Climate change: Causes, consequences, corporate malfeasance, pseudoscience, and a call to action

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Chief Seattle famously said,

> The earth is our mother. Whatever befalls the earth befalls the sons of the earth. The earth does not belong to man, man belongs to the earth. All things are connected like the blood that unites us all. Man did not weave the web of life; he is merely a strand in it. Whatever he does to the web, he does to himself.

Well, the web is fraying, and our mother is dying. Global warming is a scientific fact; is getting worse; and is destroying the planet's web of life, sickening and killing people and costing trillions of dollars.

Global warming ocurs consequent to the burning of fossil fuels, which releases carbon dioxide and methane. These compounds, along with nitrous oxide and sulfur oxides, contribute to a greenhouse effect wherein the sun's heat radiation becomes trapped, raising temperatures worldwide. There has been a 30% increase in atmospheric CO2 since industrialization began. 80% of current carbon emissions come from burning fossil fuels (coal, oil, and natural gas). The other 20% results from deforestation, melting of permafrost, agriculture, and other phenomena. Overall energy use has nearly doubled in the last 30+ years; thus, fossil fuel use has also nearly doubled.[1]

Our atmosphere now contains 421 ppm CO2, up from 280 ppm in the pre-industrial era. Anything over 350 ppm is considered dangerous. CO2 is currently being released at almost twice the rate it is being removed by plants and absorbed by the oceans.

Today the top 1/5 of the world's largest 145 countries account for 63% of global C02 emissions, while the lowest 1/5 account for just 2%. The US accounts for 23 tons per person per year, versus a global average of 5.4 tons per person per year. Unfairly, the countries likely to be most affected by global warming are those least responsible for the increases in global temperature.

The last 10 years have been the hottest ever recorded, based on data going back to 1856.[1] Worldwide average temperature increased by about 1.5° F since 1901 and continues to rise. The Arctic and the Pacific Northwest are warming faster than other parts of the planet. Temperatures are way beyond what they have been for at least 10,000 years. Some scientists estimate that if current trends continue, we will see a global temperature increase of between 4.5 and 9 degrees Celsius by 2100. If all identified fossil fuels on planet were burned (that is, the 5.5 trillion tons of oil, coal, and natural gas now underground), the earth could heat up by as much as 17 degrees Fahrenheit and up to 35 degrees Fahrenheit in the Arctic. And while climate cycles and temperature variations have occurred throughout history, they have occurred on geological timescales of many

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http://www.phsj.org
Prescription for Justice Television:
https://www.youtube.com/channel/UCJt34I9c5vT2RpZtkg6Im2A/videos
Prescription for Justice Podcast:
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thousands to millions of years, and even then wrought catastrophic consequences for life on earth.

The World Health Organization and the United Nation's Environment Program estimate that global warming causes at least 400,000 deaths worldwide annually. This number is expected to double by 2030. Furthermore, in addition to heart and lung disease and a variety of cancers, air pollution from fossil fuels causes between 100,000 and 200,000 premature deaths per year in U.S., over 500,000 in the European Union, and 7 million worldwide (half of these are due to indoor cooking fires in poor nations).

Since 1990, greenhouse gas emissions from the world's top carbon emitters (United States, China, Russia, India, and Brazil) have caused an estimated $6 trillion in global economic damage (11% of annual global gross domestic product). Harms have predominantly affected poor countries through myriad adverse environmental and health consequences, crop failures, and heatwaves.

Global warming also leads to increased weather extremes and natural disasters, including megafires, drought, and severe floods. There were almost 70,000 wildfires in the U.S. in 2022, burning 7.6 million acres and destroying thousands of homes. Megafires, which burn over 100,000 acres, occurred less than once per year in the U.S. prior to 1995; between 2007 and 2017, there were an average of 10 per year. The summer of 2020 megafires in Oregon and Alaska turned the skies of Portland, Oregon, and San Francisco, California orange for days, killed dozens, and led to mass evacuations. The worst fire in the history of California, the August Complex fire, lasted 3 months, burned over one million acres, and destroyed almost 1,000 buildings. The western U.S. wildfire season lasts at least 2.5 months longer today than in the early 1970s. Worldwide over 330,000 people die annually from the aftereffects of wildfires. Following such fires, forests do not recover quickly, and some areas may be permanently replaced by grasslands and shrublands. Compounding the problem, rising temperatures increase smog and ground level ozone, which stunts plant growth.

