

Pasadena Citizens' Advisory Council

**Annual Report on Worker Safety**  
**For Calendar Year 2018**

**Occupational Safety and Health Administration (OSHA)**  
**work-related injury and illness data**  
**for employees and contractors**  
**in 18 PCAC plants**

**FINAL 3-1-19**

**PCAC PLANTS INCLUDE...**

Refineries that refine crude oil into gasoline and other fuels; chemical plants that make organic and inorganic chemicals, plastics, and fertilizer; a wastewater treatment plant; and terminals that store liquids until shipment.

*Some cases begin as restricted duty but become lost-time. Plants thus may show one injury in both categories.*

**Symbols used in report:**

# no restricted duty -- Kinder Morgan Export Terminal

\* no contractors -- Kinder Morgan Export Terminal

¶ Not available- Kinder Morgan Liquid Terminal Contractor Hours

## Pasadena Citizens' Advisory Council

# GLOSSARY

**OSHA** - the Federal Occupational Safety and Health Administration, which regulates safety in the workplace.

**OSHA recordable** - injury or illness that must be entered onto an OSHA log. Recordables include injuries requiring a doctor's intervention, such as stitches or prescription medicine. Work-caused illnesses are also counted. Some injuries are common slips, trips, and falls. Some may result in **restricted duty** or loss of a day or more of work (**lost-time**). Recordables also include fatalities. First aid cases do not have to be recorded on the OSHA log, but plants may track them as precursors of more serious accidents. OSHA logs must be available at the work site.

Kinder Morgan Export Terminal does not allow restricted duty. If the worker cannot work his or her usual job, the injury becomes a lost-time recordable. The # symbol indicates a plant without restricted duty.

**Recordable rate** - Rate established by OSHA for both kinds of industry (good-producing and service-providing) and facilities of different sizes. The rate is based on 200,000 work hours, the approximate hours 100 people work in a year. 200,000 hours multiplied by the number of recordables and divided by the work hours equals the recordable rate.

**PCAC total recordable rate** is based on work hours of plant employees and contractors combined. The CAC asks plants to provide data on both employees and contractors. Plants are asked to include at least their resident or nested contractors--those who work in the plant on a routine basis, such as maintenance technicians. Plants are also asked to include contractors working planned maintenance turnarounds or construction. Some track additional contractors and report them to PCAC.

Plants without contractors are shown with \* an asterisk. In 2018, all plants except Kinder Morgan Export Terminal reported contractor hours.

Plants that do not allow restricted duty are shown with the symbol #.

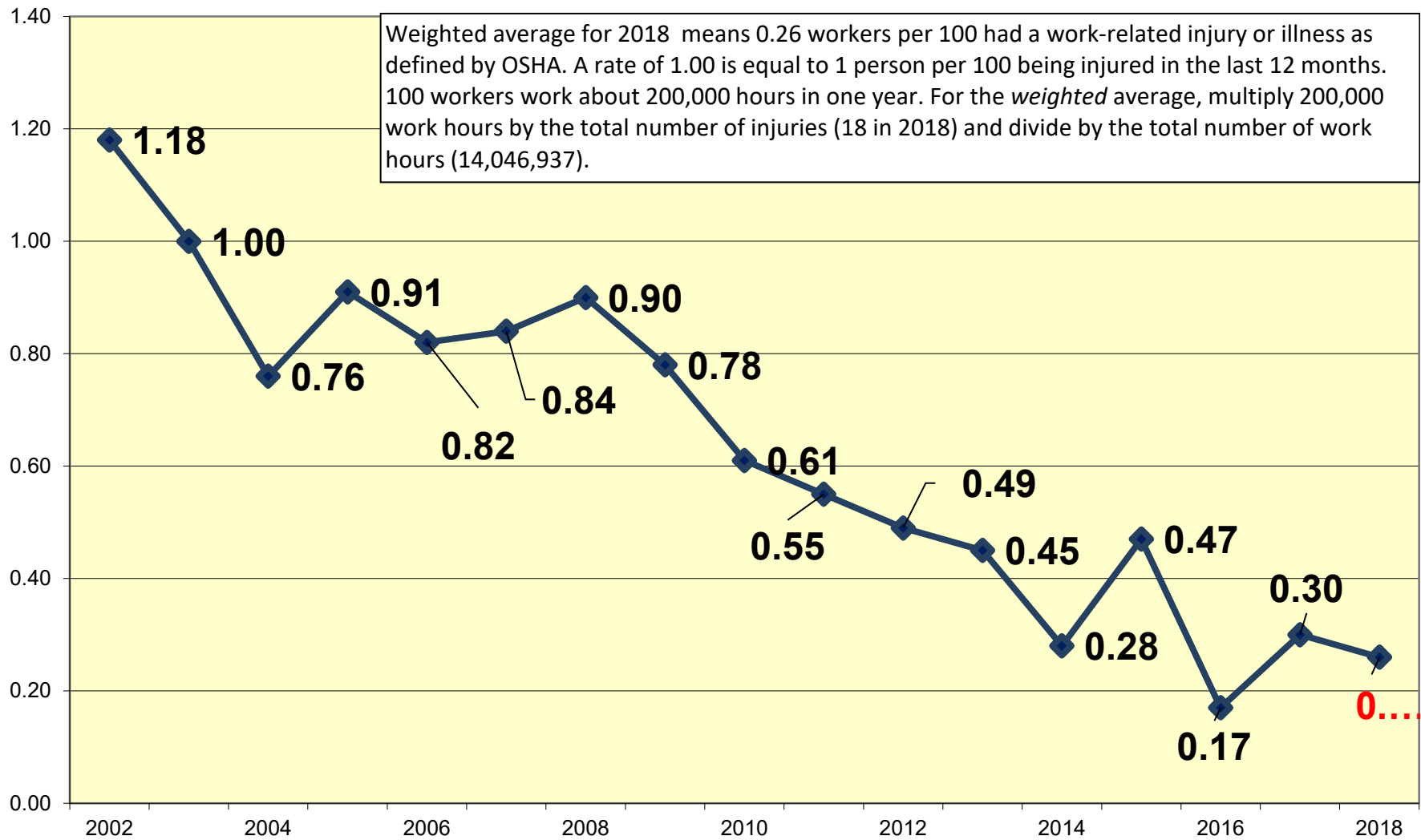
PCAC 2-19 safety FINAL DETAILS 3-1-19

Pasadena CAC Plants in Years	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Total work hours</b>		12,345,007	10,548,228	10,043,741	13,161,458	15,785,172	15,479,274	17,342,326	13,523,223	14,693,700	17,001,936	14,208,292	15,204,003	13,640,052	14,349,900	15,433,320	13,519,023	14,046,937
Employee work hours					7,036,465	7,204,147	7,347,565	7,761,921	7,647,156	7,899,336	8,234,069	7,772,083	7,325,477	7,019,174	7,160,389	6,463,995	6,248,911	6,242,680
Contractor work hours					6,124,993	8,581,025	8,131,709	9,580,405	5,876,067	6,794,364	8,767,867	6,436,209	7,851,526	6,620,878	7,189,511	8,969,325	7,270,112	7,804,257
<b>Total workers</b> (est. 2080 per person)		5,935	5,071	4,829	6,328	7,589	7,442	8,338	6,502	7,064	8,174	6,831	7,310	6,558	6,899	7,420	6,500	6,753
Employees					3,383	3,464	3,532	3,732	3,677	3,798	3,959	3,737	3,522	3,375	3,443	3,108	3,004	3,001
Contractors					2,945	4,125	3,909	4,606	2,825	3,267	4,215	3,094	3,775	3,183	3,456	4,312	3,495	3,752
<b>Recordable injuries or illnesses</b>		73	53	38	60	65	65	78	53	45	47	35	34	19	34	13	20	18
Employees					34	30	37	40	38	25	29	27	22	8	19	8	18	15
Contractors					26	35	28	38	15	20	18	8	12	11	15	5	2	3
<b>Number of recordables that were restricted duty cases</b>						12	13	16	19	13	14	7	12	8	7	3	2	4
Employees						7	7	5	9	11	9	6	9	4	5	1	2	4
Contractors						5	6	11	10	2	5	1	3	4	2	2	0	0
<b>Number of recordables that were lost-time cases</b>		26	22	14	19	20	23	31	20	16	11	13	14	5	15	6	9	9
Employees		26	21	14	13	14	19	23	16	12	10	12	12	3	10	4	9	8
Contractors		0	1	0	6	6	4	8	4	4	1	1	2	2	5	2	0	1
Percentage of lost-times		36%	42%	37%	32%	31%	35%	40%	38%	36%	23%	37%	41%	26%	44%	46%	45%	50%
<b>Number of lost-time cases less than a week</b>							4	1	4	3	2	4	6	1	1	1	1	2
Employees							4	1	3	1	1	4	5	1	1	0	1	2
Contractors							0	0	1	2	1	0	1	0	0	1	0	0
<b>Number of lost-time cases 1 week to 1 month</b>							5	8	3	5	5	3	2	3	5	2	2	1
Employees							4	8	2	4	5	3	2	2	1	1	2	1
Contractors							1	0	1	1	0	0	0	1	4	1	0	0
<b>Number of lost-time cases more than a month</b>							14	22	13	8	4	6	6	1	9	3	6	6
Employees							11	14	11	7	4	5	5	0	8	3	6	5
Contractors							3	8	2	1	0	1	1	1	0	0	0	1
<b>Fatalities</b>	1	0	0	0	0	0	1	5	0	0	0	0	0	0	1	0	0	0
<b>Number of recordables from chemical exposure or contact</b>							6	0	6	2	9	2	2	1	6	0	5	1
Employees							4	0	4	1	9	2	2	1	6	0	5	1
Contractors							2	0	2	1	0	0	0	0	0	0	0	0

