

# Revised SO<sub>2</sub> NAAQS – Implications for AQI

National Air Quality Conferences  
San Diego  
March 2011

Nealson Watkins for  
David Mintz  
US EPA, Office of Air Quality Planning and Standards

# Background

- On June 2, 2010 EPA strengthened the primary NAAQS for SO<sub>2</sub>
- Revised NAAQS includes change for SO<sub>2</sub> AQI
- AQI values < 200 are computed using 1-hour daily max SO<sub>2</sub> value
- AQI values ≥ 200 are computed using 24-hour average SO<sub>2</sub> value (no change)
- Not enough health information to change the upper end

TABLE 2.—BREAKPOINTS FOR THE AQI

These breakpoints					Equal these AQI's			
O <sub>3</sub> (ppm) 8-hour	O <sub>3</sub> (ppm) 1-hour <sup>1</sup>	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	SO <sub>2</sub> (ppm) 1-hour	NO <sub>2</sub> (ppm) 1-hour	AQI	Category
0.000-0.059	.....	0.0-15.4	0-54	0.0-4.4	0-0.035	0-0.053	0-50	Good.
0.060-0.075	.....	15.5-40.4	55-154	4.5-9.4	0.036-0.075	0.054-0.100	51-100	Moderate.
0.076-0.095	0.125-0.164	40.5-65.4	155-254	9.5-12.4	0.076-0.185	0.101-0.360	101-150	Unhealthy for Sensitive Groups.
0.096-0.115	0.165-0.204	<sup>3</sup> 65.5-150.4	255-354	12.5-15.4	0.186-0.304 <sup>4</sup>	0.361-0.64	151-200	Unhealthy.
0.116-0.374	0.205-0.404	<sup>3</sup> 150.5-250.4	355-424	15.5-30.4	<sup>4</sup> 0.305-0.604	0.65-1.24	201-300	Very Unhealthy.
( <sup>2</sup> ).....	0.405-0.504	<sup>3</sup> 250.5-350.4	425-504	30.5-40.4	<sup>4</sup> 0.605-0.804	1.25-1.64	301-400	
( <sup>2</sup> ).....	0.505-0.604	<sup>3</sup> 350.5-500.4	505-604	40.5-50.4	<sup>4</sup> 0.805-1.004	1.65-2.04	401-500	Hazardous.

<sup>1</sup> Areas are generally required to report the AQI based on 8-hour ozone values. However, there are a small number of areas where an AQI based on 1-hour ozone values would be more precautionary. In these cases, in addition to calculating the 8-hour ozone index value, the 1-hour ozone index value may be calculated, and the maximum of the two values reported.

