

March 20th, 2024

Kern County Planning and Natural Resources Department  
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U.S. Environmental Protection Agency, Region 9  
ATTN: Martha Guzman, Regional Administrator  
75 Hawthorne Street  
San Francisco, CA 94105

**Re: Carbon TerraVault I Carbon Capture and Storage Project at Elk Hills Oil Field**

To the Attention of the Kern County Planning and Natural Resources Department and EPA  
Region 9 Administrator Guzman:

We are health organizations, health professionals and students from across California writing to ask you to prioritize public health and reject the Carbon TerraVault I carbon capture and storage (CCS) project at the Elk Hills Oil Field in Kern County<sup>1</sup>.

The draft Environmental Impact Report confirms that this project will have "significant and unavoidable" impacts on air quality in an area considered one of the most polluted in the country<sup>2</sup>. Particulate matter pollution, including PM2.5, already causes an estimated 1,200 premature deaths in the Valley every year. Total air emissions at the Carbon TerraVault I Carbon CCS project would exceed the San Joaquin Valley Air Pollution Control District's own limits on harmful air contaminants.

In practice, CCS at best captures only a fraction of carbon emissions and fails to address other **harmful pollution** from fossil fuel operations, such as nitrogen oxides, fine particulate matter (PM2.5), as well as other contaminants<sup>3</sup>. Moreover, carbon capture and compression of CO2 into liquid/supercritical form for transport and storage requires energy at every step. The additional energy required to power the carbon capture process generates even more emissions if supplied by fossil fuels. Increasing levels of pollutants associated with **poor birth outcomes, respiratory and cardiac diseases, neurological ailments, cancer and premature death**, would guarantee that Kern County, an already overburdened community, will continue to be a health and safety sacrifice zone.

Kern County has already experienced and continues to experience methane leaks from the Elk Hills Oil Field<sup>4</sup>. These fumes also contain volatile organic compounds (VOCs) that react

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<sup>1</sup> CEQA Project 2022030180 / Kern County PP22405; EPA docket number EPA-R09-OW-2023-0623.

<sup>2</sup> <https://files.ceqanet.opr.ca.gov/276876-2/attachment/J7HAPSwTKN-zlcp9acrbaOuBi2vQpFnRpRbAvXahe86DDxCiUyrgyoblqbw8Q-8zIDiCO4toKoJX75cV0>

<sup>3</sup> <https://www.energymonitor.ai/tech/carbon-removal/global-ccs-rates-overestimated-by-up-to-30-imperial/>

<sup>4</sup> <https://grist.org/accountability/california-regulators-try-to-salvage-system-for-allowing-extreme-pollution/>

with nitrogen oxides to form ground-level ozone, leading to increased risk of asthma and other respiratory ailments. **Concentrated CO<sub>2</sub> leakage from CCS operations is even more dangerous and life-threatening than methane leaks.** The CO<sub>2</sub> leakage could occur at any stage of transport or storage.

The Carbon TerraVault I CCS project at Elk Hills Oil Field being proposed by the California Resources Corporation introduces a **deadly new public health hazard** and potential exposure to high concentrations of Carbon Dioxide (CO<sub>2</sub>) to an already overburdened community.

**Additionally, the risk of CO<sub>2</sub> pipeline rupture is real and dangerous.** CO<sub>2</sub> has unique properties that make its transport in large quantities a serious public health hazard because of leakage concerns. CO<sub>2</sub> pipelines carry highly pressurized liquid at risk of rupture and release of an extremely cold plume of CO<sub>2</sub>, which would then expand into ground-hugging clouds of gas and small particles that will continue to spread until the supply is turned off. CO<sub>2</sub> is **odorless and colorless**. Currently a safe odorization strategy has not been identified as CO<sub>2</sub> impurities could lead to the failure and fracture of pipelines. There is also no standard practice to detect CO<sub>2</sub> leakage. **There is a significant regulatory and knowledge gap in the safe transport of CO<sub>2</sub>**<sup>5</sup>. The Carbon TerraVault I CCS Project at the Elk Hills Oil Field involves 13 miles of CO<sub>2</sub> pipelines some of which runs within **2.5 miles of McKittrick Elementary** and within 6 miles of two other elementary schools, potentially exposing more than 600 elementary age students and their teachers to concentrated CO<sub>2</sub>. In 2020, a CO<sub>2</sub> pipeline ruptured in Mississippi led to the evacuation of more than 200 people and at least 45 people were hospitalized. Many of whom still experience health consequences<sup>6</sup>.