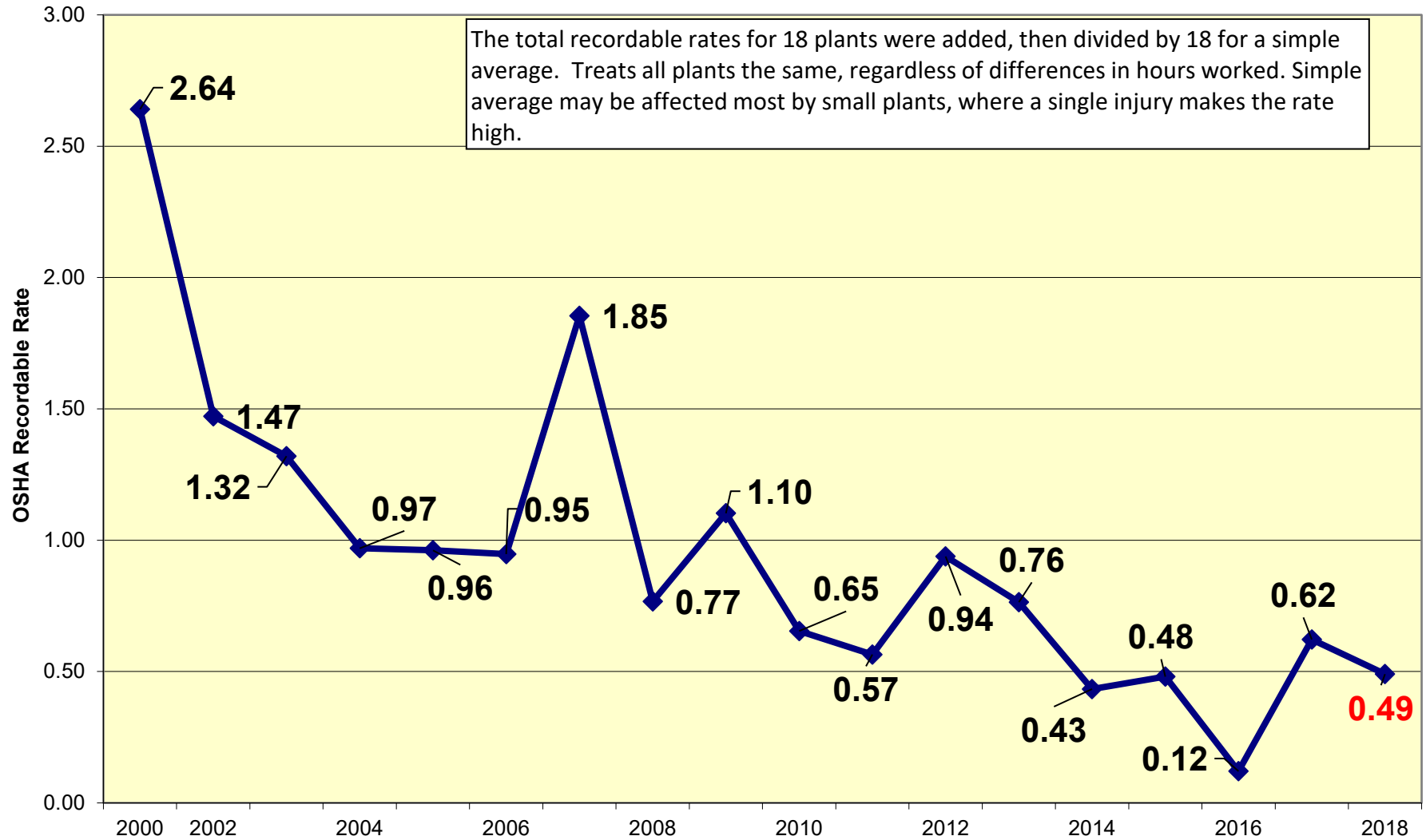
PCAC 2-19 safety FINAL DETAILS 3-1-19

Pasadena CAC Plants in Years	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Weighted average of plant recordable rates</b>		1.18	1.00	0.76	0.91	0.82	0.84	0.90	0.78	0.61	0.55	0.49	0.45	0.28	0.47	0.17	0.30	0.26
Employees					0.97	0.83	1.01	1.03	0.99	0.63	0.70	0.69	0.60	0.23	0.53	0.25	0.58	0.48
Contractors					0.85	0.82	0.69	0.79	0.51	0.59	0.41	0.25	0.31	0.33	0.42	0.11	0.06	0.08
<b>Simple average of plant recordable rates</b>	2.64	1.47	1.32	1.01	0.96	0.95	1.85	0.77	1.10	0.65	0.57	0.94	0.76	0.38	0.48	0.12	0.62	0.49
<b>Median of plant recordable rates</b>	1.03	1.06	0.94	0.48	0.59	0.82	1.18	0.47	0.69	0.56	0.00	0.40	0.30	0.00	0.06	0.00	0.00	0.18
Employees							0.99	0.84	0.94	0.51	0.00	0.38	0.00	0.00	0.00	0.00	0.00	0.00
Contractors							0.24	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Number of plants with 0.00 for both employees &amp; contractors</b>		4	2	5	5	2	4	6	3	6	9	7	5	9	9	11	10	8
Employees							4	6	3	7	9	7	9	11	12	11	10	9
Contractors							7	9	9	7	10	10	10	12	11	12	16	13
Most consecutive 0.00 rates for both							HPP 4 yrs	HPP 5 yrs	Sekisui 3 yrs	Sekisui 4 yrs	Sekisui 5 yrs	Sekisui 6 yrs	Sekisui 7 yrs	Enterprise 4 yrs	Enterprise 5 yrs	Enterprise 6 yrs	Enterprise 7 yrs	Enterprise 8 yrs
<b>5-year average</b>									1.10	0.65	0.57	0.94	0.81	0.75	0.65	0.58	0.43	0.41
<b>Worker-safety-related 3rd party voluntary audit programs</b>																		
Certified in OSHA Voluntary Protection Program								1	1	1	1	1	1 VPP, 1 Challenge	1 VPP, 1 Challenge	2 VPP	2 VPP	2 VPP	3 VPP
Working toward OSHA VPP or Challenge								2	6	5	5	5	2	2	1	0	1 Challenge	1 VPP/Challenge
Have had Responsible Care Mgt System audit								3	4	2	2	2	4	4	6	4	6	5
Scheduled for RCMS audit								2	2	1	1	2	1	3	2	2	2	2
Not scheduled yet but corporation takes part in program									2	4	4	4	5	4	3	2	2	1

