

June 12, 2013

William A. Burke, Ed.D., Chair of the Governing Board  
South Coast Air Quality Management District  
21865 Copley Drive  
Diamond Bar, CA 91765-4178

**Re: July 12, 2013 Special Governing Board Meeting, Item #1**

Dear Dr. Burke:

The City of Huntington Beach (City of Huntington Beach) requested that ENVIRON International Corporation (ENVIRON) perform a technical and regulatory policy review of the beach fire pit provisions of the South Coast Air Quality Management District's (SCAQMD's or District's) Proposed Amended Rule 444 (PAR 444). The 4-month rulemaking schedule before the public hearing was very abbreviated as compared to the general and typical 12 to 24 month rulemaking schedule, but ENVIRON's main conclusions are listed below. A more detailed review summary is contained in the next section.

- **The beach areas, even with fire ring activity, have particulate concentration levels well below state and federal health standard levels.** The coastal areas have among the lowest particulate readings in the South Coast Air Basin, despite having multiple local particulate sources. The monitoring results do not differentiate among the different sources of particulates (e.g., entrained road dust, entrained beach sand, local restaurants, residential wood burning, etc.) to a degree that is sufficient for the District to attribute their monitoring data solely to fire-ring wood smoke, as appears to have been done. Even so, all reported 24-hour average PM<sub>2.5</sub> concentrations from the monitors were 50% to 86% lower than the federal health standard level.
- **Beach particulate levels (which are intermittent and short-term) should not be compared to "alert" levels (not health standards) for multi-day wildfire events.** Federal and state air agencies have extensively reviewed health studies over the last few decades and have established that only 24-hour average and annual average particulate concentration health standards are correlated with adverse health effects. The "alert levels" that the District uses in its report as a comparison to monitored data are NOT health standards. They are used for public notification and outreach in wildfire situations when elevated wood smoke particulate levels are expected to be elevated (or greater than the 89 µg/m<sup>3</sup> alert level for sensitive groups) over many hours and/or days. Unlike the situation with wildfires, less than 2% of the hours during the District's 3-month monitoring program near the fire rings showed hourly particulate levels above the lowest wildfire alert level for sensitive groups, with no days above the health standard level.
- **Proposed rule requirements were not shown to provide greater health protection than existing nuisance regulations.** The 700 foot buffer zone was established using a generic exposure graph that is not based on fire-ring source characteristics or local beach meteorology. The District's use of a 98% concentration reduction goal is unprecedented because that goal has never been used in any District prohibitory or area source rule. There was no technical rationale provided in the staff report for the fire ring spacing requirements. Finally, the District's own analysis indicates that any potential "no-burn" days would very likely not occur when fire-ring smoke would affect local residents. It is not clear, based on all the information provided by the District, how this rule would provide any greater health protection beyond existing regulations.



## Technical and Regulatory Review

Currently there are 778 beach fire rings in Orange County and 79 in Los Angeles County;<sup>1</sup> beach fire rings or areas have existed in many of these areas for decades. In response to initial complaints from officials in Newport Beach in mid-March 2013, SCAQMD prepared two draft staff reports (one dated April 2013 and another dated May 2013) in support of amending Rule 444 to ban wood-burning fire rings. SCAQMD began a monitoring program near various beaches with fire rings on March 19<sup>th</sup> at Corona Del Mar (during the Persian New Year festivities) and then at other beaches. The results of the initial monitoring program were released in a May 15<sup>th</sup> presentation. Following public workshops in May/June, the District released the June 2013 Addendum to the previous staff reports with initial monitoring results and a revised rule proposal. Most of this review relates to the preceding documents and initial monitoring data files. On July 3<sup>rd</sup>, the District released the Final Addendum to the staff report with some additional monitoring data, which was incorporated into this review.

ENVIRON conducted a technical and regulatory policy review of the proposed beach burning requirements in PAR 444. ENVIRON reviewed SCAQMD documents and public presentations, as well as raw initial monitoring data provided by the SCAQMD on May 28, 2013 in response to the City's requests. This memorandum reviews both the technical and regulatory policy aspects of the beach fire-ring provisions of SCAQMD PAR 444. The following sections are summaries of our review.

