

APPENDIX G

Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 24 September 2007)

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
B1	Page 6-7 Last paragraph in Section 6.2.2 MEIW-Future Controlled Conditions, contains a transcription error. The worker cancer risk for the 8 a.m. to 4 p.m. shift is listed as 12 in one million, however Table 6.1a shows 11 in one million. Please edit.	Comment incorporated. See Table 6.1a.
B2	Page 6-11 Third paragraph in Section 6.7.2 Estimation of Exposure Concentrations: This section incorrectly includes “for 70 years” for the duration of exposure reflected in the REL. Please correct.	<p>As noted in OEHHA Hot Spots Guidance (2000), “The exposure period of concern in the development of chronic RELs is a full lifetime, which encompasses periods of potentially increased susceptibility to adverse health effects from chemical exposure, particularly during childhood and the later years of life. The chronic REL is intended to be protective for individuals exposed continuously over their lifetime.” This section (Section 1.6, page 11) of the OEHHA guidance (2000) also addresses the definition of chronic exposure from a “practical standpoint”. In doing so, OEHHA explicitly defines lifetime as 70 years.</p> <p>However, for simplicity, reference to the exposure duration reflected in the chronic REL will be deleted from the text as OEHHA and the District did not consider the difference between a worker exposure duration (default of 40 years) and the duration of exposure reflected in the REL in deriving the adjustment factor for manganese. See page 6-11.</p>
B3	Page 6-13 First paragraph in Section 6.7.5 Risk Calculation: In this section, it is stated that “...the HQs of chemicals not expected to induce the same type of effects or that do not act by the same mechanism were summed and this over estimates the total HI.” This is not correct since ENVIRON refined their analysis of the the HIs and summed only those values that affected the same target organ. Please edit.	Comment incorporated. See Page 6-13.

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
B4	<p>Page 7.1 Fourth paragraph in Section 7.0 Summary and Conclusions: "...Adverse non-cancer health effects are not expected due to exposure to Facility emissions because the estimated target organ-specific chronic and acute non-cancer hazard indexes for all receptors are below the District non-cancer Notification Level." This statement is not accurate: the District assumes that adverse non-cancer health effects are not expected when the chronic and acute non-cancer <u>hazard indexes are one or less</u>. The District has set the notification threshold for non-cancer risk at a hazard index of one. In addition, HIs exceed one at some worker receptors and notification is triggered. Please correct the statement regarding expected adverse effects (reference HI of 1) and update any discussion of notification levels.</p>	<p>At the time that the HRA Report, dated September 24, 2007, was prepared and submitted for agency review, the District had not issued formal guidance and/or policy indicating that the District notification level was one under the AB2588 Program. In the absence of District-issued guidance, ENVIRON relied on documentation provided in an ARB website (http://www.arb.ca.gov/ab2588/district_levels.htm) indicating that the District notification level is ten for the AB2588 Program. It should be noted that the ARB website currently lists ten as the notification level used in the District. However, subsequent to the submittal of this HRA and during a presentation given by the District on January 9, 2008, the District stated that their notification level is now one under the AB2588 Program. Consequently, at the request of the District, the HRA will be revised to indicate that the District currently considers the notification level to be one.</p> <p>The report will also be revised to indicate that, no adverse non-cancer health effects are expected when the hazard quotient is equal to or below one (USEPA 1989). The HRA report will also indicate that, if the hazard quotient is greater than 1, then adverse health effects are possible. However, according to USEPA (2007), "a Hazard Quotient exceeding 1 does not necessarily mean that adverse effects will occur."</p>

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
B5	Table 4.1 Source Parameters for Air Dispersion Modeling Using AERMOD: Plant 703, Source 32000, Small ladle heater was included in the emission calculations (Table B.4.2), but was omitted in Table 4.1 and omitted in the health risk analysis. This omission will have a negligible impact on the results since emissions are not significant, however please include this source in the analysis for completeness.	This source was modeled as part of AERMOD SRC18; however, it was inadvertently omitted from Table 4.1. Plant 703 Source 32000 has been added to Table 4.1.
B6	Table 5.1 Site Related COPCs with Health Effects: In this table, Acenaphthene is checked for Cancer health effect. There is currently no cancer health value for Acenaphthene. Please edit.	Comment incorporated. See Table 5.1.
B7	The Health Risk Assessment should be conducted considering changes to health effects values recently noticed by OEHHA [<i>Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values – May 22, 2008</i>]: Zinc (chronic REL was deleted) Copper (chronic REL was deleted) Ethyl benzene (new inhalation cancer potency and oral slope factors)	Comment incorporated. See updated text and tables.
B8	Appendix D has not been updated to reflect the latest refinements to the HRA and the use of the additional health value table tblToxicity_Worker_Cancer for the worker receptor. a. Table D.4.1 is missing from the paper copy, but is present in the electronic file. Please include this table in the paper copy of the report.	A copy of D.4.1 will be included with all future paper copies of the Report.

