

**REVIEW OF VULCAN MATERIALS
AB2588 HEALTH RISK ASSESSMENT (HRA)**

September 4, 2024

Emissions Inventory Facility ID: 6306

Toxics Emissions Inventory Year: 2021

Review Conducted by: Stephen Amberg, SDAPCD

A Health Risk Assessment (HRA) was performed for Vulcan Materials Company (Vulcan) on 10051 Black Mountain, San Diego, CA 92126, by Taylor Environmental Services, Inc. for emissions in calendar year 2021 and submitted to the District for review on September 4, 2023 (Submittal HRA). The District provided District's comments on the HRA along with comments provided from the Office of Environmental Health Hazard Assessment (OEHHA) to Vulcan on March 14, 2024. Vulcan submitted a revised HRA (Revised HRA) to the District on May 14, 2024. Subsequently, the District completed a modified health risk assessment (District Modified HRA) on September 4, 2024.

The following are the District's comments on the Revised HRA and, in addition, the results of the District Modified HRA.

Approved HRA Results

| | |
|---|-------------------------|
| Maximum Individual Excess Cancer Risk (PMI) | 71.40 in a million |
| Maximum Residential Excess Cancer Risk | 8.89 in a million |
| Maximum Occupational Excess Cancer Risk | 5.32 in a million |
| Maximum Chronic Non-Cancer Health Hazard Index (PMI) | 4.26 |
| Maximum Residential Chronic Non-Cancer Health Hazard Index | 0.54 |
| Maximum Occupational Chronic Non-Cancer Health Hazard Index | 1.98 |
| Maximum 8-Hour Occupational Non-Cancer Health Hazard Index | 0.86 |
| Maximum Acute Health Hazard Index (PMI) | 3.72 |
| Maximum Residential Acute Health Hazard Index | 1.09 |
| Maximum Occupational Acute Health Hazard Index | 2.84 |
| Population Excess Cancer Burden | 0.102 |
| Sub-Chronic Lead Exposure Risk | <0.12 ug/m ³ |

The 30-day lead concentration at the Maximum Offsite Concentration (MOC), using EPA's AERMOD model, is estimated to be 0.00023 $\mu\text{g}/\text{m}^3$, which is below the High Exposure Scenario approval level of 0.12 $\mu\text{g}/\text{m}^3$ in the ARB Risk Management Guidelines for Lead, 2001. Lead emissions were estimated based on annual emissions being emitted in a 30-day period.

Summary of Health Impacts by Pollutant and Source

Non-Cancer Chronic Risk at the MEIW is mainly due to the Haul Roads (85.2%), Aggregate Plant (8.4%), and Recycled Asphalt Plant (6.1%). The main pollutant contributing to this risk is Arsenic (85%), Silica (10%), and Nickel (5%).

Acute risk at the MEIR is mainly due to the Aggregate Plant (49.4%) and Haul Roads (43.8%). The main pollutant contributing to this risk is Nickel (100%).

Acute risk at the MEIW is mainly due to the Aggregate Plant (48.7%) and Haul Roads (46.9%). The main pollutant contributing to this risk is Nickel (100%).

The Revised HRA concludes that the occupational chronic risk and the acute health hazard index exceed the public notification levels specified in District Rule 1210.

Summary of Changes in District Modified HRA

Air Dispersion Modeling

1. Receptor grids were recreated, including additional coverage for on-site receptors.
2. 1/3-arc second NED terrain data was used over the 1-arc second DEM terrain data
3. The volume sources for D1233A, D1233B, and D1233C when uploaded into Lakes AERMOD were too large. The length of side from Vulcan's model was reduced by 3.281 (feet in a meter) which resulted in an appropriately sized volume source.

Risk Assessment Calculations

1. Hourly emissions were adjusted to match the approved emissions inventory for the maximum hourly emissions. It appears that Vulcan used the 'Hourly Emission Rate (lbs/hr) for chronic and 8-hour score' from the District's HHRP file rather than the 'Maximum Hourly Emission Rate (lbs/hr) for acute score' which is required.
2. The Cancer Burden and Lead analysis would not significantly be affected by the changes therefore the results were not recalculated and are presented as Vulcan reported them.

