



Spilled Milk

How a little plastic jug lured Chevron into a slanderous trap.

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"All the truth in the world adds up to one big lie." – Bob Dylan

The lowly milk jug—that most simple of containers sitting in almost every fridge in America—is truly a wonder. The carbon and hydrogen atoms within it begin their journey at an oil and gas field somewhere. Along the way, ethane is refined, sent to a cracker to become ethylene, and fed into a specialized polymerization reactor. High-density polyethylene (HDPE) exits as pellets that are sold to a specialized container manufacturer. There, the pellets are heated until molten and blow-molded into shape.

Ready to fulfill its destiny, the jug is sent to a milk producer, where it is filled and capped for transport through the cold chain. With the structural integrity and barrier properties needed to protect its precious cargo along the complex journey to the grocery retailer, the jug's ubiquitous design makes it easy for customers to place in their shopping carts and accessible for children to "help themselves" at home.



Not all children, it seems. | Warner Brothers

A standard one-gallon milk jug uses just 60 grams of HDPE (confirmed at The Coop™ using a simple baking scale). Blow-mold-grade HDPE can currently be acquired in bulk at the Port of Houston for \$990 per metric ton, which means there are just *six cents* of material value in the world’s most recognizable container. Suffice it to say, we get our money’s worth.



Despite that exercised utility, we would understandably prefer not to simply throw away milk jugs and other such containers at the end of use. As manufactured articles that have been reasonably subjected to decades of “Reduce, Reuse, Recycle” anthems, tossing them in a

landfill seems wasteful, akin to outright littering. Surely, recycling the material and breathing a second life into these magic atoms is the proper course, right? Here is where things get...complicated.

According to data from DevelopmentAid, the US generates an astonishing 1,788 pounds of municipal waste per person each year, most of which is either placed in a landfill or incinerated. Only a quarter of all municipal waste gets recycled. The problem gets significantly worse if you drill down into the plastics category. Here are the sobering details (emphasis added throughout):

“Only 5% of the mountains of plastic waste generated by US households last year was recycled, according to new research by Greenpeace. Americans discarded 51m tons of wrappers, bottles and bags in 2021 – about 309lb of plastic per person – of which almost 95% ended up in landfills, oceans or scattered in the atmosphere in tiny toxic particles.”



Fill 'er up | Getty

The resulting blight gives insult to the injury of otherwise ignoring the meaningful embodied energy remaining in these heaps of discarded plastics. Companies in related industries have invested countless sums to address the question “*How do we capture the potential energy*

value remaining in plastics while minimizing the impact on the environment?" One such player, Chevron, has discovered that any naive pursuit of this question holds an unavoidable trap.

Recently, Chevron won approval from the US Environmental Protection Agency (EPA) to demonstrate a process that recycles plastic waste in a novel way. The company's plans involved feeding plastic-derived material back into its Pascagoula, Mississippi refinery—a sprawling 2,700-acre maze of state-of-the-art chemical facilities capable of refining 369,000 barrels of oil per day—where it would be transformed into a “green” version of jet fuel. The Chevron proposal would theoretically give society a second bite of the milk jug's energy while solving the known issues with mainstream recycling programs. Better to be tossed back into the refinery than into the ocean, so the thinking goes.

What's not to like?

A lot, apparently. The EPA's approval of Chevron's plans has sparked an unprecedented and nasty attack on both the company and the government agency itself by the professional environmental movement. The tactics being used are ugly and preposterously unscientific, rising to a new and jarring level of vitriol. Chevron executives surely expected the company to be lauded for their development. What dragged their effort into the crosshairs of the environmental left instead? Is their program a promising solution or a dangerous threat? Let's head to Mississippi and find out.

The concept of leveraging the global fleet of petrochemical refineries to deal with plastic waste is not a new one, and the chemistry is well understood. As described in an excellent recent review in the journal *Energy & Fuels*, only 8% of the output of refineries is used by the chemical industry, and a fraction of that number ends up being used to make plastics (the rest is used to make paints, deicing fluids, cleaners, and other goods). Plastics can be reintroduced using a chemical process known as pyrolysis, a technique that has found wide industrial application for many decades. Through the magic of modern chemistry, Chevron proposes to take the pyrolyzed waste and blend it with fresh petroleum inputs to produce jet fuel that meets current airline specifications.