### ***District monitoring studies to date are, at best, inconclusive and do not form an adequate basis for rulemaking***

"Gradient surveys/studies" and related analyses did not appropriately determine "background" concentrations or account for other coastline sources of particulate matter. As noted in the June 2013 Addendum, the DustTrak Aerosol monitors used in the gradient surveys do not use U.S. Environmental Protection Agency (EPA) certified techniques but are used to provide "relative" measurements (i.e., ratio of a series of measurements against a single measurement).

- Measurements were not taken simultaneously as would traditionally be done to assess source impacts. Vehicle-mounted monitors were driven from location to location and measurements were generally taken over 10 to 40 minutes at each location over a period that could last 4 to 6 hours. Non-standardized sampling times could also introduce errors if, as is likely, ambient particulate matter concentrations are highly variable over short sampling times.
- The "background" concentrations used by the District were not measured at true background locations but at inland locations.
- Other coastline particulate sources exist, so the monitoring data cannot be interpreted as being attributable solely to wood smoke from fire rings. Other coastline sources include: paved road dust from local roads and parking lots (i.e., Pacific Coast Highway in Orange County daily produces more particulate emissions than if all Orange County fire rings were in use); restaurants; the beach (e.g., windblown, beach grooming, human activity); and other local activities. Outside residential fire bowls, rings and chiminea are also present along the coastline. (Residential burning in Orange County<sup>2</sup> emits over 4 times more particulates on an average winter day than all Orange County fire rings could produce in a day.)

The fixed monitoring sites do not isolate the contribution of wood smoke and measured concentrations do not show that wood smoke is the dominant source at those sites. As the District

<sup>1</sup> SCAQMD. May 2013 Staff Report. page 5. The June 2013 Addendum reduces the overall number of affected fire-rings to approximately 765 with the exclusion of Doheny State Beach camping area fire rings that are not on the sand.

<sup>2</sup> California Air Resources Board. CEPAM: 2009 ALMANAC - STANDARD EMISSIONS TOOL query



notes in the June 2013 Addendum, the E-BAM (Environmentally-protected Beta Attenuation Monitor) monitors also do not meet EPA criteria for regulatory monitoring but are based on similar measurement principals. They are less accurate at low concentration levels (i.e.  $< 50 \mu\text{g}/\text{m}^3$ ).<sup>3</sup>

- As shown in the Final Addendum,<sup>4</sup> the vast majority of hourly readings were less than  $50 \mu\text{g}/\text{m}^3$  and hourly readings above  $89 \mu\text{g}/\text{m}^3$  wildfire event alert level for sensitive groups were rare: approximately 32 hours from April 4<sup>th</sup> through June 4<sup>th</sup> at Balboa Beach; approximately 21 hours from March 29<sup>th</sup> through June 4<sup>th</sup> at Corona Del Mar; and approximately 10 hours from April 4<sup>th</sup> through June 15<sup>th</sup> at Huntington Beach. Unlike wildfire events where high hourly particulate concentrations above the alert levels can persist for hour and days, less than 2% of the hours during the District's monitoring near the fire rings exceeded the lowest wildfire event alert level (NOT a health standard).
- Analysis of the Huntington Beach data provided by the District shows variations between the monitors were an average of  $66 \mu\text{g}/\text{m}^3$  for measurements when either monitor had a reading above  $50 \mu\text{g}/\text{m}^3$ . "Peak" hourly readings, including those on the weekends, used by the District should include a caveat about measurement uncertainty.
- The Balboa Beach fixed monitoring site was closer to a bus parking lot and OCTA bus stop than to the fire rings and near the channel where diesel-powered boats transit (including boats returning in the early evening and weekends). Channel waterways are generally upwind of the monitor during the afternoons (i.e., down-shore wind conditions).