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
	<p>b. Page 5-5 of the report indicates that per "...OEHHA Hot Spots Guidance, the annual average concentration is used in the deposition modeling for both residents and workers." However the cancer risk calculation example starting on page D.1.B-3 does not document or explain the additional refinement to the worker receptor cancer risk for TACs that have multipathway impacts nor does it reference the tblToxicity_Worker_Cancer table that is used to lookup the health values. Please update this discussion.</p> <p>Worker TAC Cancer Risk = (worker TAC exposure concentration) * (worker TAC inhalation pathway HARP Factor) + (period average TAC concentration) * (worker TAC dermal adsorption pathway HARP Factor) + (period average TAC concentration) * (worker TAC soil ingestion pathway HARP Factor)</p>	<p>There is no page D.1.B-3 in appendix D. Therefore, it is difficult to discern the specific meaning of this comment. However, a worker-specific calculation for multi-pathway TACs was incorporated into Appendix D.1 for clarification in response to this comment.</p>

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
	<p>c. Page 5-12 of the report indicates that "...the District and OEHHA have recommended a worker exposure adjustment factor of 0.357 (applied only for manganese)..." This factor is applied to manganese in this HRA to estimate a chronic HI that reflects actual worker exposure during an 8-hour work day." However, the chronic noncarcinogenic hazards calculation example starting on page D.1.B-4 does not document or explain the additional refinement to the worker receptor to adjust for exposure just for manganese by using the adjusted value from the tblToxicityNoncancer_Mn-adjusted table. Please update this section. The definition of the HARP factor_{nc} on this page should also be updated to reference the tblToxicityNoncancer as the lookup table for the residential HARP Factor_{nc} and the tblToxicityNoncancer_Mn-adjusted as the lookup table for the worker HARP Factor_{nc} instead of the tblToxicityMP table, which in this submittal of the HRA only contains the cancer health values.</p>	<p>There is no page D.1.B-4 in appendix D. Therefore, it is difficult to discern the specific meaning of this comment. The methodology used to calculate the hazard quotient using the adjustment for manganese is discussed in detail on page 5-12 of the report. Additional discussion in Appendix D.1 is not warranted. The reader is also referred to section 5.0 of the report for additional details regarding the calculation. Specifically, the following passage on Page D.1-9 was included: "As discussed in Section 5.4.2 of the HRA report, the District and OEHHA recommended a worker adjustment factor of 0.357 (for manganese only) for use in this HRA. For simplicity, the inverse of the adjustment factor (1/0.357) was applied to the HARP factor within the database. The adjusted manganese HARP factor can be found in "tblToxicityNoncancer_Mn-adjusted."</p>

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
B9	<p>Appendix E, Page 3 of 7, ENVIRON response to BAAQMD Comment 4 states "...tables showing chronic non-cancer hazard quotients and total hazard indexes (HI) have been included as Tables 6.8 and 6.9." However, these tables are not found in the Tables section of the report. It appears that this information may be found in Appendix D in Tables D.4.1 and D.4.2. Please provide a complete set of tables in the main portion of report.</p>	<p>ENVIRON response to BAAQMD Comment 4 incorrectly made reference to Tables 6.8 and 6.9, which are not in the main report. The information referenced in ENVIRON's response is included in Tables D.4.6 and D.4.14 in Appendix D.4 of the report.</p> <p>Given that a complete set of tables is provided in Appendix D, it does not appear necessary to duplicate the tables in their entirety and present them in the main portion of the report as well. Based on a discussion with District, it was decided that the complete set of tables would be provided in an appendix and tables selected for inclusion in the main portion of report would be limited to those tables that focus the discussion of the HRA analysis and results.</p>
P1	<p>OEHHA did not find any discrepancies in the HRA procedures or results, rather they noted:</p> <ol style="list-style-type: none"> a. That information was not presented adequately (e.g., OEHHA suggests additional tables for noncancer risk results: hazard quotients presented by chemical and by target organ and hazard indexes summed by target organ; they suggest 4 additional tables for both the MEIR and MEIW, before and after facility modifications and with and without the 0.357 worker exposure adjustment for manganese). Please update your report to include requested tables. 	<p>Appendix D.4 provides the hazard indices segregated by target organ and chemical for the MEIR, MEIW, Maximum Sensitive receptor, and PMI.</p> <p>At the request of BAAQMD, the unadjusted hazard indices for the MEIW are presented in Table 6.1b of the main report as footnotes.</p>

