

CARBON CAPTURE: PUBLIC HEALTH HAZARDS

CARBON DIOXIDE (CO₂)

CO₂ is the principal greenhouse gas (GHG) released when burning fossil fuels, driving climate change. CO₂ is also the colorless, odorless gas exhaled during respiration, contributing to a misperception that it is harmless.

TOXICOLOGY

Concentrated CO₂ is an asphyxiant. If accidentally released in large quantities, concentrated CO₂ settles on the ground, flows downhill, and displaces ambient air. At a concentration of 4% or higher CO₂ is immediately dangerous to life and health.



Source: Yazoo County Emergency Management Agency

Carbon capture and sequestration (CCS) is promoted as crucial to halt climate change. But there are significant public health risks associated with each stage of the CCS process: at the capture site, during transport, and at the sequestration site.



Carbon Capture sites

Combustion of fossil fuels releases many co-pollutants associated with a wide range of public health dangers which remain after the capture of the CO₂.

Coal plants emit NO_x, SO₂, mercury, and PM_{2.5}. NO_x and SO₂ cause airway inflammation, decreased lung function, asthma exacerbation, increased response to allergens. NO_x, itself a potent greenhouse gas, also contributes to particulate matter and ground-level ozone while SO₂ reacts with water to become acid rain. Mercury is a potent neurotoxin, especially for developing fetuses and young children. PM_{2.5} contributes to premature mortality, increased hospitalizations, cardiovascular disease, bronchitis, cognitive decline, preterm birth, low birth weight, and congenital disabilities.

Natural Gas generated electricity involves significant methane leakage. Methane is a powerful greenhouse gas and a precursor to ground-level ozone formation.

Petroleum Refineries are major sources of air pollutants, including cancer-causing benzene, particulate matter, NO_x, CO, and SO₂.

Each stage of CCS technology requires its own energy source, generating additional CO₂ and other co-pollutants. CO₂ capture also requires copious amounts of water and increases water pollution, often in areas already facing water scarcity.

Adding carbon capture to an existing fossil fuel or industrial site functions to extend the lifespan of that facility. Many of the communities already adversely impacted by these facilities would be further harmed by the increased emissions and water pollution associated with carbon capture units.

Transport

Liquefied, concentrated CO₂ is transported in a highly pressurized state. Rupture of a highly pressurized liquid CO₂ pipeline results in an explosive release of an extremely cold (less than -70° C) flood of liquid CO₂ that forms ground-hugging clouds of gas and small particles that continue to spread until supply is turned off. A CO₂ concentration of 10% causes unconsciousness within one minute. Because CO₂ displaces oxygen, internal combustion engines would be rendered inoperable near a leak or rupture, interfering with emergency responses. Potential mass casualties would overwhelm rural emergency health systems.

Storage site

The risks of CO₂ sequestration include leakage of CO₂ and increased occurrence of earthquakes. CO₂ leaks at the surface could damage surface ecosystems or structures, threaten people and animals from high concentrations of CO₂, and would contribute to greenhouse gas accumulations. Leaks that occur sub-surface could affect drinking water aquifers.

For more information on CCS, CCUS, and carbon pipelines, visit: www.carboncapturefacts.org