### ***The District inappropriately conflates wildfire health effects and alert levels with fire-ring wood smoke health impacts***

Wildfires are multi-hour, multi-day events of elevated particulate levels over large regions that have been shown to adversely affect the general public's health; fire ring wood burning is localized, intermittent and short-term and the District has presented no health effect studies for that source.

The District compares local monitoring data to wildfire alert levels, which were designed to trigger protective measures people should take to reduce longer-term exposure to wildfire particulates. These alert levels are NOT health standards (which are 24-hour average and annual average standards). Neither the federal nor state environmental agencies have set particulate matter health standards for shorter-term exposures.

Comparison of monitoring data to wildfire alert levels is NOT a comparison related to health effects. Particularly misleading is the Concentration Comparison figure in the District's Staff Report (Figure 7) and related presentations. The figure implies that beach particulate concentrations are more unhealthy than July 4<sup>th</sup> 2012 and all other areas in the South Coast Air Basin without noting that elevated particulate concentrations were over multiple hours (and in many cases, days) for the Station Fire and non-coastal areas in the Basin. Again, these are comparisons of peak HOURLY concentrations, which are not correlated with adverse health effects.

### ***Proposed District rule requirements are not supported by their technical analysis and would not appreciably reduce any public health effects***

The proposed rule requires that, in general, all fire rings must be more than 700 feet from the nearest residence. The District established this distance using 1) a "screening model" approach and 2) a requirement that exposure (i.e., concentration) be reduced by 98%.

<sup>3</sup> SCAQMD. June 2013 Addendum. page 10.

<sup>4</sup> SCAQMD. July 2013 Final Addendum. pages 15-17.

- Chart 1 in the June 2013 Addendum, which was used to justify the 700-foot buffer, does not have a citation or reference. It shows 100% exposure at 100 feet, not at the source, with no explanation and in contrast to the District's own charts that have "peaks" on the beach near to the fire ring locations.<sup>5</sup> In this and other ways, the "screening model" does not reflect fire ring-specific source characteristics.
- The District's "screening model approach" uses meteorology and terrain inputs that give the highest concentrations (as is typical for screening models). Actual beach conditions would tend to be breezier than the screening model conditions, which would decrease overall concentrations and result in a more rapid concentration decline over distance.
- No precedent or rationale is presented for the 98% reduction in exposure. To our knowledge, no other SCAQMD prohibitory rule (Regulation IV) or source-specific rule for an area source (Regulation XI) requires a 98% reduction (emissions or concentration) of an area source. Even control technology for diesel particulate emissions from trucks is only required to show an 85% reduction (and that is on tailpipe emissions).<sup>6</sup>

No justification is given for the fire-ring spacing requirements in the proposed amended rule other than generic statements about possible reductions in fire ring wood smoke impacts. As noted above, there is no analysis as to how changing fire ring spacing would result in any appreciable overall particulate reduction at residences.

The "no-burn day" requirement is essentially meaningless and would not meet the District's goal of reducing "local, not regional" exposures. According to the District, a "no-burn" day would likely only be triggered during "major forest fire incidences events with off-shore flow wind patterns." But that is exactly when any fire ring wood smoke would be blown off-shore (away from residences) and account for a negligible amount of overall particulate.

Sincerely,



Julia C. Lester, PhD  
Principal

cc: SCAQMD Governing Board Members, Clerk of the Board  
Mr. Fred Wilson, City Manager, City of Huntington Beach

SCAQMD Hearing submittal - ENVIRON.docx (0531823A)

<sup>5</sup> SCAQMD. June 2013 Addendum. p. 13. A chart of the Doheny State Beach results in the District's June 13<sup>th</sup> presentation at Newport Beach showed similar behavior.

<sup>6</sup> SCAQMD Rule 1420 requires that for processors of lead-containing materials the "gas stream from any emission collection system shall be ducted to a lead control device which shall reduce lead emissions by 98 percent or more" [Rule 1420(e)(2)]. Thus, it appears as if the District is applying the most extreme emissions/concentration reduction requirement to an open, intermittent, seasonal source of wood smoke, whose health impacts at monitored concentrations have not been established (see above).