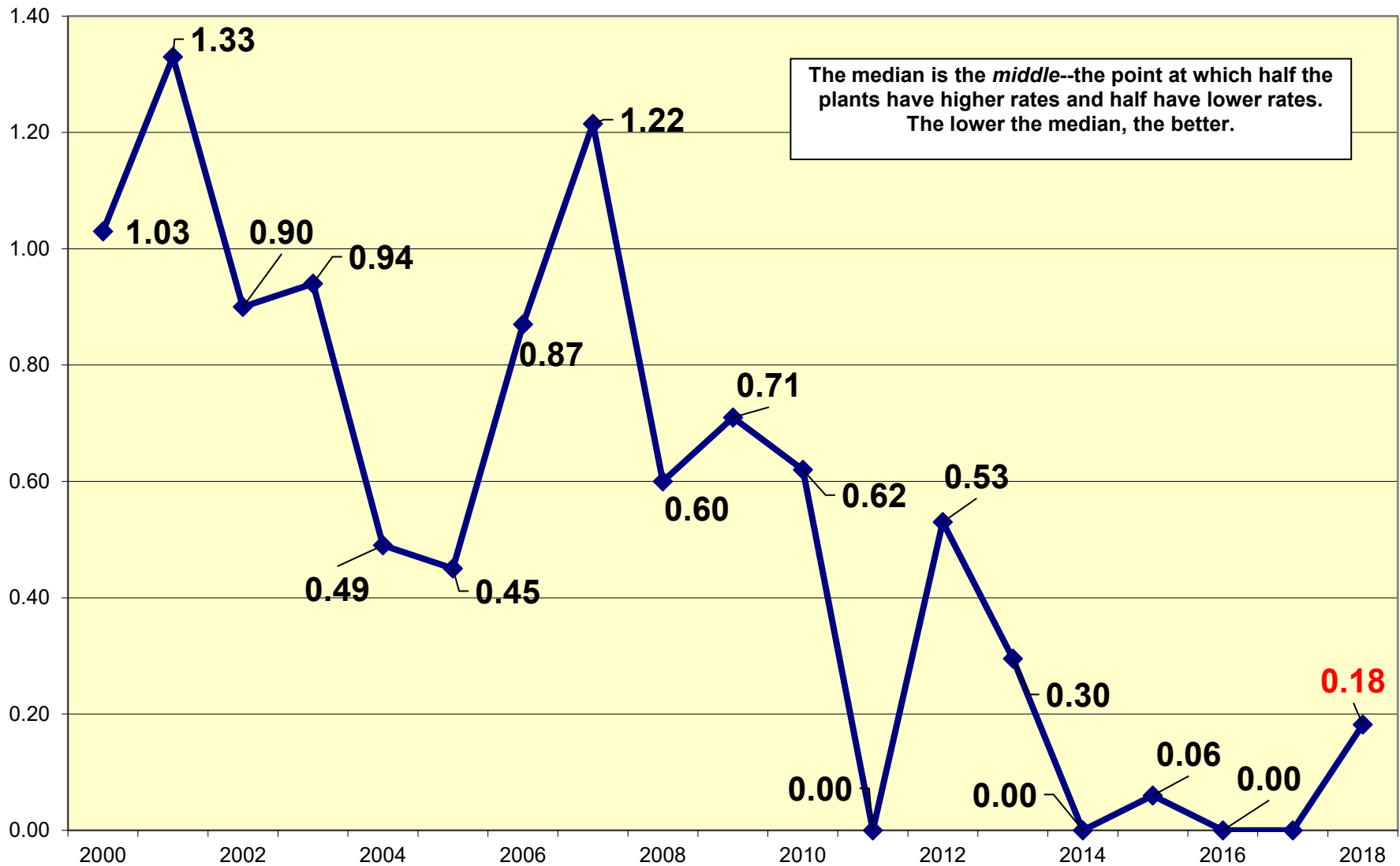
## Trend in Weighted Averages 2018



## Trend in Simple Average 2018



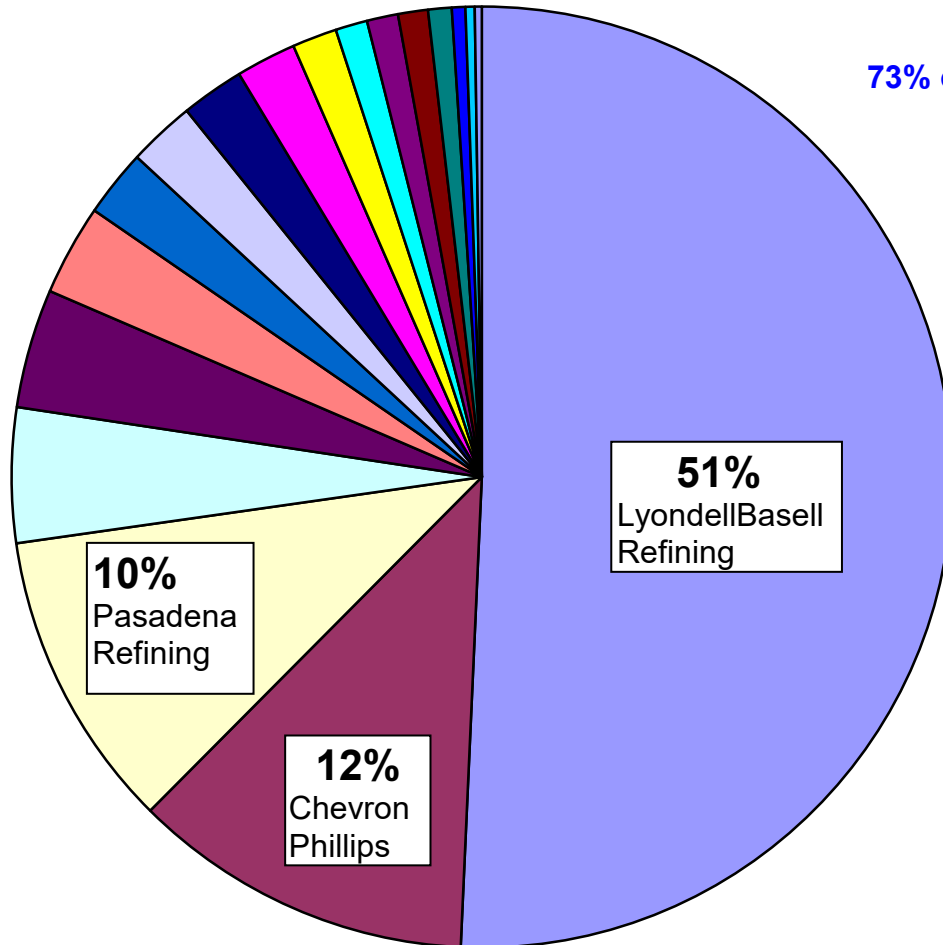
# Trend in Median 2000-2018



# Plant Size by Work Hours in 2018

14,046,937 Total Work Hours

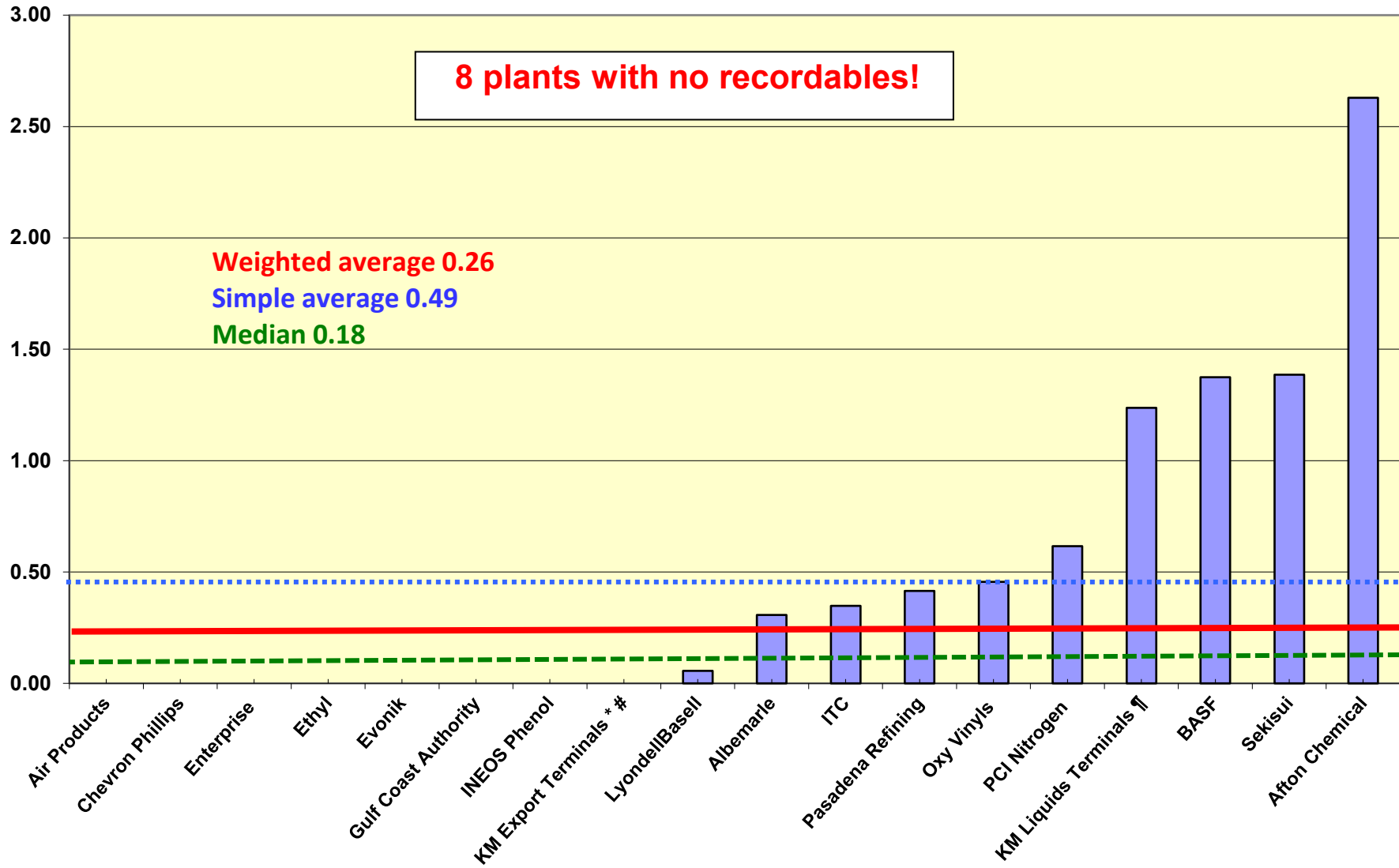
73% of total hours worked in 3 plants with more than 1 million work hours each



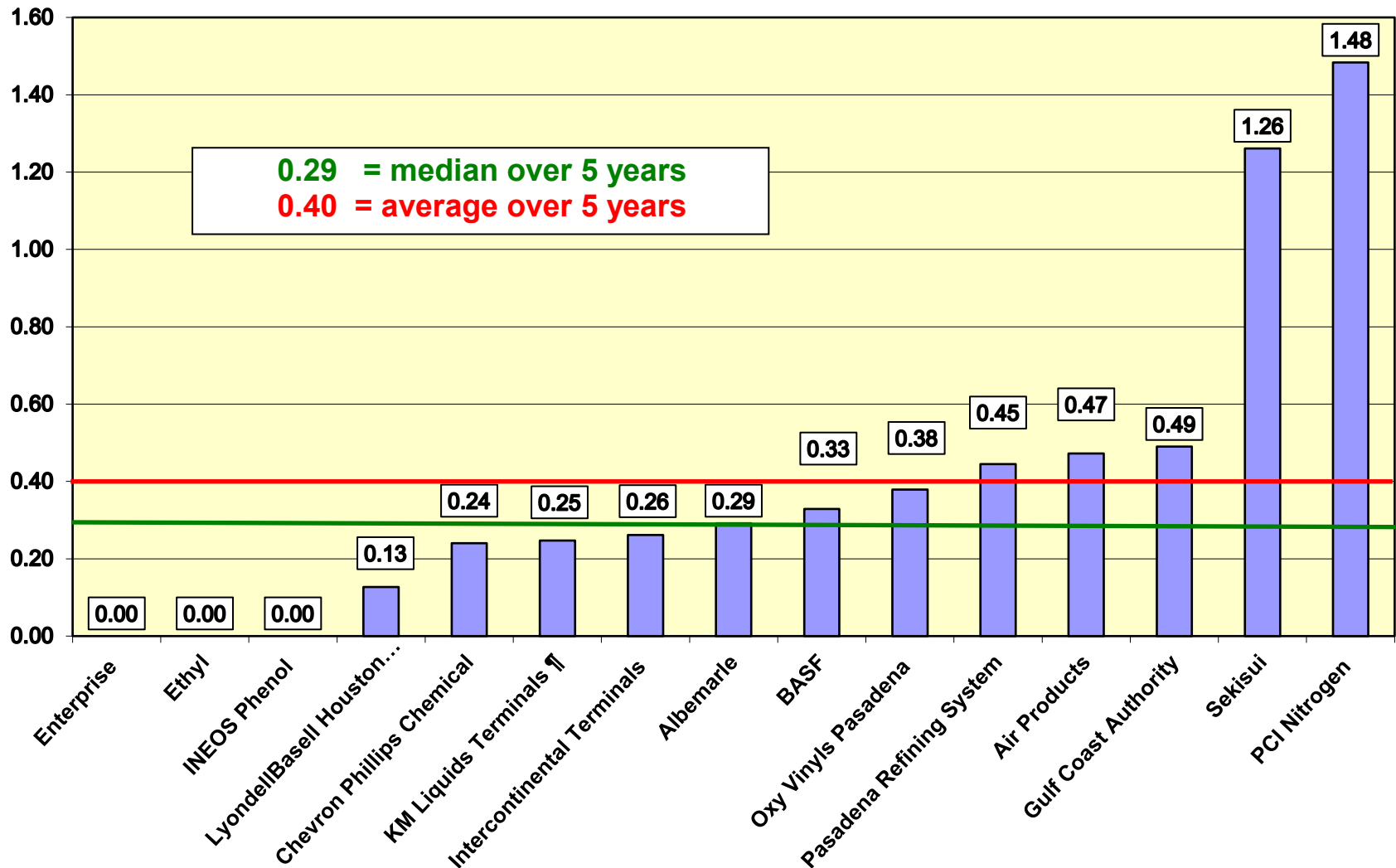
LyondellBasell Houston Refining	7,123,909
Chevron Phillips Chemical	1,649,733
Pasadena Refining System	1,445,620
Albemarle	650,385
Intercontinental Terminals	574,124
Oxy Vinyls Pasadena PVC	438,389
PCI Nitrogen	324,613
KM Liquids Terminals	323,503
Afton Chemical	304,357
BASF	290,930
INEOS Phenol	215,641
Air Products	153,920
Evonik	150,692
Sekisui	144,327
Enterprise	113,621
Gulf Coast Authority	64,961
KM Export Terminals # *	44,488
Ethyl	33,724



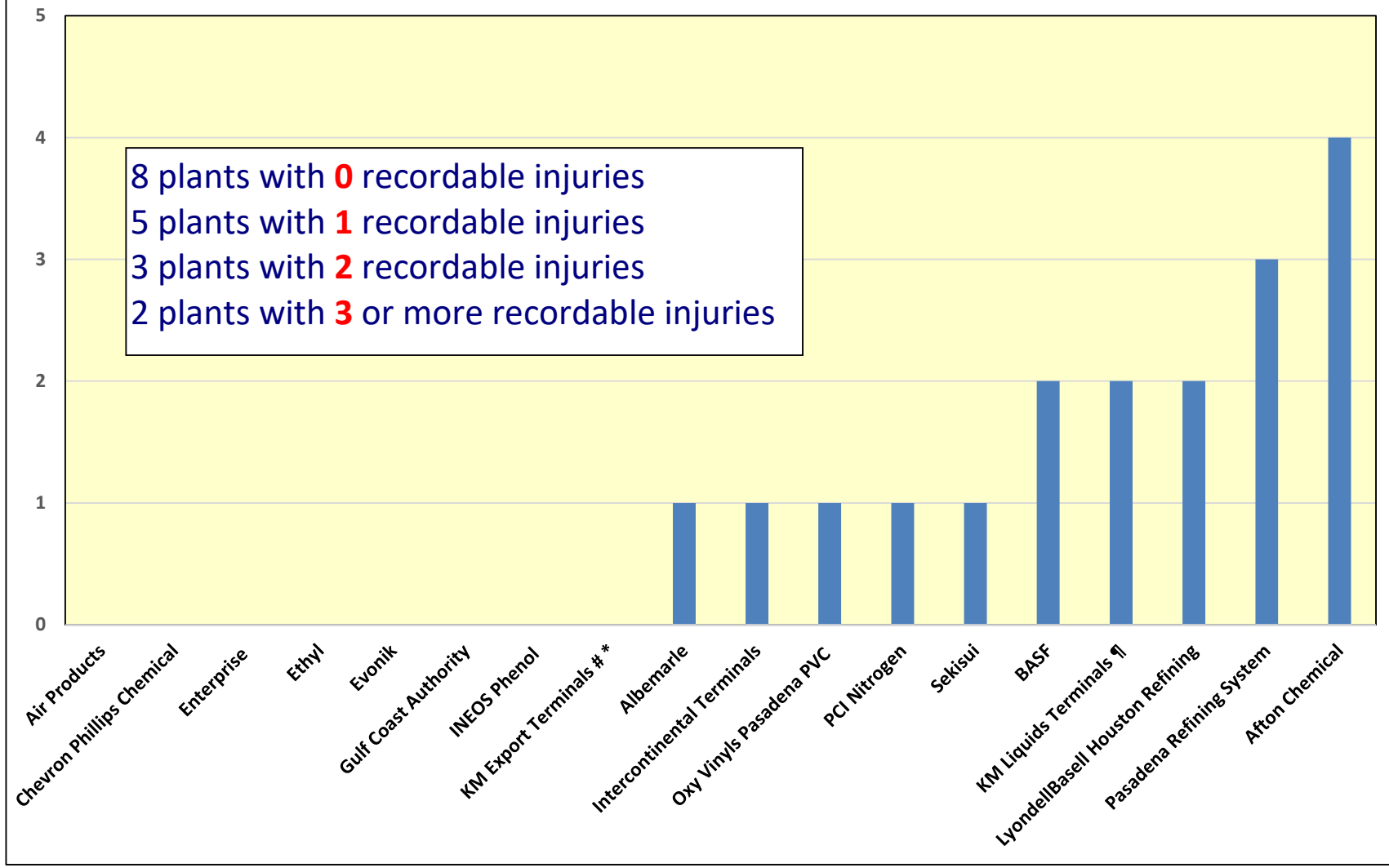
## Plant Rankings 2018 Based on Recordable Rates