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
	<p>b. That information was characterized improperly (e.g., page 6.9: "...the calculated lead exposure is "not expected to pose any noncancer adverse health effects"). Although the calculated lead exposure is below California's risk management guidance level, there is not an identified exposure level for lead below which health effects would not be expected in the child population. Please edit statement about expected effects of lead exposure.</p>	<p>The report will be revised to reflect the finding that the calculated lead concentration is below the California risk management level identified in the ARB Risk Management Guidelines for New, Modified, and Existing Sources of Lead (Cal/EPA 2001).</p>
P2	<p>Several commenters noted that Section 5.2.5 (bottom p. 5-8) states that homegrown produce is comprised of root and leafy vegetables. It is unclear if other vegetables such as exposed vegetables or protected vegetables were evaluated. Please provide clarification on this point.</p>	<p>As stated in Section 5.2.5, the exposure pathways identified for the HRA were selected in accordance with OEHHA Hot Spots Guidance (2003). The OEHHA-recommended exposure pathways are shown in Table 5-1 of the OEHHA Hot Spots Guidance and are programmed in HARP. The HRA used HARP and thus included an evaluation of the risks associated with resident ingestion of exposed, leafy, protected, and root vegetables. The text on Page 5-8 of the report was revised to reflect the recommendations of OEHHA Hot Spots Guidance and HARP Software.</p>

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
P3	<p>Kenneth Kloc noted several items that are notable and need addressing:</p> <p>a. Emission rates for several sources were inaccurate, for example, annual-average emission rates are greater than maximum 1-hr average rates (see attached Table 1 for examples). Please recheck and correct all emission rates for consistency.</p>	<p>This discrepancy was a result of using two different sources of data for hourly and annual emission rates for the identified sources. In general, short term (hourly) emission rates were based on permitted hourly throughput limits where available. For sources without hourly permit limits, short term emission rate estimates were developed based on the operational schedule of the source or emission limits on sources upstream in the process. Long term emission rates (annual) were developed from the actual material throughputs reported by the facility in their annual reporting to the BAAQMD.</p> <p>For most sources identified by the commenter (such as exempt heat treat furnaces and shell molding machines), the discrepancy arose from assuming a maximum throughput rate when a limit was not established. To rectify this discrepancy, in this analysis for the final report the short term emission rate was set to be equivalent to the annual emission rate. This was completed for either finishing sources (in Plant 703) or natural gas sources. – neither of which are significant contributors to overall risk from the facility.</p> <p>In the case of Plant 703 Source 27 (Electric Arc Furnace), the difference arose from a discrepancy in the operating schedule that was modeled and the actual operating schedule at the facility during the reporting period used for material throughput information. During the reporting period used for material throughput (August 1, 2005 to July 31, 2006), Plant 703 was operating at a higher capacity than it has been since that time. When the HRA was started in 2007, Source 27 was typically operating from 6 pm to 10 am the following morning, 5 days per week. However, after obtaining additional information from the facility, ENVIRON ascertained that during the material throughput reporting period (August 1, 2005 to July 31, 2006) used in the emission calculations, Source 27 typically operated from 6 pm to 12 pm the following day, 5 days a week and every other Saturday. Thus, the previous draft of the HRA presented a conservative estimate of risks from this source as 18 hours of emissions were modeled in 16 hours of operation, artificially increasing long term emission rates. In this revised analysis, Source 27 was modeled using the 6 pm to 12 pm, 5 days per week plus alternate Saturdays schedule described above to be consistent with the throughput data set used to develop the emission inventory. Using this schedule, the long term emission rate is no longer higher than the short term one. As a result, some of the estimated cancer risks and hazard indices decrease slightly while some increase slightly (namely the 8 am to 4 pm worker shift as they are present during the additional two hours of operation during each weekday).</p>

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
	b. Averaging method for off-site worker exposure may be inadequate and should be verified.	It is unclear what this comment is referring to. OEHHA is the state agency responsible for developing the methodology for AB2588 HRAs and reviewing that the methodologies were properly implemented for site-specific HRAs. OEHHA "did not find any discrepancies in the HRA procedures or results;" therefore, the averaging method for off-site worker exposure used in this HRA is appropriate and consistent with OEHHA requirements.