Deadly heat waves, both here and abroad, have roasted the planet, including a 2003 European heat wave which caused up to 70,000 premature deaths, and one affecting Moscow in 2010, which killed about 10,000. Heat-related deaths increased 68% between 2017 and 2021, compared with 2000 to 2014. Meanwhile, floods and hurricanes are getting bigger and more frequent. The National Flood Insurance Program is phasing out flood insurance, as it is $24 billion in debt and unable to pay off existing Hurricanes Katrina and Sandy claims. In 2020, the United States ran through the alphabet of hurricane names and had to default to the letters of the Greek alphabet. Due to its unique geography, extreme weather events are more powerful, expensive, and frequent in the United States than anywhere else. Outside the United States, increased flooding has contributed to homelessness, climate refugees, and cholera outbreaks.

Globally, natural disasters make 14 million people homeless each year. This number will increase dramatically. Thirteen of the world's 20 largest cities are coastal; 1/3 of world's population lives within 60 miles of a shoreline. As sea levels rise, in the absence of multi-trillion-dollar mega-engineering projects, cities like New York, Miami, and many others will need to relocate and rebuild. The National Oceanic and Atmospheric Administration has estimated that US coasts can expect a 10–12-inch sea level rise in the next 30 years, causing high tide floods to increase ten-fold and allowing storm surges to spread further inland. Already, Indonesia plans to move its capital city away from Jakarta, which is sinking. The island of Kiribati is expected to disappear by 2050; other areas at high risk of submersion are Tuvalu, Vanuatu, Kivalina (Alaska), and Male (Maldives).

Higher temperatures lead to the expansion of water, along with melting of the polar icecaps, glaciers, the Greenland ice sheet, and the greenhouse gas-laden permafrost, all resulting in a positive feedback loop of runaway temperatures. Sea levels have risen 10 inches since late 19th Century and could rise at least another 3 feet over 21st Century. A recent study concluded that the Greenland Ice Sheet's melting has passed the point of no return. The Arctic ice pack has lost 40% of its thickness compared with 1960. The Thwaites ("Doomsday") Glacier and West Antarctic ice sheet are undergoing irreversible collapse, which could cause up to 10 feet of rise in global sea level, causing catastrophic flooding worldwide. Nearly 1,000 icebergs are currently drifting south of 48th Parallel, threatening oil platforms and ships. Great Lakes ice coverage is down 71% over the last 40 years, Glacier National Park will likely require a name change before the end of the century, and the fabled Snows of Kilimanjaro have shrunk 82% since 1912 and may be gone within the next 20

years. Fifteen million people live in possible flood paths for glacial melting, which can be sudden and catastrophic if natural dams suddenly rupture. Inland, lakes and reservoirs are rapidly shrinking, putting major cities' water supplies at risk, drying up once productive farmland, increasing mega-fire risks, decimating native species, and in some cases exposing natural and manmade lake bottom toxins, which are dispersed widely by prevailing winds. The world's most important rivers, vital to transportation, agriculture and hydropower, are drying up.

Arctic and boreal forests are warming twice as fast as other parts of the world. Spontaneous fires are breaking out in newly exposed peat bogs, far from population centers and difficult to control. Beaches are losing so much sand to erosion that there is a global black market in sand to support the construction industry. Beach resorts and ski chalets are suffering significant economic losses. Global wine production has decreased and wine regions are in flux, affecting both small- and large-scale operations.

