



Arizona Department of Environmental Quality

Janet Napolitano, Governor  
Stephen A. Owens, ADEQ Director

**MONTHLY AIR QUALITY REPORT FOR**  
**MAY 2006**

AQI COLOR SCALE

<b>GOOD</b>  <b>0-50</b>	<b>MODERATE</b>  <b>51-100</b>	<b>UNHEALTHY FOR SENSITIVE GROUPS</b>  <b>101-150</b>	<b>UNHEALTHY</b>  <b>151-200</b>
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Calendar of maximum AQI values & their corresponding color for May 2006\*

\*Preliminary data

SAMPLE POLLUTANT REPORTING BOX

<b>1</b> <b>(day of month)</b>	<b>O3</b>	<b>CO</b>
	<b>PM10</b>	<b>PM2.5</b>

SUN			MON			TUE			WED			THU			FRI			SAT		
		1	48	11	2	42	10	3	44	10	4	44	10	5	54	09	6	111	10	
			58	44		62	41		73	42		68	41		55	45		47	53	
7	79	07	8	85	09	9	77	14	10	85	15	11	85	22	12	87	20	13	66	08
	34	44		60	49		64	46		66	61		81	68		74	45		51	44
14	59	09	15	72	16	16	59	17	17	74	09	18	69	08	19	49	09	20	49	10
	43	49		84	59		91	56		59	40		65	44		61	43		41	29
21	42	08	22	38	07	23	85	10	24	90	13	25	64	10	26	54	09	27	46	05
	56	39		110	51		61	38		66	50		65	47		66	40		54	43
28	79	03	29	74	09	30	72	14	31	100	15									
	44	54		44	41		62	49		66	49									

**Calendar of High Pollution Advisories and Health Watches issued during May 2006**

SUN	MON	TUE	WED	THU	FRI	SAT
						1
						F
2	3	4	5	6	7	8
						F
9	10	11	12	13	14	15
	F					
16	17	18	19	20	21	22
	F	D	F			A
23	24	25	26	27	28	29
	D			A		
30						
						F

**LEGEND**

**HIGH POLLUTION ADVISORIES**  
**A** = PM-10 High Pollution Advisory  
**B** = PM-2.5 High Pollution Advisory  
**C** = Ozone High Pollution Advisory

**HEALTH WATCHES**  
**D** = PM-10 Health Watch  
**E** = PM-2.5 Health Watch  
**F** = Ozone Health Watch

**Exceedance days during MAY 2006-**

Total= 1	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
	5/22	110	PM-10	West Forty Third

**High Pollution Advisories issued during MAY 2006-**

Total= 2	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
	5/22	110	PM-10	West Forty Third
	5/27	54	PM-10	Higley

