeted in the U.S. and California for tracking and emission reductions because they are known to be toxic to humans; at very low exposure levels, most of them pose a substantial hazard to health. In the case of PSC, these emissions consist of a number of highly toxic heavy metals that persist in the environment, accumulate in human tissues, and are uniquely hazardous (see Figure 2).[3] Manganese, lead, and nickel fall into this group; they are toxic to the human neurological system, they are hazardous to fetal development, and/or they produce a range of other toxic effects.[4, 5] Any long-term strategy for PSC should assume that releasing

[3] The unique public health hazards associated with persistent, bioaccumulative, and toxic industrial materials (particularly for children) are discussed in a report released March 14, 2006 by the UC Office of the President to the California Senate Environmental Quality Committee and Assembly Committee on Environmental Safety and Toxic Materials, which I co-authored. This report can be downloaded from the UC Center for Occupational and Environmental Health (http://coeh.berkeley.edu/greenchemistry1.htm) (see pages 25-31)

[4] I will provide you with a general toxicological profile for these substances in a subsequent document, on request.

[5] For example, the chronic inhalation Minimal Risk Level (MRL) for manganese established by the Agency for Toxic Substances and Disease Registry of the CDC is 0.00004 mg/m^3 for community exposures, as a continuous time-weighted average, with a disease endpoint of neurotoxicity. (http://www.atsdr.cdc.gov/mrls.html) (accessed March 31, 2006). Manganese is considered by ATSDR to be more hazardous to human health than mercury by over one order of magnitude; the mercury inhalation MRL is 0.0002 mg/m^3. Similarly, the chronic inhalation MRL for nickel is 0.00009 mg/m^3. There is essentially no safe level of lead exposure for children. (http://www.atsdr.cdc.gov/cabs/lead/lead_cabs.pdf)

substances of this nature into densely populated urban areas is inherently problematic and should be remedied.

4. By its emissions of manganese alone, PSC was ranked #12 for public health risk among 2,171 stationary sources in six Bay Area counties by US EPA.

According to risk calculations by U.S. EPA, PSC is in the top 1% of stationary sources for risks to public health in six Bay Area counties (Figure 3). EPA arrived at this estimate based on PSC's emissions of manganese alone; the estimate did not take into account the plant's emissions of other toxic metals (lead, nickel etc), air toxics (benzene, formaldehyde etc) and criteria air pollutants. The estimate was also based on an emission mass of only 250 pounds of manganese per year, below the mass of 483 pounds reported by PSC to BAAQMD in 2003 (see Figure 2). The EPA risk rating is based on the toxicity of manganese, the quantity of manganese emitted, the prevailing wind at the plant site, and the characteristics of the exposed population (e.g. population density, proximity to the emission source, etc).[6]

Figure 3. U.S. EPA stationary source risk ratings for 2,171 industrial sites in six Bay Area counties, placing PSC at #12.