Chevron's Pascagoula Refinery | AP/John Fitzhugh

Unfortunately for Chevron, no attempted good deed from the fossil fuel industry goes unpunished. While this new grade of jet fuel is practically indistinguishable from what is currently on the market, the EPA was forced by law to treat it as a new chemical, which triggered the need to model various worst-case scenario risks where extremely aggressive assumptions are made. In a recent [letter](#) addressed to Congress explaining how it evaluated Chevron's proposed fuel, the EPA wrote that although the product was essentially the same as jet fuel, it was not exactly so, and since it *"did not have an appropriate analogous petroleum stream to evaluate cancer hazard,"* the *"EPA's risk assessment included the assumption that 100% of the new jet fuel was Stoddard [dry cleaning] solvent, an assumption we know to be very conservative."* They then went on to imagine the following impossible scenario:

*"[T]he Agency divided the total projected future annual production volume of the new jet fuel by the total number of locations expected to receive the fuel (about 100 locations). The Agency then assumed each location could be an end-use location (e.g., airport), and also assumed that these locations were where all of the fuel would be burned. **The scenario that was modeled in effect presumed that every plane at the airport was idling at the same time on a runway burning an entire tank's fuel without ever taking off, that the components of the fuel that contribute to cancer risk are not fully combusted and are***

present in the exhaust, and that residents living nearby would continuously breathe the exhaust each day over many years in their lifetime. This is not an exposure scenario that would ever actually occur.”

Unsurprisingly, if you replace the actual product being proposed with one known to be more dangerous and then assume extreme scenarios indistinguishable from fantasy, you can produce shockingly unacceptable outcomes. It is the scientific equivalent of assessing the cancer risk of gasoline by modeling that people will drink a tablespoon of chainsaw bar oil each time they fill up or measuring the worker hazard associated with a new stairwell by assuming people will always leap from the rooftop instead.

Because this was just one of many scenarios performed, and all of the sane ones showed minimal risk, the EPA approved Chevron’s pre-manufacture notice (PMN). Shortly thereafter, environmental groups “discovered” the existence of the absurd model in the EPA’s files and pounced. *ProPublica* and *The Guardian* triggered an avalanche of disinformation and fear in late February:

“The Environmental Protection Agency recently gave a Chevron refinery the green light to create fuel from discarded plastics as part of a ‘climate-friendly’ initiative to boost alternatives to petroleum. But, according to agency records obtained by ProPublica and The Guardian, the production of one of the fuels could emit air pollution that is so toxic, 1 out of 4 people exposed to it over a lifetime could get cancer.

‘That kind of risk is obscene,’ said Linda Birnbaum, former head of the National Institute of Environmental Health Sciences. ‘You can’t let that get out.’

That risk is 250,000 times greater than the level usually considered acceptable by the EPA division that approves new chemicals. Chevron hasn’t started making this jet fuel yet, the EPA said. When the company does, the cancer burden will disproportionately fall on people who have low incomes and are Black because of the population that lives within 3 miles of the refinery in Pascagoula, Mississippi.”



These accusations are knowing lies, but the defamation of Chevron has had the desired effect. The Pascagoula community was understandably alarmed, and Chevron was forced to post a Fact Sheet to its website clarifying the situation. In a just world, Chevron would be able to sue *ProPublica* and *The Guardian* for slander, but instead, it is the environmental groups doing the suing:

“A community group in Pascagoula, Mississippi, today filed a lawsuit against the Environmental Protection Agency (EPA) for its approval of new chemicals to make fuels despite finding that the resulting air pollution would pose a cancer risk 250,000 times greater than what the agency typically considers unreasonable.

Cherokee Concerned Citizens is challenging EPA’s decision to allow the world’s largest Chevron refinery — located about a mile away from their neighborhood — to turn plastic waste into fuels. EPA determined that the production of Chevron’s new chemicals will pose up to a 1 in 4 cancer risk, meaning 25% of residents living nearby could develop cancer over their lifetime.”

Just what is the real risk involved here? We return to the EPA's letter to Congress for the scientifically realistic answer:

*“Your letter references a news report that described a 1 in 4 cancer burden falling on people who live within 3 miles of a facility that refines a mixture of plastic-based feedstock oil with petroleum oil. This report is inaccurate. In fact, for the referenced jet fuel PMN, **the general population risks associated with refinery emissions that EPA calculated in its risk assessment were on the order of one in a hundred thousand**, consistent with the Agency’s benchmark residual cancer risk levels for refineries, and risks to workers in the refinery were found to be orders of magnitude lower than that – **about one in ten million.**”*

If you made it this far and are feeling a mix of anger and bewilderment, good. You should.

You might be asking yourself how it came to be that the EPA runs such crazy scenarios in the first place. The answer is simple. Environmentalists worked with Congress to codify into law the requirement to do so, setting traps like these *by design*. It is no coincidence that these groups knew exactly what to look for, found it right away, and were ready to unleash their ersatz smears without hesitation. Chevron’s attempt to do something useful with empty milk jugs was met with a wall of cynical tactics so outrageous you wouldn’t believe it unless you read it on *Doomberg*.

Where does Chevron go for restitution? Nowhere. That milk is good and truly spilled.