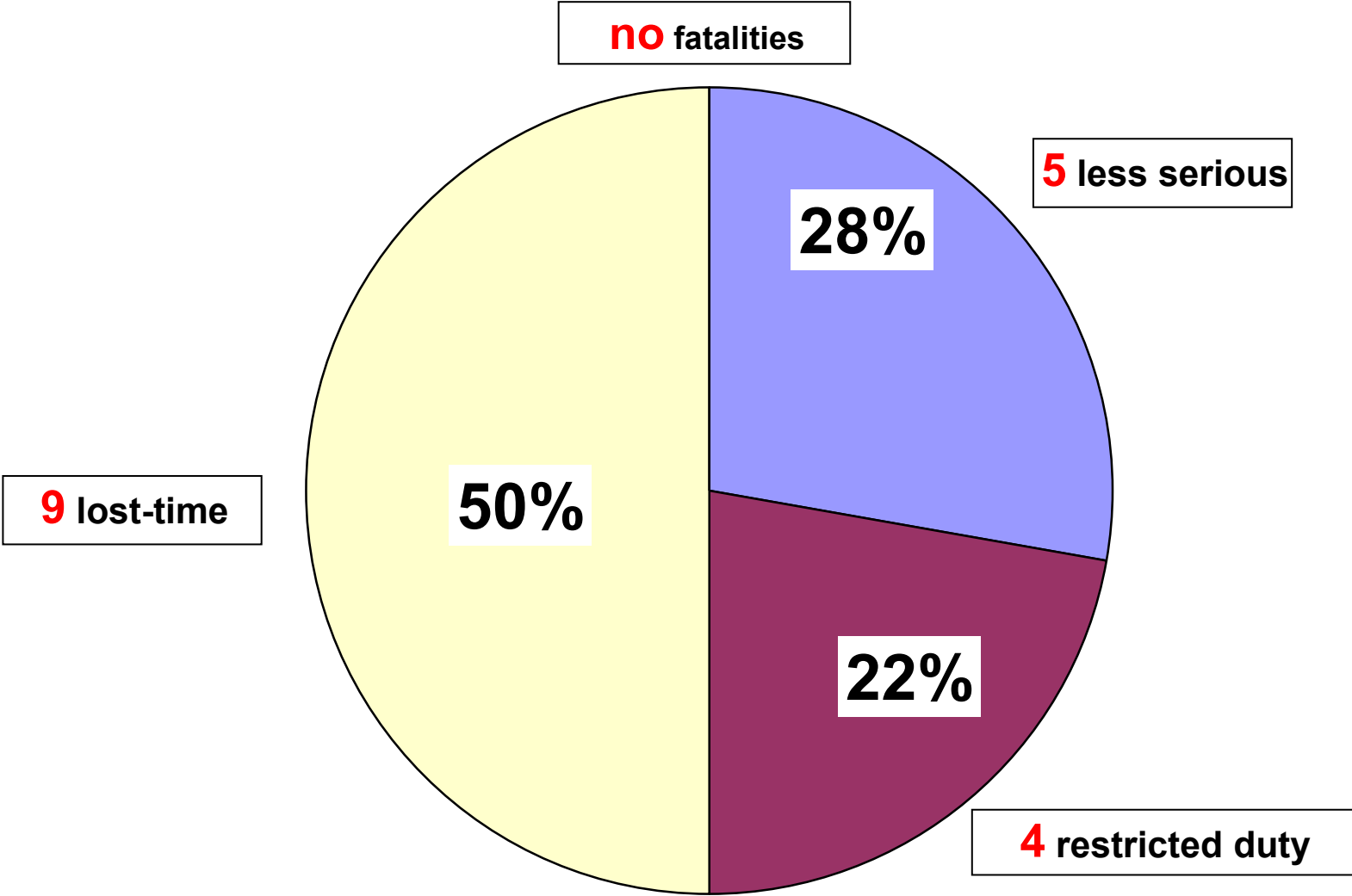
## 5-Year Rankings 2013-2018 for plants in PCAC for 5 or more years



