

Carbon dioxide (CO<sub>2</sub>) is a newsworthy chemical lately, for a number of reasons. The CO<sub>2</sub> levels in our atmosphere continue to increase to levels which will impact the climate for decades to come. Many large companies have announced their “carbon neutrality.” In Louisiana, carbon dioxide capture and storage is a hot topic. But few stories discuss the dangers of carbon dioxide at ground level, potentially during an emergency event like a pipeline explosion or well failure.

The phrase “the dose makes the poison” perfectly describes carbon dioxide. While CO<sub>2</sub> naturally makes up about .04% of the atmosphere, or 400 parts per million, a concentration 100 times stronger at 4%, or 40,000 parts per million, is immediately dangerous to human life.<sup>1</sup> Carbon dioxide displaces oxygen in the lungs, and at high enough concentrations can cause death.<sup>2</sup> At non-deadly levels of exposure, CO<sub>2</sub> may cause headache and drowsiness.<sup>3</sup> Exposure at the levels expected from a pipeline burst or well rupture include heart attack and permanent brain damage.<sup>4</sup> Since CO<sub>2</sub> replaces oxygen in the lungs, the brain does not receive the needed oxygen for normal function, and this can cause an inability to seek help or to even realize that the body is in distress.<sup>5</sup> Carbon dioxide is colorless and odorless, and cannot be detected without special equipment.

Our best data on the effects of CO<sub>2</sub> exposure comes from a tragic example- during a landslide caused by heavy rainfall, a pipeline carrying pure CO<sub>2</sub> burst in Sartartia, Mississippi. Carbon dioxide remains at ground level for some time after release rather than quickly entering the atmosphere, so cars passing by the road where the pipeline broke passed right through a cloud of CO<sub>2</sub>.<sup>6</sup> Additionally, wind blew the plume of CO<sub>2</sub> for miles- at ground level- outside of the release site.<sup>7</sup> Emergency responders did not have CO<sub>2</sub> detectors, and could not determine what was the cause of people slumped unconscious in their cars on the roadside. The entire town of 200 people was ordered to evacuate, and 45 residents- nearly a quarter of the town’s population- were hospitalized due to their CO<sub>2</sub> exposure.<sup>8</sup> Some people who were exposed have had permanent brain damage, and a local doctor noted that people with existing asthma saw “increased frequency and severity” of asthma attacks.<sup>9</sup>

While industrial accidents often call for evacuations, during a CO<sub>2</sub> release event, *gas-powered cars, which depend on oxygen to burn fuel, will not operate.*<sup>10</sup> During the Sartartia disaster, three people were found passed out in their car after the engine stopped running. One of these men suffers from permanent

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<sup>1</sup> [https://www.fsis.usda.gov/sites/default/files/media\\_file/2020-08/Carbon-Dioxide.pdf](https://www.fsis.usda.gov/sites/default/files/media_file/2020-08/Carbon-Dioxide.pdf)

<sup>2</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5380556/>

<sup>3</sup> [https://www.fsis.usda.gov/sites/default/files/media\\_file/2020-08/Carbon-Dioxide.pdf](https://www.fsis.usda.gov/sites/default/files/media_file/2020-08/Carbon-Dioxide.pdf)

<sup>4</sup> <https://www.ceemjournal.org/journal/view.php?doi=10.15441/ceem.19.015>

<sup>5</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5380556/>

<sup>6</sup>

<https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/Failure%20Investigation%20Report%20-%20Denbury%20Gulf%20Coast%20Pipeline.pdf>

<sup>7</sup>

<https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/Failure%20Investigation%20Report%20-%20Denbury%20Gulf%20Coast%20Pipeline.pdf>

<sup>8</sup>

<https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/Failure%20Investigation%20Report%20-%20Denbury%20Gulf%20Coast%20Pipeline.pdf>

<sup>9</sup> <https://www.npr.org/2023/05/21/1172679786/carbon-capture-carbon-dioxide-pipeline>

<sup>10</sup> <https://www.npr.org/2023/05/21/1172679786/carbon-capture-carbon-dioxide-pipeline>

brain damage and has said he is unable to work due to ongoing tremors.<sup>11</sup> Residents at the house closest to the pipeline became unconscious after the cloud of CO<sub>2</sub> entered their property.<sup>12</sup> This leaves people living nearby CO<sub>2</sub> pipelines and injection sites without a way to escape, and also unable to shelter in place inside their homes. Many companies that are advertising their “carbon neutrality” don’t plan to change their practices to emit less carbon, but rather pay credits for carbon dioxide to be captured, pressurized, piped through sometimes thousands of miles of pipeline, and injected underground.<sup>13</sup> There is still no scientific consensus that injecting carbon dioxide underground will store it away permanently.<sup>14</sup> Especially in Louisiana, where many old oil wells were improperly capped or not capped at all, “the risk of CO<sub>2</sub> leakage from [oil and gas] wells remains a substantial risk in CCS projects.”<sup>15</sup>

St. James is the location for several planned CO<sub>2</sub> pipelines and injection sites. Many of these carbon dioxide pipelines will follow existing petrochemical pipelines, and a rupture in a CO<sub>2</sub> pipeline could cause a cascading disaster by damaging other nearby pipelines. Don’t fall for CO<sub>2</sub> producers saying that carbon dioxide is just what makes soda bubbly or that it’s completely natural. Too much of even natural things- like tobacco, alcohol, salt, and carbon dioxide- can kill you.

#### HOW TO REDUCE THE PRODUCTION OF CO<sub>2</sub>

- Attend parish, city, or regional transmitter meetings to demand that renewable energy is prioritized instead of continuing to rely on natural gas, which emits large amounts of CO<sub>2</sub>.
- Dig deeper into a company’s claims of being “carbon neutral”- is this neutrality purchasing carbon capture credits, or is the company making changes to its practices to avoid generating and emitting CO<sub>2</sub> in the first place?
- Ask your local parish council representatives, firefighters, doctors, and nurses if they have heard of carbon capture, know about the dangers of CO<sub>2</sub> exposure, and whether they have specialized equipment to detect and respond to CO<sub>2</sub> incidents.

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<sup>11</sup> <https://www.npr.org/2023/05/21/1172679786/carbon-capture-carbon-dioxide-pipeline>

<sup>12</sup>

<https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2022-05/Failure%20Investigation%20Report%20-%20Denbury%20Gulf%20Coast%20Pipeline.pdf>

<sup>13</sup> <https://frontierclimate.com/>

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[https://escholarship.org/content/qt015944r2/qt015944r2\\_noSplash\\_e0eeb9ceece121a4beb68ca7a5834caf.pdf?t=p0u\\_wke](https://escholarship.org/content/qt015944r2/qt015944r2_noSplash_e0eeb9ceece121a4beb68ca7a5834caf.pdf?t=p0u_wke)

<sup>15</sup> [https://sequestration.mit.edu/pdf/GHGT8\\_Ide.pdf](https://sequestration.mit.edu/pdf/GHGT8_Ide.pdf)