Rank	Chemical	Name	MediaText	TRIPounds	Model
1	Lead	U.S. DOE SANDIA NATIONAL LABORATORIES/CALIFORNIA	3 Direct Water	3	194608
2	Lead	U.S. DOE SANDIA NATIONAL LABORATORIES/CALIFORNIA	6 POTW Transfer	4	94761
3	Manganese compounds	UNITED STATES PIPE & FOUNDRY CO INC	2 Stack Air	2260	13302
4	Sulfuric acid	CONOCOPHILLIPS CARBON PLANT	2 Stack Air	34000	5566
5	Sulfuric acid	SHELL OIL PRODUCTS US MARTINEZ REFINERY	2 Stack Air	120000	5358
6	Mercury compounds	TESORO REFINING & MARKETING CO	3 Direct Water	0	5211
7	Sulfuric acid	GENERAL CHEMICAL RICHMOND WORKS	2 Stack Air	5932	4704
8	Lead compounds	NEW UNITED MOTOR MANUFACTURING INC	6 POTW Transfer	102	4498
9	Lead	AB & I FOUNDRY	3 Direct Water	15	4374
10	Sulfuric acid	TESORO REFINING & MARKETING CO	2 Stack Air	170000	4367
11	Formaldehyde	OWENS CORNING CORP	2 Stack Air	47399	4365
12	**Manganese**	**PACIFIC STEEL CASTING CO**	**2 Stack Air**	**250**	**3236**
13	Glycol ethers	NEW UNITED MOTOR MANUFACTURING INC	1 Fugitive Air	154000	2667
14	Lead compounds	SANMINA-SCI PLANT #2	6 POTW Transfer	23	2563
15	Polycyclic aromatic compounds	TESORO REFINING & MARKETING CO	3 Direct Water	1	2376
16	Chromium	SHAW PIPE SHIELDS INC	1 Fugitive Air	174	1853
17	Lead	AB & I FOUNDRY	1 Fugitive Air	362	1826
18	Lead compounds	TESORO REFINING & MARKETING CO	3 Direct Water	17	1819
19	Sulfuric acid	CHEVRON PRODUCTS CO RICHMOND REFINERY	2 Stack Air	30000	1512
20	1,2,4-Trimethylbenzene	NEW UNITED MOTOR MANUFACTURING INC	1 Fugitive Air	28000	1506
Continued					
2153	Lead compounds	CONOCOPHILLIPS CARBON PLANT	765 RCRA Subtitle C Landfills	65	0
2154	trans-1,3-Dichloropropene	DOW CHEMICAL CO	756 Offsite Energy Recovery	60	0
2155	Zinc compounds	SHERWIN-WILLIAMS CO	765 RCRA Subtitle C Landfills	57	0
2156	Zinc compounds	SHERWIN-WILLIAMS CO	764 Other Landfills	3639	0
2157	Lead compounds	UNITED STATES PIPE & FOUNDRY CO INC	726 Offsite Recyc.	10	0
2158	Lead compounds	UNITED STATES PIPE & FOUNDRY CO INC	741 Solid./Stab. -metals	10057	0
2159	Lead compounds	COLLIMATED HOLES INC.	764 Other Landfills	66	0
2160	Lead compounds	U.S. ARMY RESERVE CENTER HEROIC WAR DEAD	590 RCRA Subtitle C Landfills	208	0
2161	Lead compounds	STEELSCAPE INC	726 Offsite Recyc.	880	0
2162	Lead compounds	OWENS-BROCKWAY GLASS CONTAINER INC PLANT 20	726 Offsite Recyc.	1	0
2163	Lead compounds	OWENS-BROCKWAY GLASS CONTAINER INC PLANT 20	741 Solid./Stab. -metals	2941	0
2164	Lead compounds	CHEVRON PRODUCTS CO RICHMOND REFINERY	3 Direct Water	51	0
2165	Lead compounds	CHEVRON PRODUCTS CO RICHMOND REFINERY	726 Offsite Recyc.	6	0
2166	Lead compounds	CHEVRON PRODUCTS CO RICHMOND REFINERY	741 Solid./Stab. -metals	435	0
2167	Lead compounds	CHEVRON PRODUCTS CO RICHMOND REFINERY	764 Other Landfills	8	0
2168	Lead compounds	CHEVRON PRODUCTS CO RICHMOND REFINERY	765 RCRA Subtitle C Landfills	493	0
2169	Lead compounds	NEW NGC INC	3 Direct Water	0	0
2170	Ethylbenzene	CONOCOPHILLIPS SAN FRANCISCO REFINERY	765 RCRA Subtitle C Landfills	10	0
2171	Lead compounds	UNITED STATES PIPE & FOUNDRY CO INC	764 Other Landfills	182	0

[6] U.S. EPA Risk Screening Environmental Indicators (RSEI) (http://epa.gov/oppt/rsei/) (accessed March 29, 2006).

5. While PSC is moving forward with positive changes in response to the BAAQMD, these will not be sufficient to address emissions of toxic materials.

PSC is investing significant funds into engineering controls to capture noxious phenol vapors. While these efforts are positive and could produce reductions in phenol emissions, they are not, by themselves, likely to adequately capture growing quantities of criteria air pollutants and toxic air contaminants from the plant. Existing controls similar to those being installed still allow dispersion of tens of thousands of pounds of criteria air pollutants and toxic air contaminants from the plant. The Health Risk Assessment (HRA) required by BAAQMD is also not likely to trigger a requirement for PSC to implement prevention and control strategies; as such, as long as PSC remains in a densely populated urban area (for which there is no buffer zone between the plant and residential areas), the plant will need to take proactive, voluntary actions to mitigate emissions of toxic materials.