Plant Rankings by **Number** of Recordables- 2018

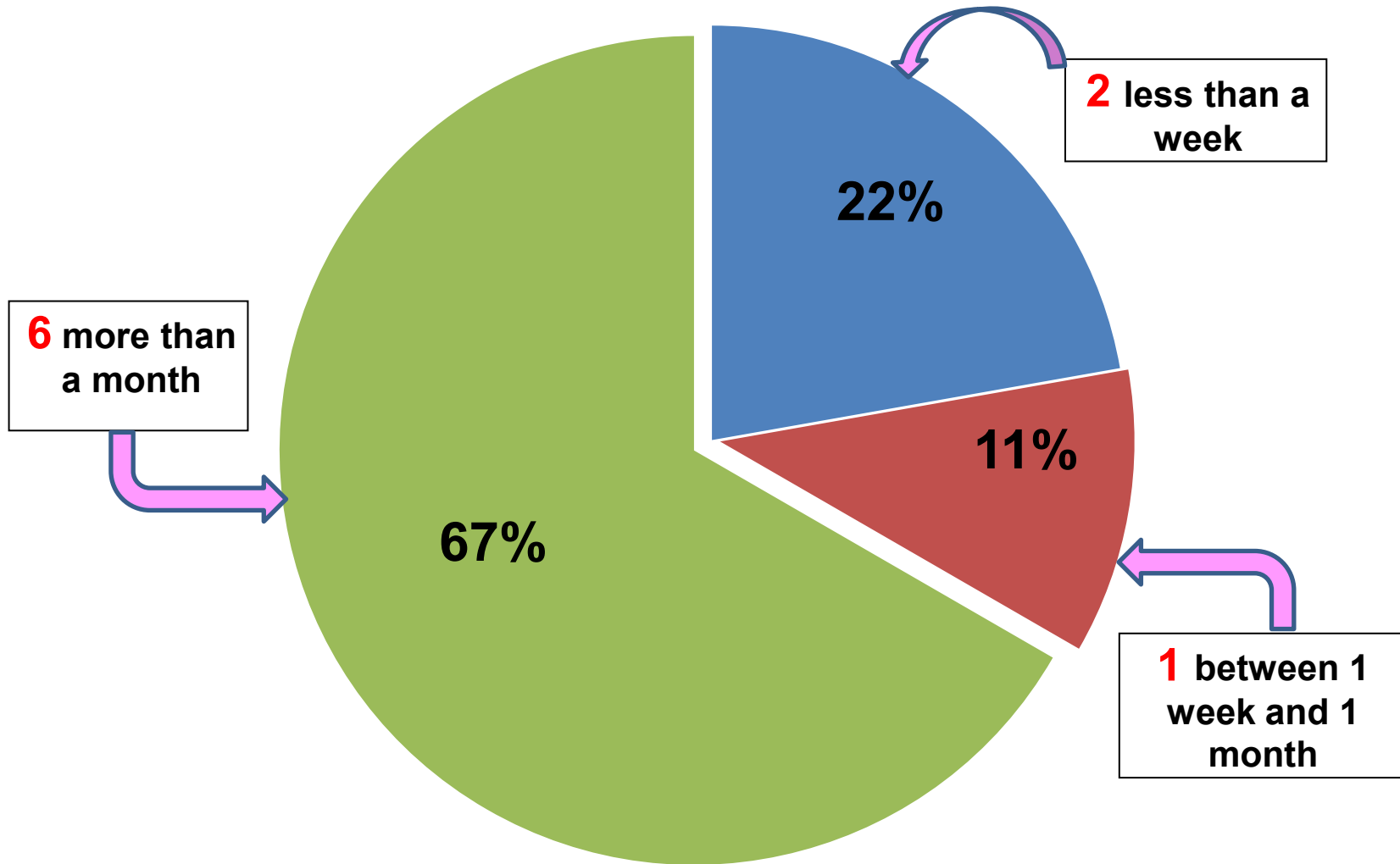


# Severity of Injury or Illness in 2018

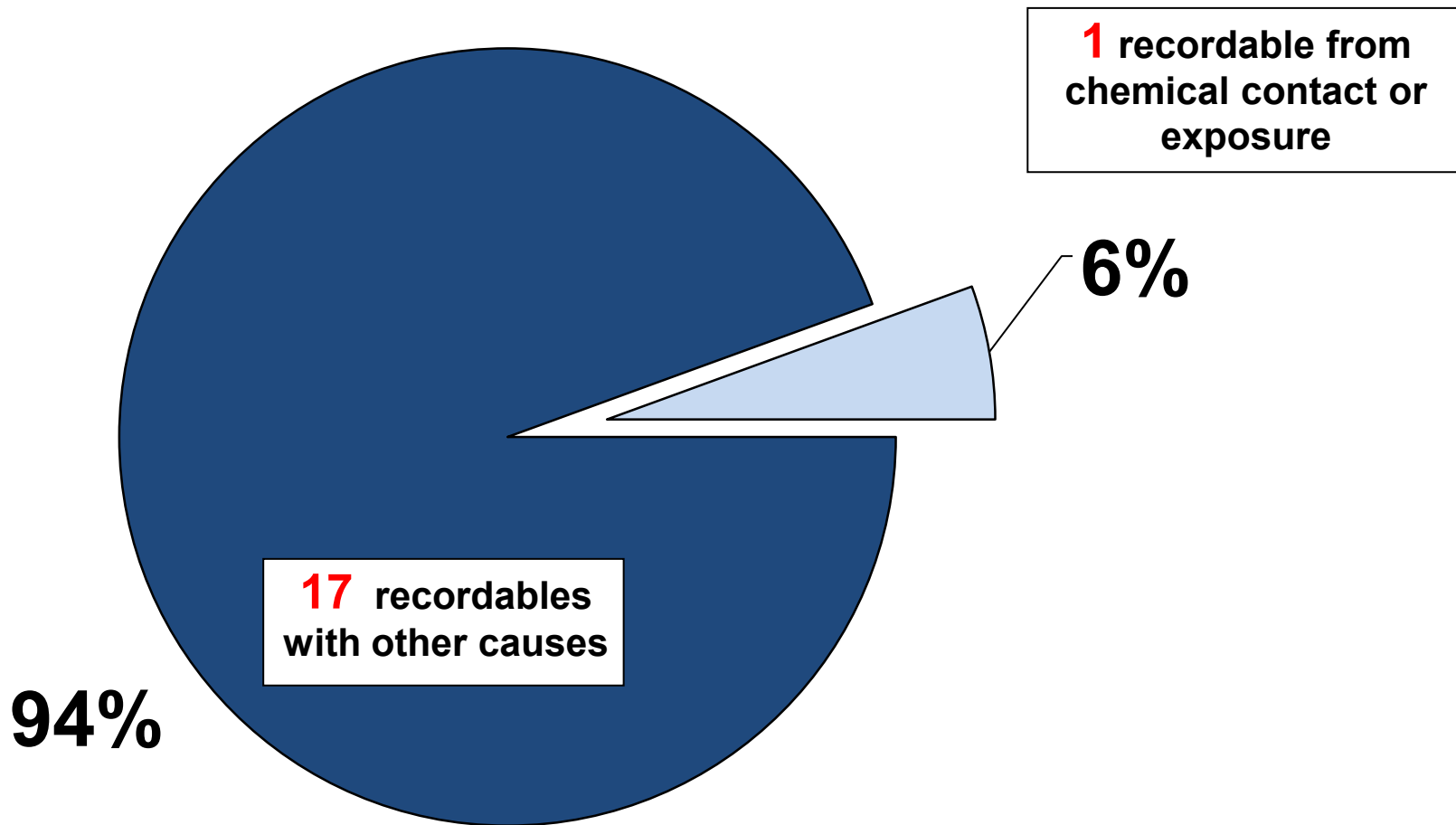


## Severity of the 9 Lost-Time Cases in 2018

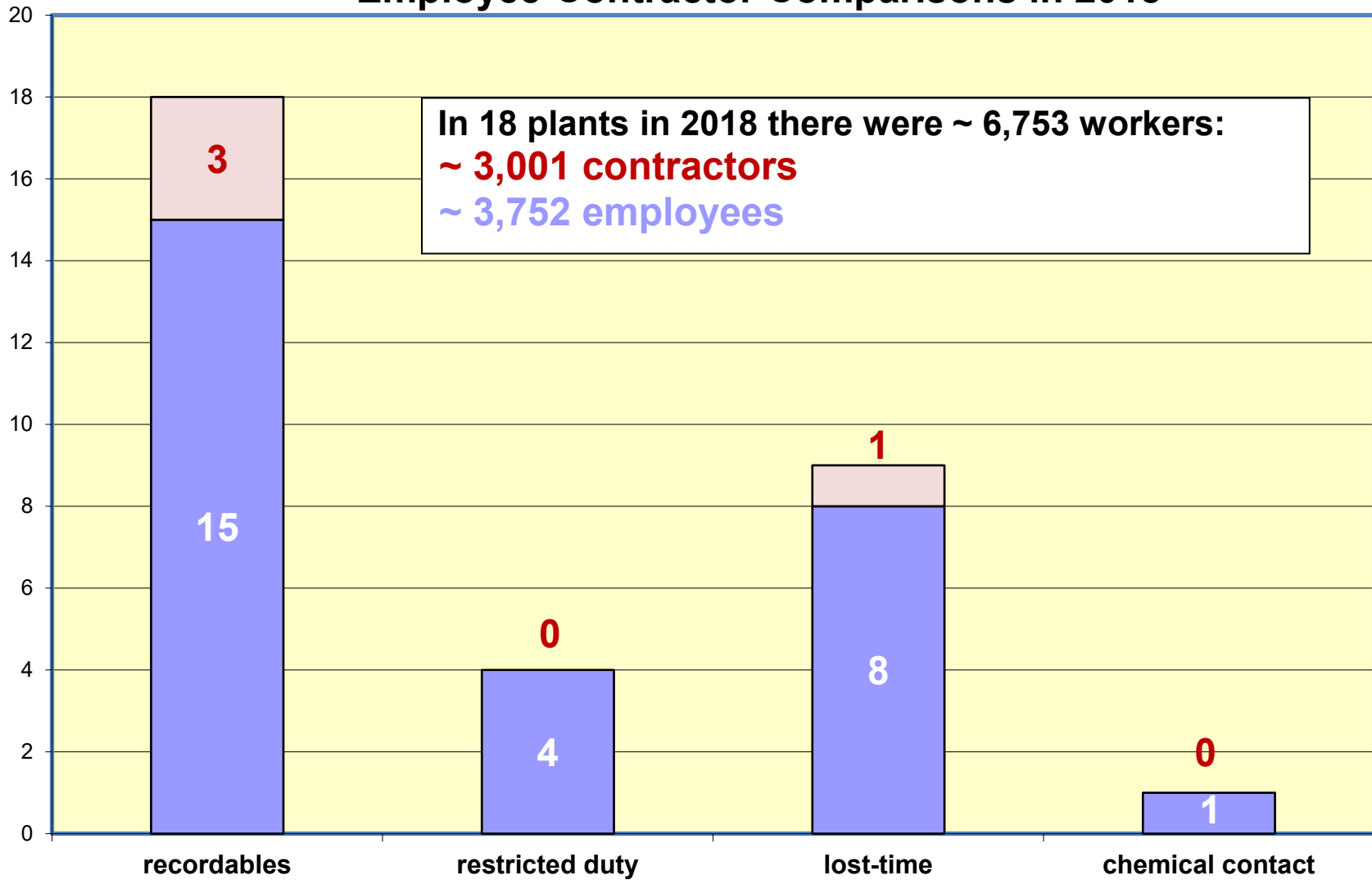
based on number of days away from work



## Recordables from Chemical Contact or Exposure in 2018



## Employee-Contractor Comparisons in 2018



# ANNUAL REPORT ON SAFETY FOR CALENDAR YEAR 2018

## Pasadena Citizens' Advisory Council

### TOTAL RECORDABLE RATES FOR 18 PCAC PLANTS

Recordable Rate = 200,000 work hours multiplied by number of injuries, then divided by work hours

**Total Recordable Rate** (employees and contractors combined, unless asterisked). Plants in alphabetical order.

	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Afton Chemical															0.00	0.00	0.00	2.63
Air Products	0.41	1.06	0.33	0.46	1.57	0.69	0.51	0.47	0.67	0.00	1.29	0.00	0.44	1.78	0.25	0.33	0.00	0.00
Albemarle	0.75	0.68	0.47	1.01	0.28	1.14	0.56	0.00	0.27	1.35	0.00	0.53	0.29	0.00	0.85	0.00	0.30	0.31
BASF	0.62	1.76	1.17	0.00	0.00	0.77	0.00	0.00	2.04	0.70	0.00	0.00	0.68	0.00	0.00	0.00	0.27	1.37
Chevron Phillips Chemical	13.39	0.90	0.94	0.49	0.45	1.04	1.18	1.28	0.41	0.37	0.67	0.77	1.09	0.12	0.52	0.25	0.31	0.00
Enterprise							14.17	0.00	1.24	2.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethyl	1.18	0.00	1.87	1.54	0.00	0.77	1.62	1.10	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00
Evonik																	2.36	0.00
Gulf Coast Authority									3.26	0.00	0.00	5.49	2.60	2.45	0.00	0.00	0.00	0.00
INEOS Phenol	2.10	0.00	0.00	3.08	0.00	0.00	3.12	0.00	0.00	0.00	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Intercontinental Terminals													0.00	0.00	0.71	0.25	0.00	0.35
KM Export Terminals # *																	0.00	0.00
KM Liquids Terminals ¶	1.03	2.75	3.00	2.47	0.00	0.87	1.25	2.18	0.71	0.75	0.00	0.56	0.30	0.00	0.00	0.00	0.00	1.24
LyondellBasell Houston Refining	0.86	0.63	0.60	0.37	0.73	0.44	0.46	0.81	0.74	0.49	0.30	0.26	0.16	0.24	0.11	0.14	0.09	0.06
Oxy Vinyls Pasadena PVC	0.77	1.25	0.44	0.00	0.93	0.46	0.00	0.45	0.45	0.93	0.00	0.00	1.85	0.46	0.00	0.00	0.98	0.46
Pasadena Refining System					2.09	1.73	1.31	0.75	0.58	0.62	0.77	1.18	0.26	0.56	1.00	0.25	0.00	0.42
PCI Nitrogen	7.77	3.65	1.65	0.39	2.23	1.18	1.61	0.84	0.75	2.20	2.31	1.76	0.99	0.47	1.34	0.71	4.28	0.62
Sekisui	0.00	0.00	0.00	0.00	1.54	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29	1.02	0.00	2.61	1.39
Site History: Crown refinery (sold to Pasadena Refining)	2.70	3.39	3.64	1.82														
Site History: Houston Products Processing *				0.00	0.00	0.00	0.00	0.00	3.39	0.00	0.00	3.18	2.89	0.00	0.00			
Site History Sun Edison	2.75	3.07	3.05	2.49	3.64	1.17	2.02	3.63	3.13	0.92	2.25	0.00	1.44	0.00	2.85			
<b>Simple average of plant rates</b>	<b>2.64</b>	<b>1.47</b>	<b>1.32</b>	<b>0.97</b>	<b>0.96</b>	<b>0.95</b>	<b>1.85</b>	<b>0.77</b>	<b>1.10</b>	<b>0.65</b>	<b>0.57</b>	<b>0.94</b>	<b>0.76</b>	<b>0.43</b>	<b>0.48</b>	<b>0.12</b>	<b>0.62</b>	<b>0.49</b>
	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018



## PCAC WORK-HOURS, NUMBERS OF INCIDENTS, RATES, AVERAGES in 2018

Approximate full-time equivalent employee count = work hours divided by 2080 (hours one person works in a year)

Plant size. Total recordable numbers and rates. Weighted averages.	Total work hours -- employees and contractors unless asterisk	Total no. of OSHA recordables	No. of restricted-duty cases	Total no. of lost-time cases	No. of lost-time cases less than 1 week	No. of lost-time cases 1 wk to 1 month	No. of lost-time cases more than 1 mo.	No of fatalities	No. due to chemical contact, exposure	Fatality rate	Total restricted duty rate	Total lost-time rate	Total recordable rate
LyondellBasell Houston Refining	7,123,909	2	0	1	0	0	1	0	0	0.00	0.00	0.03	0.06
Chevron Phillips Chemical	1,649,733	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Pasadena Refining System	1,445,620	3	1	1	0	0	1	0	1	0.00	0.14	0.14	0.42
Albemarle	650,385	1	0	1	1	0	0	0	0	0.00	0.00	0.31	0.31
Intercontinental Terminals	574,124	1	0	0	0	0	0	0	0	0.00	0.00	0.00	0.35
Oxy Vinyls Pasadena PVC	438,389	1	0	1	0	0	1	0	0	0.00	0.00	0.46	0.46
PCI Nitrogen	324,613	1	1	1	0	0	1	0	0	0.00	0.62	0.62	0.62
KM Liquids Terminals ¶	323,503	2	1	1	0	0	1	0	0	0.00	0.62	0.62	1.24
Afton Chemical	304,357	4	0	2	1	1	0	0	0	0.00	0.00	1.31	2.63
BASF	290,930	2	0	1	0	0	1	0	0	0.00	0.00	0.69	1.37
INEOS Phenol	215,641	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Air Products	153,920	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Evonik	150,692	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sekisui	144,327	1	1	0	0	0	0	0	0	0.00	1.39	0.00	1.39
Enterprise	113,621	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gulf Coast Authority	64,961	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
KM Export Terminals # *	44,488	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Ethyl	33,724	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
<b>totals &amp; simple average</b>	<b>14,046,937</b>	<b>18</b>	<b>4</b>	<b>9</b>	<b>2</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>0.00</b>	<b>0.15</b>	<b>0.23</b>	<b>0.49</b>
										Fatality rate	restricted duty rate	lost-time rate	recordable rate
<b>weighted averages</b>		<b>0.26</b>	<b>0.06</b>	<b>0.13</b>	<b>0.03</b>	<b>0.01</b>	<b>0.09</b>	<b>0.00</b>	<b>0.01</b>				

**2018 TOTAL RECORDABLE RATES WITH RANGE & MEDIAN**

median is the middle--half of the plants have higher rates and half have lower rates

PCAC Plants - Ranking Lowest to Highest 2018 Median (half plants higher, half lower)	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Ranking by Lowest to Highest Recordable Rate
Air Products	0.41	0.44	1.06	0.33	0.46	1.57	0.69	0.51	0.47	0.67	0.00	1.29	0.00	0.44	1.78	0.25	0.33	0.00	0.00	Air Products
Chevron Phillips	13.39	1.42	0.90	0.94	0.49	0.45	1.04	1.18	1.28	0.41	0.37	0.67	0.77	1.09	0.12	0.52	0.25	0.31	0.00	Chevron Phillips
Enterprise								14.17	0.00	1.24	2.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Enterprise
Ethyl	1.18	0.94	0.00	1.87	1.54	0.00	0.77	1.62	1.10	0.00	0.00	0.00	1.28	0.00	0.00	0.00	0.00	0.00	0.00	Ethyl
Evonik																		2.36	0.00	Evonik
Gulf Coast Authority										3.26	0.00	0.00	5.49	2.60	2.45	0.00	0.00	0.00	0.00	Gulf Coast Authority
INEOS Phenol	2.10	3.28	0.00	0.00	3.08	0.00	0.00	3.12	0.00	0.00	0.00	1.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	INEOS Phenol
KM Export Terminals * #																		0.00	0.00	KM Export Terminals * #
LyondellBasell	0.86	0.98	0.63	0.60	0.37	0.73	0.44	0.46	0.81	0.74	0.49	0.30	0.26	0.16	0.24	0.11	0.14	0.09	0.06	LyondellBasell
Albemarle	0.75	1.34	0.68	0.47	1.01	0.28	1.14	0.56	0.00	0.27	1.35	0.00	0.53	0.29	0.00	0.85	0.00	0.30	0.31	Albemarle
ITC														0.00	0.00	0.71	0.25	0.00	0.35	ITC
Pasadena Refining						2.09	1.73	1.31	0.75	0.58	0.62	0.77	1.18	0.26	0.56	1.00	0.25	0.00	0.42	Pasadena Refining
Oxy Vinyls	0.77	0.89	1.25	0.44	0.00	0.93	0.46	0.00	0.45	0.45	0.93	0.00	0.00	1.85	0.46	0.00	0.00	0.98	0.46	Oxy Vinyls
PCI Nitrogen	7.77	11.04	3.65	1.65	0.39	2.23	1.18	1.61	0.84	0.75	2.20	2.31	1.76	0.99	0.47	1.34	0.71	4.28	0.62	PCI Nitrogen
KM Liquids Terminals ¶	1.03	1.04	2.75	3.00	2.47	0.00	0.87	1.25	2.18	0.71	0.75	0.00	0.56	0.30	0.00	0.00	0.00	0.00	1.24	KM Liquids Terminals ¶
BASF	0.62	1.33	1.76	1.17	0.00	0.00	0.77	0.00	0.00	2.04	0.70	0.00	0.00	0.68	0.00	0.00	0.00	0.27	1.37	BASF
Sekisui	0.00	0.00	0.00	0.00	0.00	1.54	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29	1.02	0.00	2.61	1.39	Sekisui
Afton Chemical																0.00	0.00	0.00	2.63	Afton Chemical
Site History: Crown (sold to Pasadena Refining)	2.70	2.78	3.39	3.64	1.82															
Site History: HPP					0.00	0.00	0.00	0.00	0.00	3.39	0.00	0.00	3.18	2.89	0.00	0.00				Houston Products Processing *
Site History: Sun Edison	2.75	4.13	3.07	3.05	2.49	3.64	1.17	2.02	3.63	3.13	0.92	2.25	0.00	1.44	0.00	2.85				Sun Edison
<b>Median</b>	<b>1.03</b>	<b>1.33</b>	<b>0.90</b>	<b>0.94</b>	<b>0.49</b>	<b>0.45</b>	<b>0.87</b>	<b>1.22</b>	<b>0.60</b>	<b>0.71</b>	<b>0.62</b>	<b>0.00</b>	<b>0.53</b>	<b>0.30</b>	<b>0.00</b>	<b>0.06</b>	<b>0.00</b>	<b>0.00</b>	<b>0.18</b>	
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	

## PCAC GENERAL CATEGORIES OF RECORDABLES IN 2018

based on categories plants record on an OSHA 300A log

	Mechanical/ Equipment Failure or Inadequate Design	Human Error/ Not Following Procedures/ Inadequate Procedures	Other	TOTAL
Afton Chemical	1	1	2	4
Air Products	0	0	0	0
Albemarle	0	1	0	1
BASF	0	1	1	2
Chevron Phillips Chemical	0	0	0	0
Enterprise	0	0	0	0
Ethyl	0	0	0	0
Evonik	0	0	0	0
Gulf Coast Authority	0	0	0	0
INEOS Phenol	0	0	0	0
Intercontinental Terminals	0	1	0	1
KM Export Terminals # *	0	0	0	0
KM Liquids Terminals ¶	0	2	0	2
LyondellBasell Houston Refining	0	2	0	2
Oxy Vinyls Pasadena PVC	0	1	0	1
Pasadena Refining System	1	2	0	3
PCI Nitrogen	0	1	0	1
Sekisui	0	1	0	1
<b>TOTAL:</b>	<b>2</b>	<b>13</b>	<b>3</b>	<b>18</b>

## PCAC EMPLOYEE-CONTRACTOR COMPARISON -- NUMBERS OF RECORDABLES for 2018

\* No contractors. # No restricted duty. ¶ Not available.