**Health Watches issued during MAY 2006-**

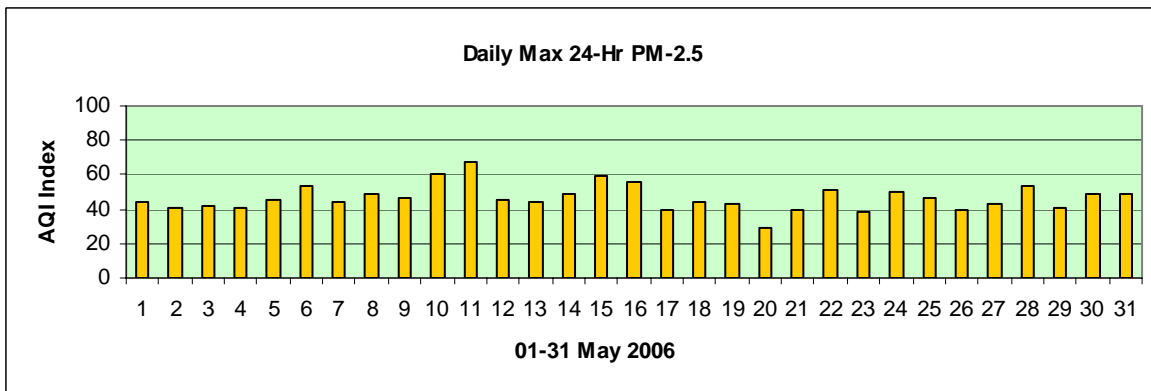
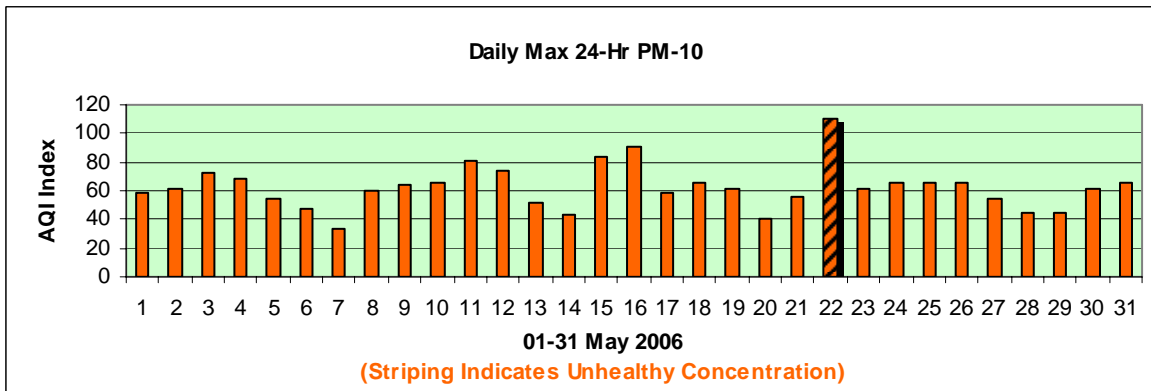
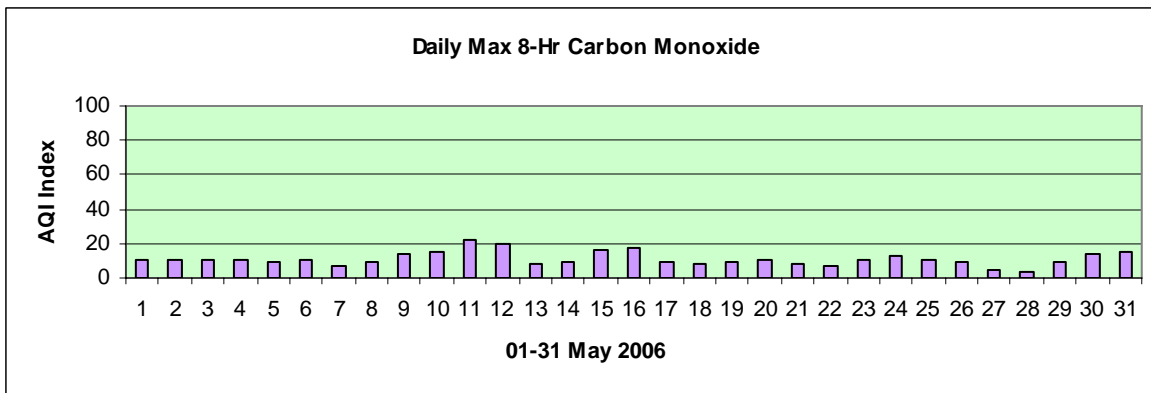
Total= 2	<u>Date</u>	<u>Max AQI</u>	<u>Pollutant</u>	<u>Site/s</u>
	5/17	59	PM-10	West Forty Third
	5/23	61	PM-10	Higley

**Concentration Recap:**

Days in the <b>Good</b> category:	1
Days in the <b>Moderate</b> category:	28
Days in the <b>Unhealthy for Sensitive Groups</b> category:	2
Days in the <b>Unhealthy</b> category:	0
Total Forecast Days:	31

Narrative:

A wide variety of weather events occurred in the Phoenix area during May 2006 including trough passages, record high temperatures, blowing dust from thunderstorms and dry frontal passages, and some smoke from wildfires. Although PM-2.5 and carbon monoxide levels were mostly in the good range of the Air Quality Index all month, May 2006 was the seventh consecutive month with at least one exceedance of the PM-10 standard – this one was on the 22nd and mainly due to thick blowing dust as a result of strong winds associated with the passage of a strong mid-latitude trough. On that date south to southwesterly wind gusts to 44 mph occurred and between 1000 and 1100 a.m. hourly PM-10 levels were in the 600-900 $\mu\text{g}/\text{m}^3$  range around the Phoenix metro area. Visibilities were measured as low as 1/8 mile during the height of the blowing dust event. Other trough passages accompanied by gusty winds occurred on the 5th and 27th and thunderstorm outflow boundaries generated areas of blowing dust on the 16th and 17th; only on the 16th did PM-10 levels approach unhealthy levels. Elevated PM-10 readings on the 11th and 15th were associated with a rather stagnant air mass and transported dust from the east via a “back-door” cold front, respectively. -Reith