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
	<p>c. Pursuant to EIRA guidelines (Section 8.3, page 8-14), the contribution of background criteria pollutants to respiratory health effects should be included in the HRA if acute or chronic HIs exceed 0.5. Hazard Indexes exceed 0.5 at some receptors; therefore, please use ambient concentrations (see attached Table 2) measured at the closest monitoring stations (San Pablo and 7th St, Richmond).</p>	<p>Evaluation of background criteria pollutants is not a required analysis under the Hot Spots Program. Rather, the HRA Guidelines (Cal/EPA 2003) state: "The District [BAAQMD] should be contacted to determine if the contribution of background criteria pollutants to respiratory health effects is required to be included in an HRA for the Hot Spots Program." During several conversations regarding this HRA, the District has not requested that PSC conduct an evaluation of background criteria pollutants as part of this HRA. In addition, the BAAQMD does not require or specifically request this type of analyses within their <i>Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines</i> (BAAQMD 2005).</p> <p>However, using the information presented with the comment, the acute hazard index (HI) for respiratory effects would be below the BAAQMD threshold of one. A conservative approach was utilized to estimate the 1-hour concentrations used to calculate acute HIs presented in the HRA as discussed in Section 5.4.3 of the main report. The District, in light of the conservative approach used in the HRA, stated that "the District's refined analysis indicated a value approximately 70% of the reported acute HI" (See District Comment 6 dated August 16, 2007 Appendix E of the Main report). Using the reported acute HI of 0.85 for the maximum exposed individual worker (MEIW) and point of maximum impact (PMI) presented in Table 6.1c of the HRA and the 30% reduction noted by the District, a more refined estimate of the acute HI at the PMI is 0.60. Note that the acute HI reported for the PMI and MEIW represents the maximum value for all modeled receptor locations in the HRA. Adding the "background" hazard of 0.31 from the comment to the more refined estimate stemming from the District comment (i.e., 0.60) results in a total acute HI of 0.91, which is less than the District threshold of one.</p>

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

Number	Bay Area Air Quality Management District Comments	Response
P4	Several commenters reported difficulties accessing the electronic report. One commenter states: "The National Archives recommends storing documents in PDF/A format, a special type of PDF that is designed for archival purposes. To make sure that a document is readable by future software and to make sure that the document is genuinely usable, PDF/A-1 prohibits the use of security settings. Please consider combining the HRA and appendices into one document, creating a table of contents within the file, optimizing the file so that it is not several hundred megabytes, removing all use restrictions, and converting it to PDF/A. Also create a separate PDF that contains the maps, not in PDF/A format, because the maps contain useful features that are not allowed in PDF/A." District staff considers this to be a reasonable request; please provide the final HRA report in PDF/A format and/or organize the report in multiple files that are easily accessible to the public.	<p>The PDF versions of the HRA were supplied to the District as a courtesy as there is no requirement under the AB2588 program or any other District rules to do so.</p> <p>In order to address this comment, ENVIRON investigated converting the files to a PDF/A format; however, chose not to do so as the PDF/A format embeds all fonts which results in extremely large file size. Therefore the revised report has been provided in a PDF format that permits searching of text and balances files size with accessibility.</p>

Sources:

Air Resources Board (ARB). 2005. *District Prioritization Scores and Risk Threshold Values*. Updated August 25. Online: http://www.arb.ca.gov/ab2588/district_levels.htm. Accessed: July.

Bay Area Air Quality Management District (BAAQMD). 2005. *Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines*. June.

Cal/EPA. 2001. *Risk Management Guidelines for New, Modified, and Existing Sources of Lead*. California Air Resources Board. March.

Cal/EPA. 2003a. *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. August.

Appendix G: Response to District Comments (dated 4 June 2008) on
Pacific Steel Casting's Health Risk Assessment Report (dated 27 September 2007)

United States Environmental Protection Agency (USEPA). 1989. *Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part A)*. Interim Final. Office of Emergency and Remedial Response. EPA-540/1-89/002. Washington, D.C. December.

United States Environmental Protection Agency (USEPA). 2007. Technological Transfer Network, 1996 National-Scale Air Toxics Assessment. November 7. <http://www.epa.gov/ttn/atw/nata/gloss1.html>