REVIEW OF ENCINA WASTEWATER AUTHORITY
AB2588 HEALTH RISK ASSESSMENT (HRA)

December 6, 2023

Emissions Inventory Facility ID: 5985

Toxics Emissions Inventory Year: 2021

Review Conducted by: Stephen Amberg, SDAPCD

A Health Risk Assessment (HRA) was performed for Encina Wastewater Authority (Encina), 6200 Avenida Encinas, Carlsbad, CA 92011, by Yorke Engineering, LLC for emissions in calendar year 2021 and submitted to the District for review on May 9, 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 Encina on September 6, 2023. Encina submitted a revised HRA (Revised HRA) to the District on November 3, 2023.

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

Approved HRA Results

Maximum Individual Excess Cancer Risk (PMI)	66.1 in a million
Maximum Residential Excess Cancer Risk	16.0 in a million
Maximum Occupational Excess Cancer Risk	6.53 in a million
Maximum Chronic Non-Cancer Health Hazard Index (PMI)	0.513
Maximum Residential Chronic Non-Cancer Health Hazard Index	0.125
Maximum Occupational Chronic Non-Cancer Health Hazard Index	0.213
Maximum 8-Hour Occupational Non-Cancer Health Hazard Index	0.501
Maximum Acute Health Hazard Index (PMI)	1.25
Maximum Residential Acute Health Hazard Index	1.01
Maximum Occupational Acute Health Hazard Index	1.17
Population Excess Cancer Burden	0.046
Sub-Chronic Lead Exposure Risk	<0.12 ug/m3

The 30-day lead concentration at the Maximum Offsite Concentration (MOC), using EPA's AERMOD model, is estimated to be 0.00004 $\mu g/m^3$, which is below the High Exposure Scenario approval level of 0.12 $\mu g/m^3$ 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

Cancer risk at the MEIR is mainly due to the Cogen Engines (83%) and Headworks (14%). The main pollutant contributing to this risk is Formaldehyde (73%), Ethylene dichloride (10%), PAHs (6%), and Arsenic (3%)

Acute risk at the MEIR is mainly due to the Cogen Engines (97%). The main pollutant contributing to this risk is Formaldehyde (98%).

Acute risk at the MEIW is mainly due to the Cogen Engines (99%). The main pollutant contributing to this risk is Formaldehyde (98%).

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

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)	66.1	469,979.92	3,664,193.34
Maximum Exposed Individual Resident Cancer Risk (MEIR)	16.0	469,829.34	3,664,228.50
Maximum Exposed Individual Worker Cancer Risk (MEIW)	6.53	470,296.35	3,664,371.60

Receptor - Non-Cancer Chronic Health Hazard Index	Health Hazard Index	x (m)	y (m)
Maximum Non-Cancer Chronic Health Hazard Index (PMI)	0.513	469,987.06	3,664,184.94
Maximum Residential Non-Cancer Chronic Health Hazard Index (MEIR)	0.125	470,493.99	3,664,295.76
Maximum Worker Non-Cancer Chronic Health Hazard Index (MEIW)	0.213	470,296.35	3,664,371.60
Maximum Worker 8-Hour Non-Cancer Chronic Health Hazard Index (MEIW)	0.501	470,296.35	3,664,371.60

Receptor - Acute Health Hazard Index	Health Hazard Index	x (m)	y (m)
Maximum Acute Health Hazard Index (PMI)	1.25	469,962.37	3,664,268.79
Maximum Residential Acute Health Hazard Index (MEIR)	1.01	469,845.23	3,664,239.62
Maximum Worker Acute Health Hazard Index (MEIW)	1.17	469,985.41	3,664,348.50

*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

Isopleths at notification thresholds for selected risk calculations are on the following pages.

1. Residential Cancer Risk
2. Acute HHI