As global temperatures rise, the geographic regions subject to various infectious diseases expand, leading to more cases of malaria and other mosquito- and tick-borne viruses, such as dengue fever, yellow fever, Eastern Equine Encephalitis, Lyme disease, and Babesiosis. Primary amoebic meningoencephalitis, caused by the brain-eating parasite *Naegleria fowleri* (which thrives in warm lakes), was recently reported as far north as Minnesota. Permafrost and tundra melting could lead to outbreaks of anthrax, whose spores can lie dormant for decades, as well as a possible resurgence of the 1918 Spanish flu virus. Higher levels of CO2 favor growth of ragweed and other pollen-producing plants, thus worsening seasonal allergies and asthma.

Global warming also contributes to species loss, with current extinction rates 1,000 times the normal background rate. Rising carbon dioxide levels acidify the oceans, destroying plankton, the basis of the ocean's complex food chain, thus impacting all ocean creatures. Corals and kelp forests are dying. Oysters, useful for filtering water, are disappearing; jellyfish, the cockroaches of the sea, are flourishing. While habitat loss, a consequence of overpopulation and deforestation, is currently the number one contributor to non-aquatic species loss, global warming (currently the number 2 cause), is expected to overtake it by 2050.

The World Health Association calls global warming the greatest threat to human health this century. The Pentagon calls it an immediate threat to national security. Countries that export oil are more than 40 times more likely to be engaged in civil war than those that do not. The desire to keep oil flowing played a significant role in the first two Gulf Wars and continues to provide one rationale for the enormous military subsidies we donate to countries in the Middle East, such as Saudi Arabia and Egypt, functional dictatorships and sites of extensive human and women's rights violations. Incidentally, researchers have also noted that a one degree rise in average temperatures is associated with a 3% increase in violent crime.

The petroleum industry continues to rack up record-breaking profits, in part due to mergers squelching competition. Record-breaking profits of $219 billion in 2022 doubled the previous year's take. The world's most profitable company is Saudi Aramco at $105 billion, exceeding number 2 Apple at $95 billion. Exxon-Mobil and Shell were numbers 5 and 7 with $55 billion and $42 billion in profits, respectively.

Worldwide annual fossil fuel subsidies were estimated at $1 trillion in 2022. These subsidies massively exceed those going to renewable power generation, biofuels, and nuclear power. This amount does not include the other costs of fossil fuels related to climate change, health and environmental impacts, and military spending. Including such externalities, the unpaid costs of fossil fuels are upward of $5.9 trillion annually, or over $11 million per minute. If all benefits and subsidies were stopped, at least 1.6 million preventable deaths per year would be averted. To put it bluntly, our tax money funds a carnage of genocidal proportions.

The fossil fuel industry wields significant political power. Oil, gas, and coal companies spent $354 million in campaign contributions and lobbying and received $29 billion in federal subsidies over the 2016 election cycle, netting a spectacular 8,200% return on their investment in new tax breaks and subsidies. During the 2020 midterm elections, the fossil fuel industry spent at least $359 million on federal campaign donations and lobbying. Oil and gas interests spent about $124 million lobbying the federal government in 2022. While a decade ago, the industry argued that further extraction of fuels was necessary due to our dependence on foreign oil the United States is currently a net oil exporter, rendering this argument implausible. Rather, industry's goal is to

get fossil fuels out of the ground as quickly as possible to amass enormous profits.

Indeed, making money is the raison *d'être* of corporations, which are designed to prioritize making money for their shareholders over the welfare of their stakeholders, such as the community and the work force. Corporations, while internalizing profits for their shareholders and paying their CEOs exorbitant salaries, externalize the trillions of dollars of health care and environmental expenditures consequent to global warming and air pollution to taxpayers of this and future generations. Thus, any solution to climate change must involve holding corporations accountable for their actions and returning power to the people, especially those suffering most from such actions, which is usually the poor, women, and racial and ethnic minorities.