6. The increasing emission rate of toxic materials from PSC appears to be at odds with the City's emphasis on linking environmental protection with economic growth.

The West Berkeley Plan calls for economic growth linked with sound environmental performance:[7]

> "The West Berkeley Plan should help make it possible for all sectors to--in an environmentally sound manner--continue to thrive. Some sectors will play their most important role in the creation of good jobs, particularly for those with poor employment prospects, others in supplying a wide and innovative range of goods and services, perhaps still others in increasing the City's tax revenue. The Plan recognizes that the widespread view of (West) Berkeley as a "clean, environmental" area is an economic as well as an environmental advantage."[8]

With increasing emissions of criteria air pollutants and toxic air contaminants, PSC is operating under conditions that are environmentally unsustainable; this path is inconsistent with the West Berkeley Plan.

PSC's environmental performance also appears to be inconsistent with the City of Berkeley's *Sustainable Development Initiative*.[9, 10]

> "Long a leader in social and environmental issues, the City of Berkeley promotes a sustainable economy by combining environmental protection with economic growth. Berkeley encourages companies to provide goods or services that enhance the environment, conserve resources or prevent pollution, and exemplify environmental leadership."

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[7] The West Berkeley Plan. (http://www.ci.berkeley.ca.us/planning/landuse/plans/westberkeley/wbtoc.htm) (accessed March 29, 2006).

[8] The West Berkeley Plan, Economic Development, I. Strategic Statement (http://www.ci.berkeley.ca.us/planning/landuse/plans/westberkeley/econdev.htm) (accessed March 29, 2006).

[9] Energy and Sustainable Development, City of Berkeley (http://www.ci.berkeley.ca.us/sustainable/community/definition.html) (accessed March 29, 2006). (http://www.ci.berkeley.ca.us/mayor/pr/pressrelease2005%2D0602.htm) (accessed March 29, 2006).

[10] City of Berkeley Annual Report, Winter 2006. The Greening of Berkeley: *Berkeley's Sustainable Development Initiative.* The number of green businesses in Berkeley now exceeds 200.

Finally, the unsustainable nature of PSC's current trajectory would appear to be at odds with the mission of the West Berkeley Association of Industrial Companies (WeBAIC).[11]

> "We are dedicated to promoting an environment in West Berkeley in which manufacturers, distributors and artisans can flourish and develop sustainable industries."

7. A lack of trust has developed between Berkeley residents and PSC.

During the last several years, over 50 articles and letters to the editor have appeared in Bay Area papers expressing criticism, and dismay, over PSC's emissions of toxic air pollutants.[12] This record appears to illustrate not simply a series of isolated events but rather a general pattern of neglect on the part of PSC with respect to its relations with the Berkeley community. It is important to recognize that a worsening public perception of the plant, and a gradual loss of the plant's social license to operate, could occur over time as growing numbers of residents and workers in Berkeley and surrounding areas become aware of, and frustrated with, increasing emissions of toxic materials from the plant.

B. Characterizing a path forward

Faced with this set of problems, PSC now faces a critical juncture. Along the current trajectory, it is likely that production and employment at the plant could be curtailed in response to growing, and legitimate, concerns among residents and workers in Berkeley and surrounding areas over emissions of toxic materials from the plant. Following a different trajectory, PSC leadership has an opportunity to reorient its relations with the City and the Berkeley community by embarking on a comprehensive assessment of its operations in collaboration with key stakeholders. Convening a Working Group comprised of key stakeholders and tasked with developing a permanent solution to the problems at PSC could result in an outcome where existing adversarial relationships cease and all parties benefit from the outcome.

The Group will need to (1) establish a mechanism to ensure public reporting and accountability, (2) come to terms with the facts regarding public health problems related to the plant, both real and perceived, (3) establish cost estimates for correcting these problems, (4) list and evaluate the set of options for correcting these problems, (5) identify the set of options that is most amenable to the Working Group, and (6) solicit PSC Board's support for a chosen set of options.

