



Department of
Toxic Substances
Control

*The Mission of
the Department of
Toxic Substances
Control is to
provide the highest
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to protect public
health and the
environment from
toxic harm.*



State of California



California
Environmental
Protection Agency

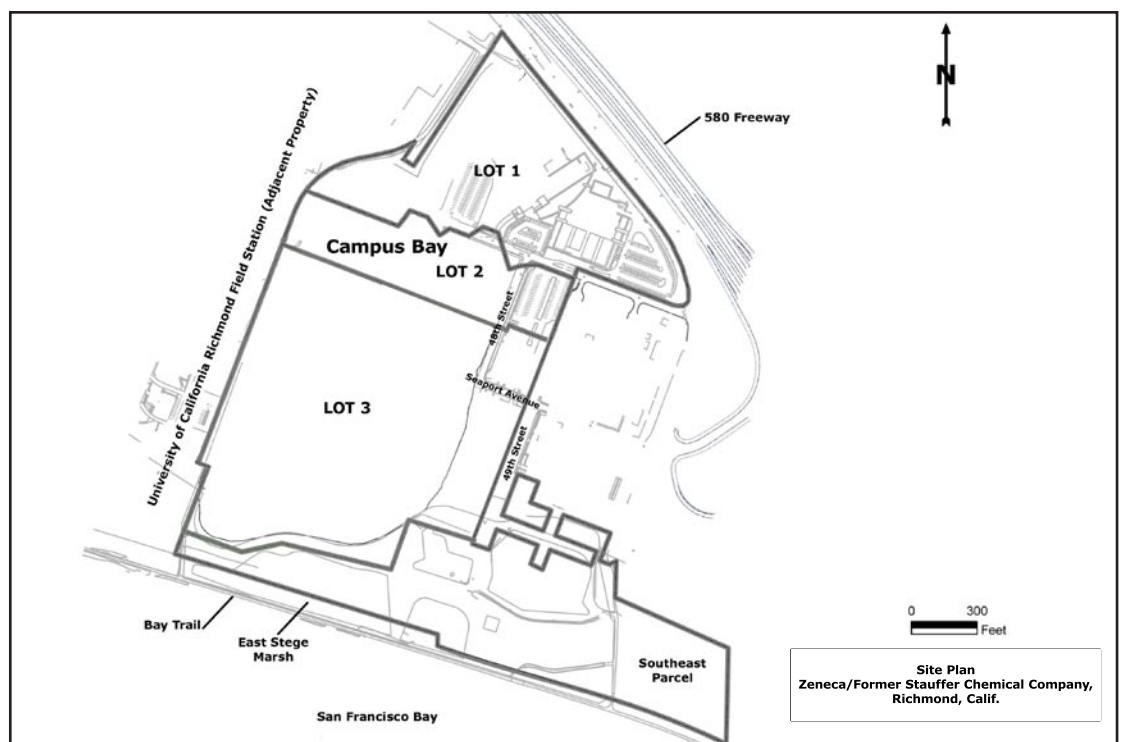
Fact Sheet, November 2008

Human Health Risk Assessment Completed for the Zeneca/Former Stauffer Chemical Company Site

This fact sheet provides you with information on the Human Health Risk Assessment (HHRA) for the Zeneca/Former Stauffer Chemical Company site (the Site). The HHRA has been approved by the California Department of Toxic Substances Control (DTSC). A glossary of technical terms used in this fact sheet has been included as an insert; the glossary defines words printed in **bold**.

This Fact Sheet Provides A Brief Summary Of:

- Site History
- Scope of Assessment
- What is a Human Health Risk Assessment
- Exposure Assessment
- Risk Characterization
- Site Specific Goals
- Other Assessments
- Conclusions
- Next Steps
- Community Advisory Group



The HHRA estimates potential health risks from identified **chemicals of potential concern** (COPCs) to humans and establishes **site specific goals** for evaluating cleanup options for the Site. The HHRA also identifies areas requiring remediation or mitigation in order to enable a variety of land uses.

Site History

The approximately 87-acre Site is located at 1391 South 49th Street in Richmond, California, which is between Meade Street and the Bay Trail, south of Interstate 580, and adjacent to the San Francisco Bay. Historically, the Site was owned by a succession of chemical manufacturing companies, including Stauffer Chemical Company and later Zeneca Inc. A variety of chemicals, including sulfuric acid and pesticides were manufactured at various times from the late 1800s until 1997. In 2002, Cherokee Simeon Venture I, LLC (CSV) purchased the property from Zeneca Inc.

The HHRA is based on data from Lot 1 (approximately 17 acres), Lot 2 (approximately 9 acres) and Lot 3 (approximately 39 acres).

The San Francisco Regional Water Quality Control Board was the lead environmental regulatory agency overseeing the restoration and cleanup of the Site from 1998 until 2004. DTSC assumed lead oversight of the cleanup in February 2005.