2018 employee-contractor comparison of NUMBERS of cases	Work-Hours		Total Recordables		Restricted Duty		Total Lost-Times		Severity of Lost-Time Cases						Fatalities		Chem Exposure	
	employee (empl)	contractor (contr)	empl	contr	empl	contr	empl	contr	empl less than week	contr less than week	empl 1 wk - 1 mo	contr 1 wk - 1 mo	empl more than month	contr more than month	empl	contr	empl	contr
	Afton Chemical	259,320	45,037	4	0	0	0	2	0	1	0	1	0	0	0	0	0	0
Air Products	122,720	31,200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Albemarle	409,347	241,038	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
BASF	186,537	104,393	1	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0
Chevron Phillips Chemical	818,883	830,850	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enterprise	56,707	56,914	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ethyl	20,492	13,232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Evonik	120,304	30,388	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gulf Coast Authority	55,196	9,765	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INEOS Phenol	98,932	116,709	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intercontinental Terminals	107,757	466,367	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
KM Export Terminals # *	44,488	*	0	*	0	*	0	*	0	*	0	*	0	*	0	*	0	*
KM Liquids Terminals ¶	323,503	¶	2	¶	1	¶	1	¶	0	¶	0	¶	1	¶	0	¶	0	¶
LyondellBasell Houston Refining	2,145,782	4,978,127	1	1	0	0	1	0	0	0	0	0	1	0	0	0	0	0
Oxy Vinyls Pasadena PVC	303,328	135,061	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0
Pasadena Refining System	769,551	676,069	3	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0
PCI Nitrogen	290,819	33,794	1	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0
Sekisui	109,014	35,313	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL numbers</b>	<b>6,242,680</b>	<b>7,804,257</b>	<b>15</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>weighted avg. rec. rate</b>	<b>employee</b>	<b>contractor</b>	<b>0.48</b>	<b>0.08</b>	<b>0.13</b>	<b>0.00</b>	<b>0.26</b>	<b>0.03</b>	<b>0.06</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.16</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>

**NO FATALITIES**

## PCAC EMPLOYEE - CONTRACTOR RECORDABLE RATES FOR 2018

\* No contractors. # No restricted duty. ¶ Not available.

2018 employee-contractor comparisons	Work-hours		Total Rate		Restricted Duty Rate		Lost-Time Rate		Fatality Rate	
	employee	contractor	empl	contr	empl	contr	empl	contr	empl	contr
Afton Clemeical	259,320	45,037	3.08	0.00	0.00	0.00	1.54	0.00	0.00	0.00
Air Products	122,720	31,200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Albemarle	409,347	241,038	0.49	0.00	0.00	0.00	0.49	0.00	0.00	0.00
BASF	186,537	104,393	1.07	1.92	0.00	0.00	0.00	1.92	0.00	0.00
Chevron Phillips Chemical	818,883	830,850	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enterprise	56,707	56,914	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethyl	20,492	13,232	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Evonik	120,304	30,388	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gulf Coast Authority	55,196	9,765	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INEOS Phenol	98,932	116,709	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Intercontinental Terminals	107,757	466,367	0.00	0.43	0.00	0.00	0.00	0.00	0.00	0.00
KM Export Terminals # *	44,488	*	0.00	*	0.00	*	0.00	*	0.00	*
KM Liquids Terminals	323,503	¶	1.24	¶	0.62	¶	0.62	¶	0.00	¶
LyondellBasell Houston Refining	2,145,782	4,978,127	0.09	0.04	0.00	0.00	0.09	0.00	0.00	0.00
Oxy Vinyls Pasadena PVC	303,328	135,061	0.66	0.00	0.00	0.00	0.66	0.00	0.00	0.00
Pasadena Refining System	769,551	676,069	0.78	0.00	0.26	0.00	0.26	0.00	0.00	0.00
PCI Nitrogen	290,819	33,794	0.69	0.00	0.69	0.00	0.69	0.00	0.00	0.00
Sekisui	109,014	35,313	1.83	0.00	1.83	0.00	0.00	0.00	0.00	0.00
<b>TOTALS &amp; WEIGHTED AVERAGES</b>	<b>6,242,680</b>	<b>7,804,257</b>	<b>0.48</b>	<b>0.08</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>
Number of recordables			<b>15</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>

## PCAC EMPLOYEE RECORDABLE RATES FOR 2018

9 of 18 plants with no employee recordables in 2018

2018 employee rates in ALPHABETICAL ORDER	employee work hours	employee recordable rate
Afton Chemical	259,320	3.08
Air Products	122,720	0.00
Albemarle	409,347	0.49
BASF	186,537	1.07
Chevron Phillips Chemical	818,883	0.00
Enterprise	56,707	0.00
Ethyl	20,492	0.00
Evonik	120,304	0.00
Gulf Coast Authority	55,196	0.00
INEOS Phenol	98,932	0.00
Intercontinental Terminals	107,757	0.00
KM Export Terminals # *	44,488	0.00
KM Liquids Terminals ¶	323,503	1.24
LyondellBasell Houston Refining	2,145,782	0.09
Oxy Vinyls Pasadena PVC	303,328	0.66
Pasadena Refining System	769,551	0.78
PCI Nitrogen	290,819	0.69
Sekisui	109,014	1.83
TOTALS & WEIGHTED AVERAGES	6,242,680	0.48

Number of recordables                      15

2018 employee rates in order FROM BEST TO HIGHEST RATE	employee work hours	employee recordable rate
Air Products	122,720	0.00
Chevron Phillips Chemical	818,883	0.00
Enterprise	56,707	0.00
Ethyl	20,492	0.00
Evonik	120,304	0.00
Gulf Coast Authority	55,196	0.00
INEOS Phenol	98,932	0.00
Intercontinental Terminals	107,757	0.00
KM Export Terminals # *	44,488	0.00
LyondellBasell Houston Refining	2,145,782	0.09
Albemarle	409,347	0.49
Oxy Vinyls Pasadena PVC	303,328	0.66
PCI Nitrogen	290,819	0.69
Pasadena Refining System	769,551	0.78
BASF	186,537	1.07
KM Liquids Terminals ¶	323,503	1.24
Sekisui	109,014	1.83
Afton Chemical	259,320	3.08
TOTALS & WEIGHTED AVERAGES	6,242,680	0.48

**Median** for employees    **0.00**  
**Range** for employees    **0.00 to 3.08**  
**9 plants with 0.00 for employees**

## PCAC CONTRACTOR RECORDABLE RATES FOR 2018

13 plants with no contractor recordables in 2018

2018 contractor rates in ALPHABETICAL ORDER	contractor work hours	contractor recordable rate
Afton Chemical	45,037	0.00
Air Products	31,200	0.00
Albemarle	241,038	0.00
BASF	104,393	1.92
Chevron Phillips Chemical	830,850	0.00
Enterprise	56,914	0.00
Ethyl	13,232	0.00
Evonik	30,388	0.00
Gulf Coast Authority	9,765	0.00
INEOS Phenol	116,709	0.00
Intercontinental Terminals	466,367	0.43
KM Export Terminals # *	*	*
KM Liquids Terminals ¶	¶	¶
LyondellBasell Houston Refining	4,978,127	0.04
Oxy Vinyls Pasadena PVC	135,061	0.00
Pasadena Refining System	676,069	0.00
PCI Nitrogen	33,794	0.00
Sekisui	35,313	0.00
<b>TOTALS &amp; WEIGHTED AVERAGES</b>	<b>7,804,257</b>	<b>0.08</b>

2018 contractor rates in order FROM BEST TO HIGHEST	contractor work hours	contractor recordable rate
Afton Chemical	45,037	0.00
Air Products	31,200	0.00
Albemarle	241,038	0.00
Chevron Phillips Chemical	830,850	0.00
Enterprise	56,914	0.00
Ethyl	13,232	0.00
Evonik	30,388	0.00
Gulf Coast Authority	9,765	0.00
INEOS Phenol	116,709	0.00
Oxy Vinyls Pasadena PVC	135,061	0.00
Pasadena Refining System	676,069	0.00
PCI Nitrogen	33,794	0.00
Sekisui	35,313	0.00
LyondellBasell Houston Refining	4,978,127	0.04
Intercontinental Terminals	466,367	0.43
BASF	104,393	1.92
KM Export Terminals # *	*	*
KM Liquids Terminals ¶	¶	¶
<b>TOTALS &amp; WEIGHTED AVERAGES</b>	<b>7,804,257</b>	<b>0.08</b>

Number of recordables

3

**Median** for contractors

**0.00**

**Range** for contractors

**0.00 to 1.92**

**13 plants with 0.00 for contractors**

# ANNUAL REPORT ON SAFETY FOR CALENDAR YEAR 2018

## Pasadena Citizens' Advisory Council

### 5-YEAR AVERAGES for plants with 5 years of data

Total Recordable Rate (employees and contractors combined)

	5-yr avg	2014	2015	2016	2017	2018
Enterprise	0.00	0.00	0.00	0.00	0.00	0.00
Ethyl	0.00	0.00	0.00	0.00	0.00	0.00
INEOS Phenol	0.00	0.00	0.00	0.00	0.00	0.00
LyondellBasell Houston Refining	0.13	0.24	0.11	0.14	0.09	0.06
Chevron Phillips Chemical	0.24	0.12	0.52	0.25	0.31	0.00
KM Liquids Terminals ¶	0.25	0.00	0.00	0.00	0.00	1.24
Intercontinental Terminals	0.26	0.00	0.71	0.25	0.00	0.35
Albemarle	0.29	0.00	0.85	0.00	0.30	0.31
BASF	0.33	0.00	0.00	0.00	0.27	1.37
Oxy Vinyls Pasadena	0.38	0.46	0.00	0.00	0.98	0.46
Pasadena Refining System	0.45	0.56	1.00	0.25	0.00	0.42
Air Products	0.47	1.78	0.25	0.33	0.00	0.00
Gulf Coast Authority	0.49	2.45	0.00	0.00	0.00	0.00
Sekisui	1.26	1.29	1.02	0.00	2.61	1.39
PCI Nitrogen	1.48	0.47	1.34	0.71	4.28	0.62
<b>In order from best to highest</b>	<b>5-yr avg</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>

<b>Average of 5-yr plant rates</b>	<b>0.40</b>	<b>0.49</b>	<b>0.39</b>	<b>0.13</b>	<b>0.59</b>	<b>0.41</b>
Median	0.29					

Afton Chemical does not yet have 5 years of performance  
 Evonik does not have yet 5 years of performance  
 KM Export Terminal (# \*) does not yet have 5 years of performance

