Larry J. Schweiger

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Ian Irvin, Executive Director,
Citizens Advisory Council Rachel
Carson State Office Building
400 Market Street
Harrisburg, PA 17101

Dear Mr. Irvin:

I understand that the Citizens Advisory Committee will discuss aspects of the proposed Carbon Capture and Sequestration Act on July 9th. I would like to share my concerns with Senate Bill 831 as I believe it introduces a significantly impactful environmental policy but lacks the necessary safeguards for such a large-scale experiment. This legislation should not be rushed and requires thorough public hearings and robust safeguards to mitigate potential risks.

Senate Bill 831 creates a deficient legal structure for carbon capture and geologic carbon sequestration within the Commonwealth. This bill wrongly treats stored carbon dioxide as an asset, not a liability, even though CO_2 will be stored in perpetuity in porous rock formations. While injecting CO_2 in concrete can produce value-added building materials, like concrete aggregate, this option is far more available than recovering sequestered CO_2.

When compressed into a supercritical phase, CO_2 behaves like a fluid when injected into porous rock formations. Ideally, its plume becomes physically contained in the pore spaces and eventually reacts to form stable minerals over geologic time. The process of carbon mineralization, which occurs over thousands of years, is a testament to the magnitude and complexity of the task at hand.

A carbon sequestration study in New Mexico's Bravo Dome, where sequestration began more than a million years ago, found that only 20% of the CO_2 has dissolved into the field's saline brine over 1.2 million years, while the rest remains as a free gas trapped by the caprock. This research underscores the urgent need to address the potential liabilities of carbon storage for multiple generations.

In a region where widespread fracking has undoubtedly destabilized geologic formations, a geologic failure of a formation containing stored carbon dioxide could be lethal. We have a vivid example from a natural source. "On August 21, 1986, a massive release of carbon dioxide from Lake Nyos in Cameroon, West Africa, killed between 1,700 and 1,800 people and many animals. The cloud was heavy since $CO_2$is denser than air, displacing oxygen at high concentrations. Victims died from carbon dioxide asphyxiation, with clinical findings in survivors showing signs of

exposure to an asphyxiant gas." In another example, in Satartia, Mississippi, a pipeline carrying carbon dioxide ruptured, sending 49 people to the hospital complaining of labored breathing, stomach disorders, and mental confusion.

This practice could be widespread in a carbon-constrained world. Since carbon dioxide is collected and pumped under high pressure into porous formations, a failure of a formation could eventually erupt into the atmosphere, posing uncertain environmental and public health risks.
Here are just a couple of concerns that need to be legislatively addressed:

- Experimentally, pumping CO_2 for permanent storage must be declared an "Ultrahazardous Activity" by statute. The actions of individuals and entities that inject CO_2 into geologic formations involve a high level of long-term danger, so this activity must carry strict liability. By its nature, ultrahazardous activity cannot avoid the possibility of damaging property or individuals. Therefore, the Commonwealth must hold defendants strictly liable for any damages resulting from the ultrahazardous activity, meaning no negligence must be proven.
- This bill severely restricts surface landowners' rights. It does not require surety bonding, liability insurance, or rebuttable presumptions and limits punitive damages. Homeowners and others living on top of carbon storage are at the highest risk, and they must not be constrained from seeking punitive damages or be required to prove negligence. The bill shifts the legal burden to the impacted surface property owner and simply does not address any individuals who are not property owners who may be harmed by leaking CO_2. The bill says, “A surface property interest owner, subsurface property interest owner, or lessee may not seek punitive damages due to the injection or migration of carbon dioxide if the storage operator is determined to have had a reasonable basis for believing that the carbon sequestration project would not migration of carbon dioxide beyond the storage facility.” Surface landowners and others harmed by a failed CO_2 storage project are burdened by Senate Bill 831 and their risks are not adequately addressed.
- The bill, by default, transfers long-term liabilities in perpetuity to the Commonwealth, thus privatizing profits while socializing profound risks. Commonwealth taxpayers should not perpetually accept the liability. The Commonwealth has a long history of accepting massive social liabilities while special interests enjoy private profits. When the legislature passed the 1937 Clean Streams Act it exempted mine drainage. Today, we have 2,500 miles of polluted waters that the Commonwealth must pick up the tab to clean up, if ever. When the Gas Operations Well-Drilling Petroleum and Coal Mining Act was adopted in 1955, it protected mines under well drilling but failed to address well sealing and other environmental issues. The Commonwealth has repeatedly failed to properly address financial accountability for sealing wells. With widespread “five spottings,” perhaps as many as 750,000 orphan unsealed wells still exist. Plugging orphan wells could cost as much as nineteen billion dollars. With this history, why would the Commonwealth let others privatize profits while socializing enormous liabilities? The legislation charges the Environmental Quality Board with establishing fees for sequestration. Still, it does not create provisions for endowing sufficient funds to address the long-term risks that the Commonwealth and future generations will inherit.

Blue hydrogen is a heavily subsidized program to placate Senator Joe Manchin, a West Virginia coal mine owner who chaired the Energy Committee and opposed the Inflation Reduction Legislation without this authorization. The theory is that gas can be fracked, transported by long-distance pipelines, pressurized in diesel pumping stations, and then converted to hydrogen through a cracking process with some level of CO_2 capture (50% to 87%) with the captured CO_2 then be transported by pipeline and pumped high pressurized to be stored in perpetuity. That all of this can be economically competitive with clean energy is a pipe dream advanced by the fossil fuel industry. Take away all the Federal and state subsidies and the transference of risks; clean energy wins every time. Carbon capture and storage are not economically competitive approaches, so the industry has long fought against clean energy.

As currently written, Senate Bill 831 authorizes an unproven ultra-hazardous practice on fractured lands while inadequately addressing risks. I could list other flaws in the bill, but I believe it deserves far more scrutiny than it currently receives.

As someone who has been deeply concerned about climate change for decades, I know this is not the way to go.

Thank you for this consideration as the Citizens Advisory Committee considers this important matter.

Sincerely,

Larry J. Schweiger