Scope of Assessment

In 2005, the **Current Conditions Summary Reports** (CCRs) prepared for the Site presented the results of previous environmental investigations and remedial activities, and identified data gaps. In 2006 and 2007, soil, groundwater and soil vapor investigations were conducted to fill these data gaps. The information obtained by these investigations is contained in two separate **Remedial Investigation** (RI) reports for Lots 1 and 2, and Lot 3. These reports were approved by DTSC in 2008.

The HHRA presents conservative estimates of risk to different groups of people who could potentially be exposed to the contaminants at the Site, under three potential scenarios:

- During cleanup and construction of a hypothetical development;
- A future hypothetical development that includes commercial/industrial, recreational, and/or residential development on an uncapped site; and
- A future hypothetical development that includes commercial/industrial, recreational, and/or residential development on a **capped** site.

What is a Human Health Risk Assessment?

The HHRA is made up of three main sections:

- Toxicity Assessment – The Toxicity Assessment uses conservative standards to estimate the risks associated with the COPCs identified at the Site. The California Environmental Protection Agency (Cal-EPA) and United States Environmental Protection Agency (U.S. EPA) are the primary sources of published toxicity criteria used for COPCs in the HHRA. These standards provide a number that represents the toxicity of a chemical. This number is then used to help determine the potential risk the chemical poses to people.
- Exposure Assessment – The Exposure Assessment identifies the exposure pathways or how people could be exposed to the COPCs identified at the Site. The exposure pathways are evaluated under **reasonable maximum exposure** scenarios.
- Risk Characterization – The Risk Characterization estimates the potential risk to human health by combining the information in the Toxicity Assessment and the Exposure Assessment to estimate the potential risks to human health.

Risk is determined based on the following factors:

- The amount of a chemical that is present in soil, water, soil gas or air;
- How much contact (exposure) a person has, or may have, with the chemical; and
- The toxicity of the chemical

The amount of a chemical present was determined by using data provided in the CCRs and RI reports. These reports provide a thorough overview of environmental conditions at the Site.

Exposure Assessment

The exposure assessment determines how much of each chemical people may be exposed to, based on potential future land uses. To be at risk, people must come into contact with the chemicals. The HHRA identified eleven categories of people who could potentially be exposed to contaminants

through six different exposure pathways at the Site. The Exposure Assessment makes conservative exposure assumptions about how a person might be exposed to chemicals at the Site. A summary of these groups and exposure pathways for the three potential scenarios that could take place at the Site is as follows are shown in Table 1 below.

The exposure parameters are based on standard conservative assumptions and professional judgment. This information is then combined with information on the toxicity of the chemical(s) found at the site to calculate the risk posed by

Table 1. Exposure Assessment

Potentially Exposed Population	Potential Exposure Pathways					
	Inhalation of Non-Volatiles	Inhalation of Volatiles: Outdoor Air	Inhalation of Volatiles: Indoor Air	Skin Contact with Soil	Incidental Ingestion of Soil	Skin Contact with Ground Water
During Construction						
Earthwork/Remediation Construction Workers	●	●		●	●	●
Off-Site Commercial/Industrial Workers	●	●				
Off-Site Residents	●	●				
Post Construction Without a Cap						
On-Site Residents	●		●	●	●	
On-Site Commercial/Industrial Workers	●		●	●	●	
On-Site Groundskeeper/Maintenance Workers	●	●		●	●	●
On-Site Recreational Users	●	●		●	●	
Post Construction With a Cap						
On-Site Residents			●			
On-Site Commercial/Industrial Workers			●			
On-Site Groundskeeper/Maintenance Workers	●	●		●	●	●
On-Site Recreational Users		●				

● » Represents a potentially complete exposure pathway through which the identified populations may be exposed to COPCs at the Site.

the chemical(s). Because some uncertainty about risk estimates is unavoidable, a large margin of safety is built into the calculations to prevent underestimating the risks. The HHRA contains a section discussing the uncertainties in the calculations and assumptions.

Risk Characterization

The HHRA concludes that steps will need to be taken to reduce the estimated human health risks that may occur under three potential scenarios: 1) During cleanup and construction, 2) Post cleanup and construction without a cap on the Site, and 3) Post cleanup and construction with a cap on the Site.

Table 2 below displays a summary of the chemicals that represent the greatest risk to potential future users of the site.

Both cancer and non-cancer effects of each COPC are evaluated in the HHRA. The likelihood of a cancer resulting from a COPC is expressed as a probability. For example, a “1 in 1 million chance” (1×10^{-6}), means that for every one million people exposed to a COPC, one extra cancer may occur beyond what would be expected from all other sources. For non-cancer causing chemicals, a hazard quotient—a level of exposure above which non-cancer health effects could occur—is calculated. If the Hazard Quotient is calculated to be less than 1, then no adverse health effects are expected as a result of exposure. If the Hazard Quotient is greater than 1, then adverse health effects could be possible.

