Summary of the 2011 Health Risk Assessment

Risk indices discussed below are MEIR (Maximum Exposed Individual Resident) as relevant to the community surrounding the facility. Risk evaluation for MEIW (Maximum Exposed Individual Worker) was omitted in this summary.

Notification thresholds used by BAAQMD:
1.0x10-5 for cancer hazard index
1.0 for noncancer hazard index, which is mainly mercury-related toxicity.

Results for 2005 Production Rates
Potential human health risks for cancer were: 0.79 (mercury-related toxicity) and 8.3x10-6 (cancer hazard), and considered below levels requiring notification, based on the regulations in place at the time those emissions occurred (i.e., excluding the LASF and using reference exposure levels published prior to December 2008, and using "historical average" for mercury content in raw material, 0.24 ppm).

Applying *current* regulations and actual mercury content in local limestone (0.31 ppm), the extrapolated human health risks would be **3.61** (mercury-related toxicity) and **$1.5x10^{-5}$** (cancer hazard), and highly above levels requiring notification.

The 2005 risk indices were extrapolated from the 2008 indices after adjustment for 2008/2005 ratio of cement production (0.58, HRA page 10) and assuming linear proportion between emission and health risk.

Results for 2008/2009 Production Rates
Using an average of 2008/2009 production rates, potential human health risks were:
$8.5x10^{-6}$ for cancer risk (just below notification)
2.1 for mercury toxicity (exceeded the notification threshold)

Results for 2010, Including Kiln Mill Dust Shuttling
Acute hazard index (mostly mercury-related) was modeled based on the reduction in mercury emissions achieved by dust shuttling system (in operation since June 2010). This process removes approximately 30 percent of the mercury emissions (per company estimation).
Applying this reduction of mercury emission for the entire year, the 2010 predicted acute hazard index was **1.5** and still exceeded the BAAQMD notification level.

Projected Results for 2011, Including Additional Kiln Mercury Emissions Reduction from Sorbent Injection
Reduction in mercury emissions by injecting activated carbon sorbent is estimated to remove approximately 50 percent additional mercury emissions from the kiln (per company statement).

Despite combined 80% reduction of mercury emission (30% dust shuffling and 50% activated carbon), the acute hazard index for 2011 was lowered only to 0.76 (below the BAAQMD notification level of 1.0).

CONCLUSION
Acute health risk for residents was above BAAQMD notification level for years 2005, 2008, 2009, and 2010 (despite 30% reduction in mercury emission). Based on TRI emission data, the health risk due to mercury emission in years 2006 and 2007 was also most likely above notification level (not assessed in current HRA).