It is likely that technical and policy subcommittees would need to be established for the purpose of investigating options identified by the full Working Group. The range of options that could emerge for PSC as a result of the Group's analysis will be driven by myriad factors that cannot be explored adequately in this letter; however, they should incorporate short-, medium-, and long-term goals, and should range from immediate mitigation of toxic

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[11] West Berkeley Association of Industrial Companies. 900 Murray Street, Berkeley CA 94710 510-841-SAVE, Extension 304.
[12] Chronology of Pacific Steel Casting, Bay Area Air Quality Management District, and Neighbors for Clean Air/West Berkeley Alliance for Clean Air and Safety Jobs History, 1980-2005.

emissions to comprehensive, long-term strategies. If entered into with sufficient will and resources, including possible federal funds, this process can produce a set of agreed-upon goals that can then be used as a "roadmap" for the plant, the community, the PSC workforce, and the City.

The views and recommendations expressed are those of the author and do not necessarily represent the opinions of the Regents of the University of California, the UC Berkeley School of Public Health, or the Northern California Center for Occupational and Environmental Health.

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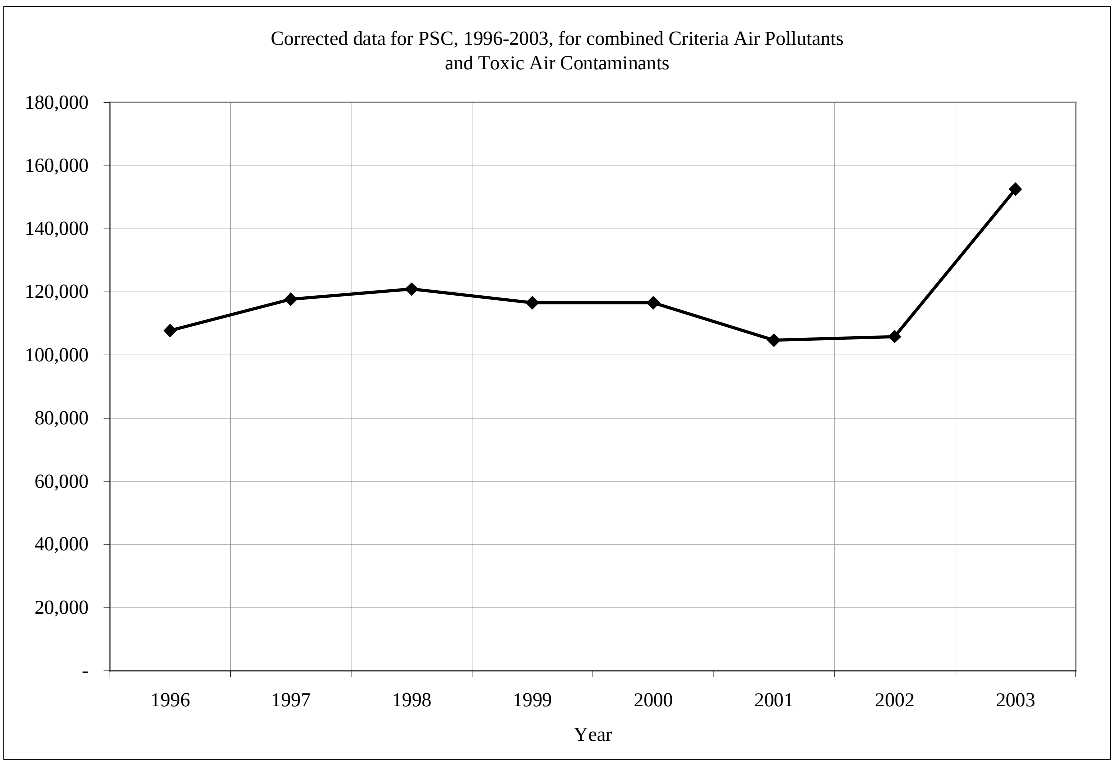
Addendum (September 6, 2006)

The data from the California Air Resources Board (ARB) illustrated in Figures 1 and 2 "over-counted" certain emissions figures for PM and Total Organic Gases (TOG). The ARB includes PM_{10} and $PM_{2.5}$ in their PM figure; they include Total Reactive Gases in their TOG figure. Data for toxic air contaminants are correct. Figures 1 and 2 reflect this clarification in TOG and PM.