0.00	0.00	0.00	2.63
		2.36	0.00
		0.00	0.00



## Comparing Recordable Rates within OSHA's Nationwide Industry Groups

2017 NATIONAL DATA	NAICS CODE	INDUSTRY GROUP	2018 Total Plant Recordable Rate	2017 NAICS group rate
Gulf Coast Authority	221320	Sewage Treatment Facilities	0.00	2.60
LyondellBasell Houston Refining	324110	Petroleum Refineries	0.06	0.70
Pasadena Refining	324110	Petroleum Refineries	0.42	
INEOS Phenol	325110	Petrochemical Manufacturing	0.00	0.80
Albemarle	325199	Industrial Organic Chemicals	0.31	1.40
BASF	325199	All Other Basic Organic Chemical Manufacturing	1.37	
Ethyl	325199	All Other Basic Organic Chemicals	0.00	
<b>Afton Chemical</b>	<b>325199</b>	<b>All Other Basic Organic Chemicals</b>	<b>2.63</b>	
Evonik	325199	All Other Basic Organic Chemicals	0.00	
Air Products	325199	Basic Organic Chemical Manufacturing	0.00	
Chevron Phillips	325211	Plastics Material and Resin Manufacturing	0.00	1.60
Oxy Vinyls	325211	Plastics Material and Resin Manufacturing	0.46	
Sekisui	325211	Plastics Material and Resin Manufacturing	1.39	
PCI Nitrogen	325312	Fertilizer Manufacturing	0.62	2.20
Enterprise	424710	Petroleum Bulk and Terminals	0.00	2.60
KM Export Terminal # *	493190	Other Warehousing and Storage	0.00	2.80
KM Liquids Terminal ¶	493190	Other Warehousing and Storage	1.24	
Intercontinental Terminals	49319	Bulk Liquid Storage Facility	0.35	

After the passage of North American Free Trade Agreement (NAFTA), the North American Industry Classification System (NAICS) replaced the former Standard Industrial Code (SIC) system as a way to classify 20 major industrial sectors and the businesses within each.

**All but 1 PCAC plant performed better than those in the same industry code group.**

Source of OSHA data is US Bureau of Labor Statistics nonfatal workplace injuries and illnesses found at [www.bls.gov](http://www.bls.gov)

## Voluntary, Third-Party Audit Programs in Which PCAC Plants Took Part in 2018

PLANT NAME	2018 Total Recordable Rate	OSHA Voluntary Protection Program (VPP) since —	Working toward OSHA VPP or OSHA Challenge	Most recent Responsible Care Management System (RCMS) audit	Will have RCMS in 20 —	Not scheduled for RCMS yet but corp. takes part	Other
Afton Chemical	2.63			2018			
Air Products	0.00						
Albemarle	0.31						
BASF	1.37					x	
Chevron Phillips Chemical	0.00	2015		2015			
Enterprise	0.00						
Ethyl	0.00			2018			
Evonik	0.00				2019		
Gulf Coast Authority	0.00						
INEOS Phenol	0.00						
Intercontinental Terminals	0.35		VPP and Challenge	2018	2019		
KM Export Terminals # *	0.00						
KM Liquids Terminals ¶	1.24	2016					
LyondellBasell Houston Refining	0.06						
Oxy Vinyls Pasadena PVC	0.46	1991		2014			
Pasadena Refining System	0.42						
PCI Nitrogen	0.62						
Sekisui	1.39						
<b>Totals</b>		<b>3 VPP</b>	<b>1 VPP/ Challenge</b>	<b>5</b>	<b>2</b>	<b>1</b>	

8 plants in or working on programs,  
or part of company in RC  
10 remaining plants

0.53 weighted avg. 3 of 8 had zeroes  
0.16 weighted avg. 5 of 10 had zeroes

**IN LISTED PROGRAMS**

Afton Chemical  
 BASF  
 Chevron Phillips Chemical  
 Ethyl  
 Evonik  
 Intercontinental Terminals  
 KM Liquids Terminals ¶  
 Oxy Vinyls Pasadena PVC

work hours	no. of recordables
304,357	4
290,930	2
1,649,733	0
33,724	0
150,692	0
574,124	1
323,503	2
438,389	1
<b>3,765,452</b>	<b>10</b>
<b>0.53</b>	

**WEIGHTED AVERAGE****NOT IN LISTED PROGRAMS**

Air Products  
 Albemarle  
 Enterprise  
 Gulf Coast Authority  
 INEOS Phenol  
 KM Export Terminals # \*  
 LyondellBasell Houston Refining  
 Pasadena Refining System  
 PCI Nitrogen  
 Sekisui

work hours	no. of recordables
153,920	0
650,385	1
113,621	0
64,961	0
215,641	0
44,488	0
7,123,909	2
1,445,620	3
324,613	1
144,327	1
<b>10,281,485</b>	<b>8</b>
<b>0.16</b>	

**WEIGHTED AVERAGE**

In addition to the programs listed, plants may have internal corporate audits, agency inspections, programs like OSHA Process Safety Management that many are required to do. They may be certified by the ISO quality organization, audited by their insurance company, audited by customers and suppliers, or be part of other organizations that assess their safety performance.

## Kind of Processes in PCAC Plants in 2018

	Batch	Continuous	Some of Both	2018 Recordable Rate
Afton Chemical			x	2.63
Air Products		x		0.00
Albemarle			x	0.31
BASF			x	1.37
Chevron Phillips Chemical		x		0.00
Enterprise			x	0.00
Ethyl	x			0.00
Evonik	x			0.00
Gulf Coast Authority		x		0.00
INEOS Phenol		x		0.00
Intercontinental Terminals	x			0.35
KM Export Terminals # *	x			0.00
KM Liquids Terminals ¶	x			1.24
LyondellBasell Houston Refining		x		0.06
Oxy Vinyls Pasadena PVC			x	0.46
Pasadena Refining System		x		0.42
PCI Nitrogen		x		0.62
Sekisui		x		1.39
<b>Number of Plants</b>	<b>5</b>	<b>8</b>	<b>5</b>	
<b>Weighted Avg. Recordable Rate</b>	<b>0.53</b>	<b>0.13</b>	<b>0.89</b>	

	work hours	no. of recordables	work hrs by process		no.	weighted avg
Ethyl	33,724	0	1,126,531	batch	3	0.53
Evonik	150,692	0		batch		
Intercontinental Terminals	574,124	1		batch		
KM Export Terminals # *	44,488	0		batch		
KM Liquids Terminals ¶	323,503	2		batch		
Air Products	153,920	0	11,122,724	continuous	7	0.13
Chevron Phillips Chemical	1,649,733	0		continuous		
Gulf Coast Authority	64,961	0		continuous		
INEOS Phenol	215,641	0		continuous		
LyondellBasell Houston Refining	7,123,909	2		continuous		
Pasadena Refining System	1,445,620	3		continuous		
PCI Nitrogen	324,613	1		continuous		
Sekisui	144,327	1	continuous			
Afton Chemical	304,357	4	1,797,682	some of both	8	0.89
Albemarle	650,385	1		some of both		
BASF	290,930	2		some of both		
Enterprise	113,621	0		some of both		
Oxy Vinyls Pasadena PVC	438,389	1		some of both		
<b>TOTALS</b>	<b>14,046,937</b>	<b>18</b>				

**PCAC ANNUAL SAFETY REPORT FOR CALENDAR YEAR 2018 -- DETAILS PLANT BY PLANT**

summary charts are based on these data -- \* = no contractors # = no restricted duty ¶ = not available

Additional details in other worksheets

<b>Plant details for 2018</b>	Work hours	No. of OSHA-recordable injuries and illnesses	No. of recordables that were restricted duty cases	No. of recordables that were lost-time cases	No. of lost-times less than a week	No. of lost-times 1 week to 1 month	No. of lost-times more than a month	No. of fatalities	No. of recordables from chemical contact, exposure	Restricted Duty Rate	Lost-Time Rate	Fatality Rate	Total Recordable Rate for 2018
Afton Chemical employees	259,320	4	0	2	1	1	0	0	0	0.00	1.54	0.00	3.08
Afton Chemical contractors	45,037	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Afton Chemical plant total	304,357	4	0	2	1	1	0	0	0	0.00	1.31	0.00	2.63
Air Products employees	122,720	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Air Products contractors	31,200	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Air Products plant total	153,920	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Albemarle Pasadena employees	409,347	1	0	1	1	0	0	0	0	0.00	0.49	0.00	0.49
Albemarle Pasadena contractors	241,038	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Albemarle Pasadena plant total	650,385	1	0	1	1	0	0	0	0	0.00	0.31	0.00	0.31
BASF Pasadena employees	186,537	1	0	0	0	0	0	0	0	0.00	0.00	0.00	1.07
BASF Pasadena contractors	104,393	1	0	1	0	0	1	0	0	0.00	1.92	0.00	1.92
BASF Pasadena plant total	290,930	2	0	1	0	0	1	0	0	0.00	0.69	0.00	1.37
Chevron Phillips employees	818,883	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Chevron Phillips contractors	830,850	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Chevron Phillips plant total	1,649,733	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Enterprise employees	56,707	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Enterprise contractors	56,914	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Enterprise plant total	113,621	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Ethyl employees	20,492	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Ethyl contractors	13,232	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Ethyl plant total	33,724	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Evonik employees	120,304	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Evonik contractors	30,388	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Evonik plant total	150,692	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
<i>Joined 2017</i>													
Gulf Coast Authority employees	55,196	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gulf Coast Authority contractors	9,765	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Gulf Coast Authority plant total	64,961	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
<i>Joined 2009</i>													
INEOS Phenol employees	98,932	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
INEOS Phenol contractors	116,709	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
INEOS Phenol plant total	215,641	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
<i>Was Georgia Gulf until 2014. Became Axiall, then became INEOS Phenol in 2015.</i>													

<b>Plant details for 2018</b>	Work hours	No. of OSHA-recordable injuries and illnesses	No. of recordables that were restricted duty cases	No. of recordables that were lost-time cases	No. of lost-times less than a week	No. of lost-times 1 week to 1 month	No. of lost-times more than a month	No. of fatalities	No. of recordables from chemical contact, exposure	Restricted Duty Rate	Lost-Time Rate	Fatality Rate	Total Recordable Rate for 2018
Intercontinental Terminals empl	107,757	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Intercontinental Terminals contr	466,367	1	0	0	0	0	0	0	0	0.00	0.00	0.00	0.43
Intercontinental Terminals total	574,124	1	0	0	0	0	0	0	0	0.00	0.00	0.00	0.35
<i>Joined 2014 when under construction</i>													
KM Export Terminals employees #	44,488	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
KM Export Terminals contractors	*	*	*	*	*	*	*	*	*	*	*	*	*
KM Export Terminals plant total # *	44,488	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
<i>Joined 2017</i>													
KM Liquids Terminals employees	323,503	2	1	1	0	0	1	0	0	0.62	0.62	0.00	1.24
KM Liquids Terminals contractors	¶	¶	¶	¶	¶	¶	¶	¶	¶	¶	¶	¶	¶
KM Liquids Terminals plant total ¶	323,503	2	1	1	0	0	1	0	0	0.62	0.62	0.00	1.24
<i>¶ KMLT had 2 contractor injuries in 2018 but was unable to provide contractor hours</i>													
LyondellBasell Houston Refining empl	2,145,782	1	0	1	0	0	1	0	0	0.00	0.09	0.00	0.09
LyondellBasell Houston Refining contr	4,978,127	1	0	0	0	0	0	0	0	0.00	0.00	0.00	0.04
LyondellBasell Houston Refining total	7,123,909	2	0	1	0	0	1	0	0	0.00	0.03	0.00	0.06
Oxy Vinyls Pasadena employees	303,328	1	0	1	0	0	1	0	0	0.00	0.66	0.00	0.66
Oxy Vinyls Pasadena contractors	135,061	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Oxy Vinyls Pasadena plant total	438,389	1	0	1	0	0	1	0	0	0.00	0.46	0.00	0.46
Pasadena Refining employees	769,551	3	1	1	0	0	1	0	1	0.26	0.26	0.00	0.78
Pasadena Refining contractors	676,069	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Pasadena Refining plant total	1,445,620	3	1	1	0	0	1	0	1	0.14	0.14	0.00	0.42
<i>Was Crown Central Petroleum</i>													
PCI Nitrogen employees	290,819	1	1	1	0	0	1	0	0	0.69	0.69	0.00	0.69
PCI Nitrogen contractors	33,794	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
PCI Nitrogen plant total	324,613	1	1	1	0	0	1	0	0	0.62	0.62	0.00	0.62
<i>Was Agrifos, then Rentech Nitrogen, then PCI Nitrogen</i>													
Sekisui employees	109,014	1	1	0	0	0	0	0	0	1.83	0.00	0.00	1.83
Sekisui contractors	35,313	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Sekisui plant total	144,327	1	1	0	0	0	0	0	0	1.39	0.00	0.00	1.39
<i>was Celanese Chemicals until 2009</i>													