The fossil fuel industry's strategy mirrors that of the tobacco industry, which for decades denied and then minimized the serious risks of smoking. Despite their own scientists predicting rapid climate change for many decades, Exxon and other oil companies have influenced public policy and confused the general public through advertising and public relations campaigns, lobbying, political donations, support of corporate front groups, and funding of a few lapdog scientists who, contrary to the 99-plus percent of climate scientists who agree that global warming is unprecedented and man-made, continue to insist otherwise. Representatives from one group, the American Council on Science and Health, are frequently quoted in the mainstream press, despite holding a variety of anti-science, debunked opinions related to environmental science. Their former, long-standing executive director spent time in prison for Medicaid fraud, perjury, and obstruction of justice. The group referred to the "belief" that burning fossil fuels has caused global warming as pseudoscience and has criticized environmental scientists as "doomsayers" and "fearmongers."[2]

With U.S. public education in disarray and our test scores among the lowest in the industrialized world, polluting industries have sponsored environmental education programs, which cash-strapped schools have adopted, such as Exxon's "Energy Cube," which contains correct but deliberately obfuscating statements, like "Gasoline is simply solar power hidden in decayed matter," and "Offshore drilling creates artificial reefs for fish." International Paper's curriculum states, "Clear cutting promotes growth of trees that require full sunlight and allows efficient site preparation for the next crop." The American Coal Foundation's 4th grade lesson packet (published by Scholastic and entitled "The United States of Energy) omits mention of toxic waste, mountaintop removal, and greenhouse gasses. Just over a decade ago, the American Association of Petroleum Geologists awarded its Notable Achievement in Journalism prize to Michael Crichton for his novel, State of Fear, which denies global warming.

Until recently, only 50% - 70% of U.S. citizens believed in human caused global warming, giving us the lowest level of environmental awareness on the planet. While more do today, only about 2/3 believes our nation is not doing enough to combat climate change. Anti-science legislators call global warming a hoax (one perpetrated by the Chinese, according to former President Trump). Former Energy Secretary Rick Perry, who once promised to eliminate the agency he headed, claimed that climate scientists manufactured a crisis as part of a conspiracy to obtain research funding. And the proudly and profoundly ignorant Republican Senator James Imhofe, who cannot understand the difference between weather and climate, once brought a snowball to the Senate floor to argue that because it was snowing in February, climate change could not be real. Imhofe, who receives substantial financial contributions from the oil industry, has also blamed Hollywood elites and the United Nations for promoting the "myth" of global warming.

In 2004, the highly respected journal Science published an article examining coverage of global warming in the scientific and mainstream news media over the preceding decade. They found that of 928 articles in peer-reviewed scientific journals, none were in doubt as to the existence or cause of global warming. On the other hand, of 636 articles in the country's four leading newspapers (the New York Times, Washington Post, Los Angeles Times, and Wall Street Journal), 53% expressed some doubt as to the existence and primary cause of global warming. This was likely due to journalists having limited scientific training and their desire to appear "fair and balanced."

Unfortunately, we lost four years of valuable time between 2018 and 2022 under a pro-business president, a narcissistic, sociopathic, xenophobic, racist, ignorant, anti-science, misogynistic, admitted sex offender and sexual

predator, who continues to represent a national security risk, has acknowledged asking adversarial governments to interfere in our elections, and is the current front runner for the Republican nomination for president for 2024.[3] But for now, let's focus on his aggressively ecocidal actions, keeping in mind what they might portend under a possible second Trump presidency.

Former President Donald Trump strongly and irresponsibly supported coal and natural gas development and fracking and expanded drilling areas. Today, more than 17 million U.S. citizens live within one mile of an active oil or natural gas well. Two and a half million abandoned oil and gas wells litter our country, with 20-30 million worldwide polluting their surroundings (which often include local water supplies) and carrying the risk of explosion. Between 2000 and 2017, the nation's natural gas network leaked over 17 billion cubic feet of mostly methane gas, taking nearly 100 lives, injuring close to 500 people, forcing the evacuation of thousands, and costing $1.1 billion. Pipeline leaks and bursts happen more than once/day. Even so, the largest in U.S. history, the Deepwater Horizon marine spill of 2010, ultimately has had no long-term impact on British Petroleum's stock value.