Corrected Figure 1. Total pounds of criteria air pollutants and toxic air contaminants emitted from Pacific Steel Casting plants 187, 703, and 1603 from 1996 to 2003, the latest year for which data are available.



Corrected Figure 2. Pounds of criteria air pollutants and toxic air contaminants emitted from Pacific Steel Casting plants 187, 703, and 1603 for 2002 and 2003.

Criteria air pollutants	2002	2003	Percent increase
Total organic gases (TOG)	67000	105400	57%
Reactive organic gases (ROG)			
Carbon monoxide (CO)	1400	1800	29%
Oxides of nitrogen (NOx)	10200	14200	39%
Oxides of sulfur (SOx)	0	0	n/a
Particulate matter	24800	26600	7%
Particulate matter (10 um)			
Particulate matter (2.5um)			
Total criteria air pollutants, pounds	103,400	148,000	43%
Toxic air contaminants	2002	2003	Percent increase
Benzene	302	598.2	98%
Copper	5	9.8	96%
Cresols	240.6	486.2	102%
Formaldehyde	321.2	708.7	121%
Lead	13.3	22.3	68%
Manganese	455.8	483.2	6%
Nickel	36.8	39	6%
Phenol	1078.8	2176.2	102%
Zinc	21.6	42.5	97%
Total toxic air pollutants, pounds	2475.1	4566.1	84%
Total pollutants, pounds	**105,875**	**152,566**	**44%**

* * * * * * * * *

Attachment 1. Raw data for releases of criteria air pollutants and toxic air contaminants from facility numbers 187, 703 and 1603, Pacific Steel Casting, 1996 – 2003.

FACILITY #		187				703				1603		PSC total	
2003	**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**Unit**			
	TOG	0.1	200		TOG	52.6	105200		TOG	0	0		
	ROG	0.1	200		ROG	36.9	73800		ROG	0	0		
	CO	0.5	1000		CO	0.4	800		CO	0	0		
	NOX	2.9	5800		NOX	4.2	8400		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	7.2	14400		PM	5.7	11400		PM	0.4	800		
	PM10	6.2	12400		PM10	4.9	9800		PM10	0.3	600		
	PM2.5	5.4	10800		PM2.5	4	8000		PM2.5	0.2	400		
	Benzene	0.2	0.2		Benzene	598	598		Lead	0.5	0.5		
	Lead	1	1		Copper	9.8	9.8		Manganese	61.6	61.6		
	Manganese	113	113		Cresols	486.2	486.2		Nickel	5	5		
	Nickel	9.1	9.1		Formaldehyde	708.7	708.7						
					Lead	20.8	20.8						
					Manganese	308.6	308.6						
					Nickel	24.9	24.9						
					Phenol	2176.2	2176.2						
					Zinc	42.5	42.5						
			44923.3				**221775.7**				**1867.1**	**268566.1**	**2003**
	Emissions	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		
2002	TOG	0.1	200		TOG	31.2	62400		TOG	2.2	4400		
	ROG	0.1	200		ROG	21.9	43800		ROG	2.2	4400		
	CO	0.5	1000		CO	0.2	400		CO	0	0		
	NOX	2.9	5800		NOX	2.2	4400		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	9	18000		PM	3.1	6200		PM	0.3	600		
	PM10	7.6	15200		PM10	2.6	5200		PM10	0.3	600		
	PM2.5	6.6	13200		PM2.5	2.2	4400		PM2.5	0.2	400		
	Benzene	0.2	0.2		Benzene	301.8	301.8		Lead	0.4	0.4		
	Lead	2.2	2.2		Copper	5	5		Manganese	50.5	50.5		
	Manganese	248.8	248.8		Cresols	240.6	240.6		Nickel	4.1	4.1		
	Nickel	20	20		Formaldehyde	321.2	321.2						
					Lead	10.7	10.7						
					Manganese	156.5	156.5						
					Mercury	0	0						
					Nickel	12.7	12.7						
					Phenol	1078.8	1078.8						
					Zinc	21.6	21.6						
			53871.2				**128948.9**				**10455**	**193275.1**	**2002**
2001	**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		
	TOG	0.1	200		TOG	31.2	62400		TOG	2.2	4400		
	ROG	0.1	200		ROG	21.8	43600		ROG	2.2	4400		
	CO	0.5	1000		CO	0.2	400		CO	0	0		
	NOX	2.9	5800		NOX	2	4000		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	8.9	17800		PM	2.8	5600		PM	0.3	600		
	PM10	7.6	15200		PM10	2.4	4800		PM10	0.3	600		
	PM2.5	6.6	13200		PM2.5	2	4000		PM2.5	0.2	400		
	Benzene	0.2	0.2		Benzene	301.8	301.8		Lead	0.4	0.4		
	Lead	2.2	2.2		Copper	5	5		Manganese	50.5	50.5		
	Manganese	248.8	248.8		Cresols	240.6	240.6		Nickel	4.1	4.1		
	Nickel	20	20		Formaldehyde	321.2	321.2						
					Lead	10.7	10.7						
					Manganese	156.5	156.5						
					Mercury	0	0						
					Nickel	12.7	12.7						
					Phenol	1078.8	1078.8						
					Zinc	21.6	21.6						
			53671.2				**126948.9**				**10455**	**191075.1**	**2001**