Locations of Receptors at Maximum Exposure Points

| Receptor - Cancer Risk | Risk (in 1 million) | x (m) | y (m) |
|--|----------------------------|--------------|--------------|
| Point of Maximum Impact Cancer Risk (PMI) | 71.40 (rec 767) | 487751.00 | 3640017.00 |
| Maximum Exposed Individual Resident Cancer Risk (MEIR) | 8.89 (rec 1012) | 487697.10 | 3940417.07 |
| Maximum Exposed Individual Worker Cancer Risk (MEIW) | 5.32 (rec 1407) | 487932.68 | 3640204.04 |

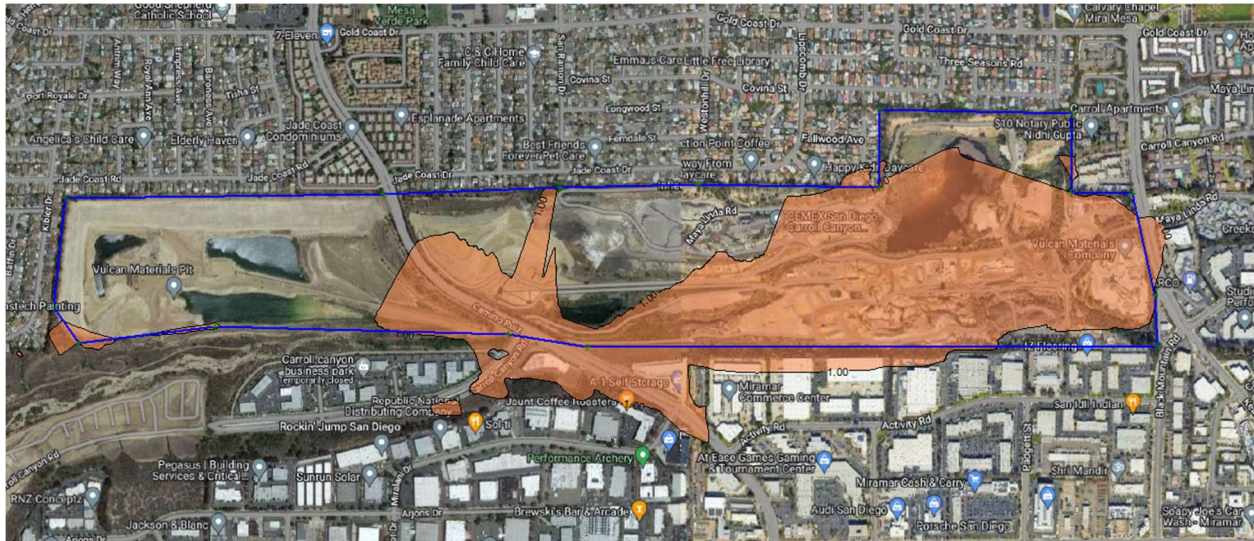
| Receptor - Non-Cancer Chronic Health Hazard Index | Health Hazard Index | x (m) | y (m) |
|---|----------------------------|--------------|--------------|
| Maximum Non-Cancer Chronic Health Hazard Index (PMI) | 4.26 (rec 767) | 487751.00 | 3640017.00 |
| Maximum Residential Non-Cancer Chronic Health Hazard Index (MEIR) | 0.54 (rec 1012) | 487697.10 | 3940417.07 |
| Maximum Worker Non-Cancer Chronic Health Hazard Index (MEIW) | 1.98 (rec 1407) | 487932.68 | 3640204.04 |
| Maximum Worker 8-Hour Non-Cancer Chronic Health Hazard Index (MEIW) | 0.86 (rec 1407) | 487932.68 | 3640204.04 |

| Receptor - Acute Health Hazard Index | Health Hazard Index | x (m) | y (m) |
|--|----------------------------|--------------|--------------|
| Maximum Acute Health Hazard Index (PMI) | 3.72 (rec 1128) | 487758.15 | 3640015.91 |
| Maximum Residential Acute Health Hazard Index (MEIR) | 1.09 (rec 1012) | 487697.10 | 3940417.07 |
| Maximum Worker Acute Health Hazard Index (MEIW) | 2.84 (rec 1400) | 487892.68 | 3640184.04 |

*The geographic coordinate system for the locations is the North American Datum of 1983, Zone 11.

Contours for Selected Risk and Health Hazard Index Calculations

1. Acute Health Hazard Index Notification isopleth



2. Non-Cancer Chronic Notification isopleth

