

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

March 3, 2022

Emissions Inventory Facility ID: 5985

Toxics Emissions Inventory Year: 2017

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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 2017 and submitted to the District for review on April 14, 2021 (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 14, 2021. Encina submitted a revised HRA (Revised HRA) to the District on November 12, 2021. Subsequently, the District completed a modified health risk assessment (District Modified HRA) on March 3, 2022.

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)	54.76 in a million
Maximum Residential Excess Cancer Risk	13.42 in a million
Maximum Occupational Excess Cancer Risk	1.84 in a million
Maximum Chronic Non-Cancer Health Hazard Index (PMI)	0.46
Maximum Residential Chronic Non-Cancer Health Hazard Index	0.11
Maximum Occupational Chronic Non-Cancer Health Hazard Index	0.18
Maximum 8-Hour Occupational Non-Cancer Health Hazard Index	0.15
Maximum Acute Health Hazard Index (PMI)	1.42
Maximum Residential Acute Health Hazard Index	0.85
Maximum Occupational Acute Health Hazard Index	1.06
Population Excess Cancer Burden	0.0204

Summary of Health Impacts by Pollutant and Source

Cancer risk at the MEIR is mainly due to the cogeneration engines (92%) and wastewater treatment (7%). The main pollutants contributing to this risk are Formaldehyde (82%), PAHs (5%), and EDC (4%).

The Acute HHI at the MEIW is mainly due to the cogeneration engines (63%), wastewater treatment (22%), and diesel emergency standby engine (12%). The main pollutants contributing to this risk are Formaldehyde (72%), Sodium Hydroxide (16%), and Chlorine (5%).

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

Summary of Changes in District Modified HRA

Air Dispersion Modeling

1. No changes

Risk Assessment Calculations

1. The emissions inventory approved 3/1/22 was used in this risk assessment.
2. For the acute risk, natural gas emissions for the cogeneration engines were not included as acute risk is highest when engines operate 100% on digester gas.

Locations of Receptors at Maximum Exposure Points

Receptor - Cancer Risk	Risk (1 in 1 million)	x (m)	y (m)
Point of Maximum Impact Cancer Risk (PMI)	54.76	469979.92	3664193.34
Maximum Exposed Individual Resident Cancer Risk (MEIR)	13.42	470493.99	3664295.76
Maximum Exposed Individual Worker Cancer Risk (MEIW)	1.84	470386.29	3664308.72

Receptor - Non-Cancer Chronic Health Hazard Index	Health Hazard Index	x (m)	y (m)
Maximum Non-Cancer Chronic Health Hazard Index (PMI)	0.46	469979.92	3664193.34
Maximum Residential Non-Cancer Chronic Health Hazard Index (MEIR)	0.11	470493.99	3664295.76
Maximum Worker Non-Cancer Chronic Health Hazard Index (MEIW)	0.18	470386.29	3664308.72
Maximum Worker 8-Hour Non-Cancer Chronic Health Hazard Index (MEIW)	0.15	470386.29	3664308.72

Receptor - Acute Health Hazard Index	Health Hazard Index	x (m)	y (m)
Maximum Acute Health Hazard Index (PMI)	1.42	470379.34	3664078.5
Maximum Residential Acute Health Hazard Index (MEIR)	0.85	469840.41	3664262.78
Maximum Worker Acute Health Hazard Index (MEIW)	1.06	470355.02	3664223.51

The geographic coordinate system for the locations is the North American Datum of 1983.

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 non-cancer chronic health hazard index