FACILITY #		187				703				1603		PSC total	
2000	Emissions	ARB unit	lbs/yr		Emissions	ARB unit	lbs/yr		Emissions	ARB unit	lbs/yr		
	TOG	0.1	200		TOG	36.4	72800		TOG	2.2	4400		
	ROG	0.1	200		ROG	25.5	51000		ROG	2.2	4400		
	CO	0.5	1000		CO	0.2	400		CO	0	0		
	NOX	3.1	6200		NOX	2.3	4600		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	9	18000		PM	3	6000		PM	0.2	400		
	PM10	7.7	15400		PM10	2.6	5200		PM10	0.2	400		
	PM2.5	6.7	13400		PM2.5	2.1	4200		PM2.5	0.1	200		
	Benzene	0.2	0.2		Benzene	0.1	0.1		Lead	0.6	0.6		
	Lead	1.9	1.9		Copper	5.9	5.9		Manganese	71.7	71.7		
	Manganese	216.7	216.7		Cresols	302.2	302.2		Nickel	5.8	5.8		
	Nickel	17.4	17.4		Formaldehyde	387.1	387.1						
					Lead	12.2	12.2						
					Manganese	185.7	185.7						
					Mercury	0	0						
					Nickel	15	15						
					Phenol	1349.5	1349.5						
					Zinc	25.6	25.6						
			54636.2				**146483.3**				**9878.1**	**210997.6**	**2000**
1999	Emissions	ARB unit	lbs/yr		Emissions	ARB unit	lbs/yr		Emissions	ARB unit	lbs/yr		
	TOG	0.1	200		TOG	36.4	72800		TOG	2.2	4400		
	ROG	0.1	200		ROG	25.5	51000		ROG	2.2	4400		
	CO	0.5	1000		CO	0.2	400		CO	0	0		
	NOX	3.1	6200		NOX	2.3	4600		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	9	18000		PM	3	6000		PM	0.2	400		
	PM10	7.7	15400		PM10	2.6	5200		PM10	0.1	200		
	PM2.5	6.7	13400		PM2.5	2.1	4200		PM2.5	0.1	200		
	Benzene	0.2	0.2		Benzene	0.1	0.1		Lead	0.6	0.6		
	Lead	1.9	1.9		Copper	5.9	5.9		Manganese	71.7	71.7		
	Manganese	216.7	216.7		Cresols	302.2	302.2		Nickel	5.8	5.8		
	Nickel	17.4	17.4		Formaldehyde	387.1	387.1						
					Lead	12.2	12.2						
					Manganese	185.7	185.7						
					Mercury	0	0						
					Nickel	15	15						
					Phenol	1349.5	1349.5						
					Zinc	25.6	25.6						
			54636.2				**146483.3**				**9678.1**	**210797.6**	**1999**
	Emissions	ARB unit	lbs/yr		Emissions	ARB unit	lbs/yr		Emissions	ARB unit	lbs/yr		
	TOG	0	0		TOG	37.6	75200		TOG	2.2	4400		
1998	ROG	0	0		ROG	29.7	59400		ROG	2.2	4400		
	CO	0.5	1000		CO	0	0		CO	0	0		
	NOX	3.1	6200		NOX	1.8	3600		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	10.5	21000		PM	3	6000		PM	0.4	800		
	PM10	7	14000		PM10	2.1	4200		PM10	0.3	600		
	PM2.5	5.3	10600		PM2.5	1.6	3200		PM2.5	0.2	400		
	Benzene	0.1	0.1		Benzene	0.1	0.1		Lead	0.6	0.6		
	Lead	2.2	2.2		Copper	5.6	5.6		Manganese	71.7	71.7		
	Manganese	243.6	243.6		Cresols	308.6	308.6		Nickel	5.8	5.8		
	Nickel	19.6	19.6		Formaldehyde	448.8	448.8						
					Lead	11.1	11.1						
					Manganese	174.7	174.7						
					Mercury	0	0						
					Nickel	14.2	14.2						
					Phenol	1378.2	1378.2						
					Zinc	24.1	24.1						
			53065.5				**153965.4**				**10678.1**	**217709**	**1998**