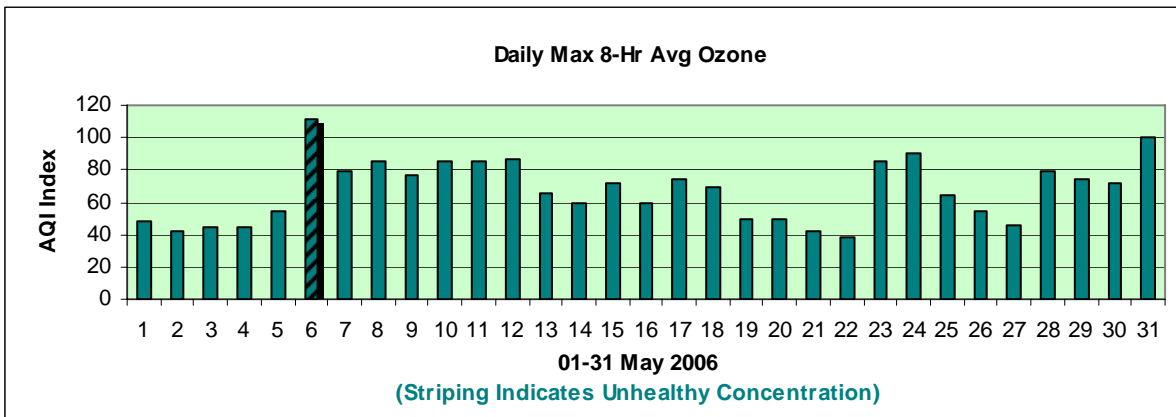
## DETAILED OZONE SECTION

<b>GOOD</b>  0-50	<b>MODERATE</b>  51-100	<b>UNHEALTHY FOR SENSITIVE GROUPS</b>  101-150	<b>UNHEALTHY</b>  151-200
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### SUMMARY OF MAXIMUM 8-HR OZONE AQI VALUES FOR MAY 2005\*

\*Preliminary data

SUN		MON		TUES		WED		THU		FRI		SAT	
		1	<b>48</b>	2	<b>42</b>	3	<b>44</b>	4	<b>44</b>	5	<b>54</b>	6	<b>111</b>
7	<b>79</b>	8	<b>85</b>	9	<b>77</b>	10	<b>85</b>	11	<b>85</b>	12	<b>87</b>	13	<b>66</b>
14	<b>59</b>	15	<b>72</b>	16	<b>59</b>	17	<b>74</b>	18	<b>69</b>	19	<b>49</b>	20	<b>49</b>
21	<b>42</b>	22	<b>38</b>	23	<b>85</b>	24	<b>90</b>	25	<b>64</b>	26	<b>54</b>	27	<b>46</b>
28	<b>79</b>	29	<b>74</b>	30	<b>72</b>	31	<b>100</b>						



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**8-hr Ozone exceedance days in MAY:** Total= 1

Date	Max ppb/AQI	Site/s
5/06	89/111	Tonto Nat'l Mon

**Total number of exceedance days since APR 01:** 1  
**Total number of exceedance sites since APR 01:** 1

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**Ozone Health Watches in MAY:** Total= 6  
 (Forecast max value 80-84 ppb)

Date	Max ppb/AQI	Site/s
5/01	61/48	Fountain Hills
5/08	78/85	Tonto Nat'l Mon
5/09	75/77	Tonto Nat'l Mon
5/16	68/59	North Phoenix
5/17	74/74	Glendale
	74/74	North Phoenix
5/31	84/100	Humboldt

**Ozone Health Watches since APR 01:** Total= 6

**High Pollution Advisories in MAY:** Total= 0  
 (Forecast max value 85+ppb)

**High Pollution Advisories since APR 01:** Total= 0

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**Concentration Recap:**

Days in the <b>Good</b> category:	9
Days in the <b>Moderate</b> category:	21
Days in the <b>Unhealthy for Sensitive Groups</b> category:	1
Days in the <b>Unhealthy</b> category:	0
Total Forecast Days:	31

Maximum 8-Hr value:	Date	Hour	Site	ppb/AQI	DOW
	5/06	1500	Tonto Nat'l Mon	89/111	Sat

Maximum 1-Hr value:	Date	Hour	Site	ppb/AQI	DOW
	5/06	1900	Tonto Nat'l Mon	97/81	Sat

Average daily max 8-Hr concentration (ppb):	69.7
Deviation from the 1996-2005 average (ppb):	-3.3