<b>HISTORY OF PCAC RECORDABLE RATES 2000 - 2018</b>																			blanks mean plant was not yet built or in PCAC																		
Historic Plant Details	2018 Total Recordable Rate	2017 Total Recordable Rate	2016 Total Recordable Rate	2015 Total Recordable Rate	2014 Total Recordable Rate	2013 Total Recordable Rate	2012 Total Recordable Rate	2011 Total Recordable Rate	2010 Total Recordable Rate	2009 Total Recordable Rate	2008 Total Recordable Rate	2007 Total Recordable Rate	2006 Total Recordable Rate	2005 Total Recordable Rate	2004 Total Recordable Rate	2003 Total Recordable Rate	2002 Total Recordable Rate	2001 Total Recordable Rate	2000 Total Recordable Rate																		
Afton Chemical employees	3.08	0.00	0.00	0.00																																	
Afton Chemical contractors	0.00	0.00	0.00	0.00																																	
Afton Chemical plant total	2.63	0.00	0.00	0.00																																	
<i>Was part of Ethyl. Became Afton in fall 2015.</i>																																					
Air Products employees	0.00	0.00	1.66	0.00	1.85	0.00	0.00	1.98	0.00	0.96	0.97	1.04	0.00	1.62	0.78	0.00	1.60	0.80	0.00																		
Air Products contractors	0.00	0.00	0.18	0.36	1.74	0.67	0.00	0.63	0.00	0.52	0.00	0.00	1.64	1.52	0.00	0.58	0.00	0.00	1.18																		
Air Products plant total	0.00	0.00	0.33	0.25	1.78	0.44	0.00	1.29	0.00	0.67	0.47	0.51	0.69	1.57	0.46	0.33	1.06	0.44	0.41																		
Albemarle Pasadena employees	0.49	0.49	0.00	0.44	0.00	0.40	0.39	0.00	1.87	0.33	0.00	0.62	0.97	0.32	0.85	0.51	0.74	1.45	0.60																		
Albemarle Pasadena contractors	0.00	0.00	0.00	1.57	0.00	0.00	0.83	0.00	0.00	0.00	0.00	0.00	2.27	0.00	2.40	0.00	0.00	0.00	2.60																		
Albemarle Pasadena plant total	0.31	0.30	0.00	0.85	0.00	0.29	0.53	0.00	1.35	0.27	0.00	0.56	1.14	0.28	1.01	0.47	0.68	1.34	0.75																		
BASF Pasadena employees	1.07	1.01	0.00	0.00	0.00	0.00	0.00	0.00	0.99	2.05	0.00	0.00	0.71	0.00	0.00	1.99	1.68	0.87	0.00																		
BASF Pasadena contractors	1.92	0.00	0.00	0.00	0.00	2.46	0.00	0.00	0.00	2.04	0.00	0.00	0.80	0.00	0.00	0.00	1.94	2.84	2.68																		
BASF Pasadena plant total	1.37	0.27	0.00	0.00	0.00	0.68	0.00	0.00	0.70	2.04	0.00	0.00	0.77	0.00	0.00	1.17	1.76	1.33	0.62																		
Chevron Phillips employees	0.00	0.47	0.21	0.65	0.22	1.64	0.84	0.70	0.14	0.41	1.14	1.17	0.90	0.37	0.49	1.07	1.15	1.89	12.00																		
Chevron Phillips contractors	0.00	0.00	0.31	0.33	0.00	0.47	0.64	0.60	0.84	0.41	1.65	1.20	1.46	0.66	0.48	0.43	0.52	0.77	16.62																		
Chevron Phillips plant total	0.00	0.31	0.25	0.52	0.12	1.09	0.77	0.67	0.37	0.41	1.28	1.18	1.04	0.45	0.49	0.94	0.90	1.42	13.39																		
Enterprise employees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.97	0.00	14.17																									
Enterprise contractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.14	0.57	0.00	**																									
Enterprise plant total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.14	1.24	0.00	14.17																									
<i>New in 2007. Did not track contractor hours at that time.</i>																																					
Ethyl employees	0.00	0.00	0.00	0.00	0.00	0.00	1.65	0.00	0.00	0.00	0.85	0.93	0.98	0.00	1.07	1.08	0.00	0.94	1.18																		
Ethyl contractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.58	2.61	0.00	0.00	2.69	6.96	0.00	0.00	1.18																		
Ethyl plant total	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00	0.00	0.00	1.10	1.62	0.77	0.00	1.54	1.87	0.00	0.94	1.18																		
Evonik employees	0.00	3.00																																			
Evonik contractors	0.00	0.00																																			
Evonik plant total	0.00	2.36																																			
<i>Joined in 2017</i>																																					
Gulf Coast Authority employees	0.00	0.00	0.00	0.00	3.02	3.11	6.84	0.00	0.00	3.89																											
Gulf Coast Authority contractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00																											
Gulf Coast Authority plant total	0.00	0.00	0.00	0.00	2.45	2.60	5.49	0.00	0.00	3.26																											
INEOS Phenol employees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.17	0.00	0.00	0.00	2.23	0.00	0.00	4.05	0.00	0.00	2.41	0.00																		
INEOS Phenol contractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.19	0.00	0.00	0.00	0.00	0.00	2.60	1.96																		
INEOS Phenol plant total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	0.00	0.00	0.00	3.12	0.00	0.00	3.08	0.00	0.00	3.28	2.10																		
<i>Was Georgia Gulf until 2014. Became Axiall, then became INEOS Phenol in 2015.</i>																																					
Intercontinental Terminals empl	0.00	0.00	0.00	0.00	0.00	0.00																															
Intercontinental Terminals contr	0.43	0.00	0.28	0.78	0.00	0.00																															
Intercontinental Terminals total	0.35	0.00	0.25	0.71	0.00	0.00																															
<i>Joined 2014 when under construction</i>																																					



Historic Plant Details	2018 Total Recordable Rate	2017 Total Recordable Rate	2016 Total Recordable Rate	2015 Total Recordable Rate	2014 Total Recordable Rate	2013 Total Recordable Rate	2012 Total Recordable Rate	2011 Total Recordable Rate	2010 Total Recordable Rate	2009 Total Recordable Rate	2008 Total Recordable Rate	2007 Total Recordable Rate	2006 Total Recordable Rate	2005 Total Recordable Rate	2004 Total Recordable Rate	2003 Total Recordable Rate	2002 Total Recordable Rate	2001 Total Recordable Rate	2000 Total Recordable Rate
KM Export Terminals employees	0.00	0.00																	
KM Export Terminals contractors	*	0.00																	
KM Export Terminals plant total # * Joined in 2017	0.00	0.00																	
KM Liquids Terminals employees	1.24	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.60	0.80	2.64	1.51	0.87	0.00	3.77	3.00	2.75	1.04	1.03
KM Liquids Terminals contractors	¶	0.00	0.00	0.00	0.00	0.95	*	0.00	1.02	0.00	1.28	1.12			0.91				
KM Liquids Terminals plant total	1.24	0.00	0.00	0.00	0.00	0.30	0.56	0.00	0.75	0.71	2.18	1.25	0.87	0.00	2.47	3.00	2.75	1.04	1.03
¶ KMLT had 2 contractor injuries in 2018 but was unable to provide contractor hours																			
LyondellBasell Houston Refining empl	0.09	0.19	0.25	0.08	0.00	0.23	0.38	0.07	0.60	0.94	0.84	0.43	0.54	0.88	0.48	0.63	0.68	1.17	1.07
LyondellBasell Houston Refining contr	0.04	0.05	0.09	0.13	0.42	0.13	0.19	0.43	0.43	0.55	0.80	0.47	0.40	0.64	0.23	0.57	0.58	0.79	0.64
LyondellBasell Houston Refining total	0.06	0.09	0.14	0.11	0.24	0.16	0.26	0.30	0.49	0.74	0.81	0.46	0.44	0.73	0.37	0.60	0.63	0.98	0.86
Oxy Vinyls Pasadena employees	0.66	1.46	0.00	0.00	0.00	1.32	0.00	0.00	0.66	0.66	0.65	0.00	0.67	1.41	0.00	0.68	1.31	0.66	1.29
Oxy Vinyls Pasadena contractors	0.00	0.00	0.00	0.00	1.53	3.06	0.00	0.00	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	1.34	0.00
Oxy Vinyls Pasadena plant total	0.66	1.46	0.00	0.00	1.53	3.06	0.00	0.00	1.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.15	1.34	0.00
Allowed Restricted Duty Starting in 2018																			
Pasadena Refining employees	0.78	0.00	0.51	1.21	0.84	0.00	1.90	1.90	0.51	0.47	0.74	1.84	1.33	1.53					
Pasadena Refining contractors	0.00	0.00	0.00	0.87	0.28	0.50	0.32	0.23	0.72	0.65	0.75	1.02	1.89	2.55					
Pasadena Refining plant total	0.42	0.00	0.25	1.00	0.56	0.26	1.18	0.77	0.62	0.58	0.75	1.31	1.73	2.09					
Was Crown Central Petroleum																			
PCI Nitrogen (was Rentech) employees	0.69	5.02	0.93	1.51	0.74	1.63	2.69	2.23	2.32	1.10	1.07	2.15	1.68	2.71	0.54	1.69	4.49	11.04	7.77
PCI Nitrogen (was Rentech) contractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.45	1.99	0.00	0.00	0.00	0	1.19	0.00	1.55	1.47		
PCI Nitrogen (was Rentech) plant total	0.62	4.28	0.71	1.34	0.47	0.99	1.76	2.31	2.20	0.75	0.84	1.61	1.18	2.23	0.39	1.65	3.65	11.04	7.77
2001 -- used contractors but no data. 2000 -- no contractors; employees performed maintenance work. Was Agrifos, then Rentech Nitrogen.																			
Sekisui employees	1.83	1.84	0.00	0.00	1.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.25	2.44	0.00	0.00	0.00	0.00	0.00
Sekisui contractors	0.00	4.49	0.00	2.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.47	0.00	0.00	0.00	0.00	0.00	0.00
Sekisui plant total	1.39	2.61	0.00	1.02	1.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	1.54	0.00	0.00	0.00	0.00	0.00
was Celanese Chemicals until 2009																			
<b>HISTORY OF SITES NO LONGER IN PCAC BUT IN TOTALS FOR EARLIER YEARS</b>																			
Crown Central Petroleum employees															1.93	3.84	2.71		
Crown Central Petroleum contractors															0.00	0.00	6.77		
Crown Central Petroleum plant total															1.82	3.64	3.39	2.78	2.70
Now Pasadena Refining System. 2000-01 have plant total rates but breakdown between employees and contractors not available.																			
Houston Products Processing empl				0.00	0.00	2.89	3.18	0.00	0.00	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Houston Products Processing contr *				*	*	*	*	*	*	*	0.00	*	*	0.00	0.00	0.00	0.00	0.00	0.00
Houston Products Processing total *				0.00	0.00	2.89	3.18	0.00	0.00	3.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moved operations to Baytown in 2016.																			
Sun Edison employees				3.02	0.00	1.65	0.00	2.59	0.91	4.72	4.15	2.35	1.35	3.99	2.98	3.48	3.21	4.13	2.75
Sun Edison contractors				0.00	0.00	0.00	0.00	0.00	0.95	0.00	1.80	0.00	0.00	2.38	0.00	0.00	2.50		
Sun Edison plant total				2.85	0.00	1.44	0.00	2.25	0.92	3.13	3.63	2.02	1.17	3.64	2.49	3.05	3.07	4.13	2.75
Was MEMC. Demolished plant in 2016.																			
# no Restricted Duty * No contractors. ¶ Not available																			