CO<sub>2</sub> is an **intoxicant and asphyxiant**. At just 4% concentration, CO<sub>2</sub> is considered immediately dangerous to life and health by NIOSH. A CO<sub>2</sub> concentration of 10% can cause unconsciousness within a few minutes, and more than 10% can cause convulsions, coma and death within ten minutes. In addition to asphyxiation, exposure to high levels of compressed CO<sub>2</sub> can also cause other health problems, such as dizziness, headaches, and respiratory issues.

CO<sub>2</sub> is 1.5 times **heavier than air**, meaning that it stays on the ground, pushing up the oxygen we need to breathe. It can travel large distances at lethal concentrations from the pipeline at ground level after a rupture and collect in high concentrations in open pits, low lying areas and confined spaces where it can displace oxygen, creating a serious health hazard.

In 1986, 1700 people died from a natural CO<sub>2</sub> reservoir leak in West Africa<sup>7</sup>. Previous smaller scale leaks in the area had gone undetected<sup>8</sup>.

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<sup>5</sup> <https://pstrust.org/wp-content/uploads/2022/10/CO2-Regulatory-and-Knowledge-Gaps-1.pdf>

<sup>6</sup> <https://www.npr.org/2023/05/21/1172679786/carbon-capture-carbon-dioxide-pipeline>

<sup>7</sup> <https://www.bmj.com/content/bmj/298/6685/1437.full.pdf>

<sup>8</sup> <https://www.smithsonianmag.com/science-nature/defusing-africas-killer-lakes-88765263/>

Carbon TerraVault I CCS project proposes up to 48 million metric tons of dangerous carbon waste injected in the Elk Hills Oil Field. The depleted oil field that is proposed to store the CO<sub>2</sub> has hundreds of drilling sites that have not been properly sealed, which increases the risk of dangerous CO<sub>2</sub> leaks. There is also a risk for well blowouts during injection. Buttonwillow's remote location means residents would have to travel a long way to reach a hospital in the event of a dangerous leak. In addition, injecting CO<sub>2</sub> underground can lead to increased seismic activity which can also lead to increased risk of CO<sub>2</sub> leakage.

CCS is water intensive and the water footprint of this project should be carefully examined in the drought-stricken state of California<sup>9</sup>. Both water quantity and water quality should be considered in evaluating this project. CO<sub>2</sub> Leaks that occur sub-surface could affect drinking water aquifers. If CO<sub>2</sub> stored deep underground leaks in even very small amounts, it could cause metals to be released in shallow groundwater aquifers at concentrations that would be harmful to the community at large<sup>10</sup>. Scientific research indicates that the most water-efficient way to stabilize the Earth's climate is to rapidly decarbonize our energy systems and improve energy efficiency<sup>11</sup>.

Carbon TerraVault I CCS Project at Elk Hills Oil Field will increase pollution and the negative health impacts associated with increased pollution. The idea that these public health hazards could be regulated are not based on the real life experiences of overburdened communities in California.

The Carbon TerraVault I CCS Project at Elk Hills Oil Field also extends the life of fossil fuels and thereby delays a Just Transition to a safer, healthier, and more caring world. Fossil fuel companies' internal documents highlighted CCS to be promoted because it could "enable the full use of fossil fuels across the energy transition and beyond."<sup>12</sup> We must not continue to force communities to pay the externalized costs of the fossil fuel industry. Community health, well-being, and peace of mind cannot be sacrificed. **We need to prevent harm.** Therefore, we need to act with an abundance of caution, especially with technologies that are not reversible and do not meet the goal of reducing carbon emissions and air pollution more generally.

We recommend a precautionary approach in how you assess and evaluate CCS, as well as other climate strategies. We ask you to prioritize public health and reject the Carbon TerraVault I CCS project at the Elk Hills Oil Field in Kern County.

Signed,

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<sup>9</sup> <https://www.sciencedirect.com/science/article/abs/pii/S1364032120307978>;  
<https://www.sciencedirect.com/topics/engineering/water-footprint-assessment>

<sup>10</sup> <https://pubs.acs.org/doi/abs/10.1021/es102235w>

<sup>11</sup> [https://www.sciencedirect.com/science/article/abs/pii/S1364032120307978?fr=RR-2&ref=pdf\\_download&rr=8677cb0d8a1f2b6e](https://www.sciencedirect.com/science/article/abs/pii/S1364032120307978?fr=RR-2&ref=pdf_download&rr=8677cb0d8a1f2b6e)

<sup>12</sup> [https://oversightdemocrats.house.gov/sites/democrats.oversight.house.gov/files/2022-12-09.COR\\_Supplemental\\_Memo-Fossil\\_Fuel\\_Industry\\_Disinformation.pdf](https://oversightdemocrats.house.gov/sites/democrats.oversight.house.gov/files/2022-12-09.COR_Supplemental_Memo-Fossil_Fuel_Industry_Disinformation.pdf)

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