Risks for all populations were evaluated using a wide range of hypothetical scenarios, including with and without some remediation and mitigation measures in place, in order to generate conservative

Table 2. Chemical Risk Characterization

Population	During Construction	Post-Construction, Uncapped	Post-Construction, Capped
Earthwork/Remediation Construction Workers	Arsenic PCBs (Lot 1) VOCs	N/A	N/A
Off-Site Commercial/Industrial Workers	Arsenic (Lot 3 only)	—	—
Off-Site Residents	None	—	—
On-Site Residents	N/A	Arsenic PCBs (Lot 1) VOCs	VOCs
On-Site Commercial/Industrial Workers	N/A	Arsenic PCBs (Lot 1) VOCs	VOCs
On-Site Groundskeeper/Maintenance Workers	N/A	Arsenic PCBs (Lot 1) VOCs	Arsenic VOCs
On-Site Recreational Users	N/A	Arsenic PCBs (Lot 1)	None

N/A » Indicates that the population was not assessed because the population will not be present at the Site during the given time period (e.g., Earthwork/Remediation Construction Workers post-construction).

— » Indicates a more conservative analysis was performed for a different population (e.g., analysis of On-Site Residents instead of Off-Site Residents in the post-construction scenarios).

estimates of risk. The HHRA concludes that the potential risk would be greatest for a resident living on a hypothetical uncapped site, and smallest for an occasional recreational user visiting a capped site. As noted below in the next steps, remedial measures and/or mitigation measures are being evaluated for future approval by DTSC.

Site Specific Goals

The HHRA identifies areas requiring remediation or mitigation in order to enable a variety of land uses at the Site, potentially including unrestricted use. Site specific goals are developed to assist in evaluating cleanup alternatives and strategies using the following sources:

- Calculated based on potential human health risks
- Compiled from published sources (largely regulatory criteria)
- Calculated based on the possibility of chemicals leaching into the groundwater
- Calculated based on estimated background concentrations for soil (for **arsenic** only)

Other Assessments

Radiological: An assessment of radiological conditions was conducted at the site as part of a separate environmental investigation. This assessment included a gamma survey to determine radionuclide concentrations in shallow soil as well as soil and groundwater sampling at select locations.

The survey and sampling resulted in **radionuclide** concentrations consistent with naturally occurring levels in the Bay Area and below Federal and State standards and guidelines, or applicable thresholds.

Supplemental soil sampling was conducted for the radiological assessment. The results are available at the locations listed on page 6.

Beryllium oxide: The California State Office of Environmental Health Hazards Assessment recently updated the toxicity values for **beryllium oxide**. Based on these updated toxicity values,

DTSC has determined that the risks due to potential exposure to beryllium at the site, under the conservative assumption that the beryllium is all beryllium oxide, are insignificant and the outcome of the HHRA would not change.

Conclusions

The HHRA concludes that steps need to be taken to reduce the estimated human health risks that may occur under certain scenarios. In both the capped and uncapped scenarios, the Site will require an evaluation of alternatives to address COPCs in soil, groundwater and/or soil gas. The alternatives will be identified in detail in a **Feasibility Study/Remedial Action Plan**.

Next Steps

A Feasibility Study/Remedial Action Plan (FS/RAP) will be developed to evaluate and select a remediation process for the Site. A fact sheet will be prepared to summarize the FS/RAP and announce the formal public comment period. DTSC will provide a written response to all comments received during the comment period. All necessary changes will then be made to the FS/RAP and it will then be approved by DTSC for implementation.

Community Advisory Group

The local Richmond Southeast Shoreline Area Community Advisory Group (CAG) provides an opportunity for the public to interact directly with DTSC. Comprised of local volunteers, the CAG serves as an advisory group to DTSC and provides regular opportunities for community members and other stakeholders to learn about cleanup activities and other environmental work at the Site.

The CAG meets on the second Thursday of every month, and members of the public are encouraged to attend. Meetings are generally held at 6:30 p.m. in the Richmond City Council Chambers at the Temporary City Hall, 1401 Marina Way South in Richmond.

For More Information

To review the complete HHRA and other site related documents, please visit one of the following locations:

The Richmond Main Library
325 Civic Center Plaza
Richmond, CA 94801
Reference Desk: (510) 620-6561

DTSC File Room
700 Heinz Avenue
Berkeley, CA 94710
(510) 540-3800
(Please call for appointment)

Information about this site can also be found by visiting DTSC's website at www.dtsc.ca.gov; click on "What's in my community?" and type in "Richmond." Sites are listed alphabetically. Information related to this Site will be located at the bottom of the second page.

Please contact any of the following individuals with questions or concerns you may have regarding the HHRA and the Site:

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