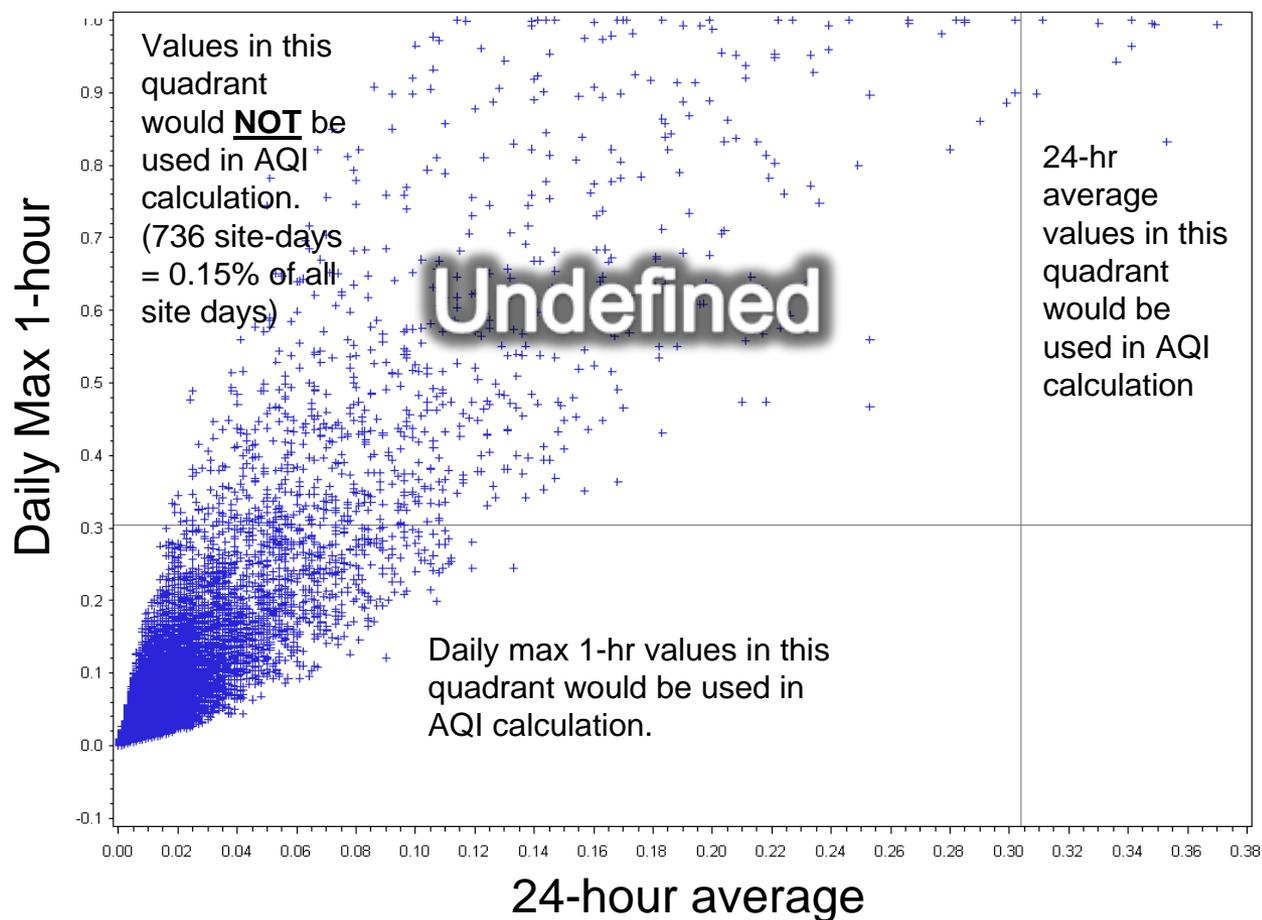
<sup>2</sup> 8-hour O<sub>3</sub> values do not define higher AQI values (≥ 301). AQI values of 301 or greater are calculated with 1-hour O<sub>3</sub> concentrations.

<sup>3</sup> If a different SHL for PM<sub>2.5</sub> is promulgated, these numbers will change accordingly.

<sup>4</sup> 1-hr SO<sub>2</sub> values do not define higher AQI values (≥ 200). AQI values of 200 or greater are calculated with 24-hour SO<sub>2</sub> concentrations.

# This presents a small problem

## SO<sub>2</sub> daily max 1-hr vs. 24-hour average concentrations, 2007-2009



## When and where do these “undefined” days occur?

- Throughout the year
- In 16 states – higher frequency in Hawaii, Illinois, Louisiana, and Missouri

<u>Month</u>	<u>Number of site-days</u>
Jan	64
Feb	52
Mar	77
Apr	78
May	85
Jun	40
Jul	31
Aug	44
Sep	47
Oct	51
Nov	75
Dec	92

<u>State</u>	<u>Number of site-days</u>
AZ	8
HI	640
IA	1
IL	18
IN	1
KY	1
LA	18
MO	31
ND	1
NH	1
OH	2
PA	2
TN	2
TX	2
UT	2
WV	6

We are considering how to account for these “undefined”  
days  
for the purposes of calculating and storing daily SO<sub>2</sub> AQI  
values and deriving nationally consistent AQI summaries.

Your ideas are welcome!