FACILITY #		**187**				**703**				**1603**		**PSC total**	
1997	**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		
	TOG	0	0		TOG	36.7	73400		TOG	2.5	5000		
	ROG	0	0		ROG	29	58000		ROG	2.5	5000		
	CO	0.5	1000		CO	0	0		CO	0	0		
	NOX	3.1	6200		NOX	1.8	3600		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	9.6	19200		PM	2.9	5800		PM	0.4	800		
	PM10	6.4	12800		PM10	2	4000		PM10	0.3	600		
	PM2.5	4.8	9600		PM2.5	1.5	3000		PM2.5	0.2	400		
	Benzene	0.1	0.1		Benzene	0.1	0.1		Lead	0.6	0.6		
	Lead	2.2	2.2		Copper	5.6	5.6		Manganese	71.7	71.7		
	Manganese	243.6	243.6		Cresols	308.6	308.6		Nickel	5.8	5.8		
	Nickel	19.6	19.6		Formaldehyde	448.8	448.8						
					Lead	11.1	11.1						
					Manganese	174.7	174.7						
					Mercury	0	0						
					Nickel	14.2	14.2						
					Phenol	1378.2	1378.2						
					Zinc	24.1	24.1						
			49065.5				**150165.4**				**11878.1**	**211109**	**1997**
1996	**Emissions**	**tons/yr**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		**Emissions**	**ARB unit**	**lbs/yr**		
	TOG	0.3	600		TOG	34.4	68800		TOG	2.1	4200		
	ROG	0.3	600		ROG	27.2	54400		ROG	2.1	4200		
	CO	0.3	600		CO	0	0		CO	0	0		
	NOX	2.1	4200		NOX	1.9	3800		NOX	0	0		
	SOX	0	0		SOX	0	0		SOX	0	0		
	PM	8.6	17200		PM	2.4	4800		PM	0.4	800		
	PM10	5.7	11400		PM10	1.7	3400		PM10	0.3	600		
	PM2.5	4.3	8600		PM2.5	1.3	2600		PM2.5	0.2	400		
	Benzene	0.1	0.1		Benzene	0.1	0.1		Lead	0.6	0.6		
	Lead	2.2	2.2		Copper	5.6	5.6		Manganese	71.7	71.7		
	Manganese	243.6	243.6		Cresols	308.6	308.6		Nickel	5.8	5.8		
	Nickel	19.6	19.6		Formaldehyde	448.8	448.8						
					Lead	11.1	11.1						
					Manganese	174.7	174.7						
					Mercury	0	0						
					Nickel	14.2	14.2						
					Phenol	1378.2	1378.2						
					Zinc	24.1	24.1						
			43465.5				**140165.4**				**10278.1**	**193909**	**1996**
	Plant total												
	193,909.00	**1996**											
	211,109.00	**1997**											
	217,709.00	**1998**											
	210,797.60	**1999**											
	210,997.60	**2000**											
	191,075.10	**2001**											
	193,275.10	**2002**											
	268,566.10	**2003**											