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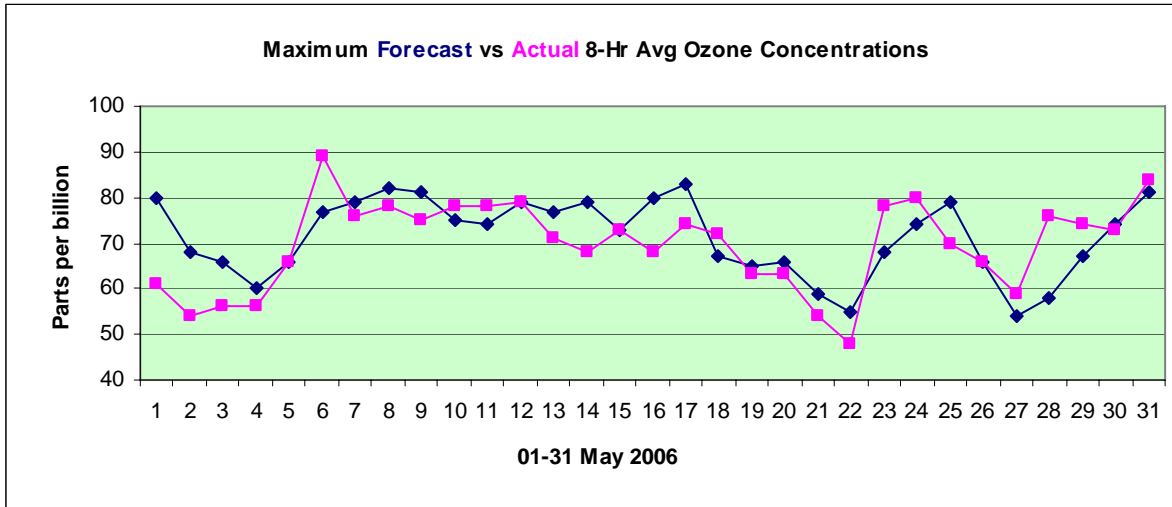
**MAY Climatology:** (1996-2005)

Average number of 8-Hr exceedances:	3.6
Maximum number of 8-Hr exceedances:	10 in 1996
Minimum number of 8-Hr exceedances:	0 in 1997, 2001, 2004
Average daily max 8-Hr concentration (ppb):	73.0
Record high max 8-Hr concentration (ppb):	105 on the 21st, 1996
Record low max 8-Hr concentration (ppb):	46 on the 20th, 1997

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**Forecast Verification:**

# of days maximum concentrations were over-forecast:	17
# of days maximum concentrations were under-forecast:	10
# of days maximum concentrations were correctly forecast:	4
May average forecast accuracy (ppb):	+/-6.3
May average forecast bias (ppb):	+1.7



**Narrative:** Ozone production jumped significantly during May 2006. For the month the local maximum daily ozone concentrations ranged from 89 parts per billion (ppb) on the 6th to 48 ppb on the 22nd—a spread of 41 ppb. The highest May range was in 1996 when 53 ppb occurred. The first exceedance of the 8-hour average standard occurred on the 6th at one site; two other sites were within two parts per billion (ppb) of the standard that day. Several other episodes of elevated ozone concentrations occurred during the month, and the highest concentration of 84 ppb was measured on the 31st. Under a certain synoptic weather situation, the transport/import of ozone and its precursors from California has long been suspected of contributing to elevated and sometime unhealthy ozone levels in the Phoenix metro area. ADEQ forecasters now take these scenarios into account and incorporate the phenomenon into their forecast routines and products. During May 2006 three such episodes left their impacts on local ozone concentrations, including the lone 8-hr exceedance on the 6th. The table below illustrates these episodes:

Day of Week	Date	Max 1-hr O3 (ppb)	Change (ppb)	Max 8-hr O3 (ppb)	Change (ppb)
Friday	May 05	73	Trough	66	Passage
Saturday	May 06	97	+24	89	+23
Monday	May 22	50	Trough	48	Passage
Tuesday	May 23	89	+39	78	+30
Saturday	May 27	65	Trough	59	Passage
Sunday	May 28	81	+16	76	+17

The synoptic driver behind these events is the passage of a mid-latitude trough; ahead of the trough southwesterly winds tend to efficiently disperse locally produced ozone while importing precursor-poor air from sparsely populated areas upstream. Behind the trough axis the wind component from the surface to 500mb (18K') becomes west to north-westerly, at which time the local air-mass source region is the usually precursor-rich areas of Southern and Central California. Although the actual spike in local ozone levels has become easy to predict, its magnitude and timing have not since factors such as time of arrival (daytime vs. nighttime) and density of emissions are not readily apparent. What is apparent is that the spike occurs independent of local ozone-level influences such as surface wind speed, maximum temperature, and day of week. -Reith