Trump's de facto science advisor was Michael Kratsios, a 31 year-old with a political science degree and no scientific training. Trump appointed Robert Phalen, who said that children need to breathe dirty air to strengthen their lungs, to a scientific advisory board. The former president's first Environmental Protection Agency head, Scott Pruitt, was an anti-regulatory zealot who resigned under a cloud of ethics scandals. Pruitt's EPA overturned Obama's Clean Power Plan, which would have required power plants to reduce carbon emissions by 32% from 2005 levels by 2030, thereby preventing 3,600 premature deaths. His replacement, Andrew Wheeler, a former coal lobbyist, overturned the Stream Protection Rule, removing restrictions on coal companies dumping ash and mine waste into waterways, and defunded a health study of coal mining communities. Trump halted Obama-era rules designed to reduce methane emissions from oil and gas drilling and postponed more aggressive miles per gallon requirements for new cars and trucks.

Trump's lapdog agency heads demoralized government scientists by silencing them and suppressing scientific studies, thus damaging these agencies' credibility and discouraging young scientists from wanting to enter public service. By an extremely conservative estimate, research published in the prestigious medical journal, JAMA [4] calculated that Trump's anti-environmental agenda would lead to an 80,000 extra deaths per decade and respiratory problems for many more than 1 million people.[5]

Outside of the risks to humanity of nuclear and other weapons of mass destruction, there is no greater threat to human health or the stability of the planet than climate change. The current generation has caused this problem and failed to solve it. We are all guilty to varying degrees, whether through our personal habits, our support of unengaged and anti-science legislators, and our failure to raise our voices loud enough to demand immediate, massive changes to global energy policy and consumption. The health, environmental, and economic consequences of the potentially unrecognizable world we are leaving to our children and grandchildren will be epically disastrous.

Fortunately, there is some good news. The United Nations' International Panel on Climate Change and former Vice-President (and author of An Inconvenient Truth) Al Gore shared the 2007 Nobel Peace Prize. The World Bank will no longer finance oil and gas projects, and more than half of all US coal plants have closed or are committed to retiring. Ireland plans to divest of all fossil fuels, France will ban all oil and gas production by 2040. Sweden, Denmark, France, Hungary, New Zealand, and the UK have passed their carbon neutral targets into law, and Finland has pledge to become climate neutral. Lawsuits invoking climate change are increasing both in the United States and worldwide. At least 20 cities and states across the U.S. have filed lawsuits against the fossil fuel industry for the consequences of its misleading the public on climate change. For instance, New York city is suing the top five oil companies for their role in climate change; it is also divesting itself of billions of dollars in fossil fuel investments. Groups of American children and teenagers brought a federal lawsuit under the public trust doctrine accusing government of violating its duty to protect future generations from climate change.

The case was rejected by the Ninth Circuit Court of Appeals, but the group plans to appeal their decision and other lawsuits from young people are pending.

The Kyoto Protocol on Climate Change calls on nations to reduce greenhouse gas emissions, based on the scientific consensus that global warming is occurring and that it is extremely likely that human-made CO2 emissions have predominantly caused it. Short-sightedly, the United States does not support this treaty. The 2017 Paris Climate Agreement commits signatories to limiting global warming to 1.5 degrees Celsius above pre-industrial levels, a number necessary to avoid a planetwide ecological and humanitarian disaster.[6] The COP27 (Conference of the Parties of the United Nations Framework Convention on Climate Change #27) Summit resulted in an agreement to set up a loss and damage fund for the Global South, but optimism must be tempered by the fact that the $100 billion pledge to lower-income countries for climate change adaptation agreed on at COP26 has yet to materialize.

President Joseph Biden's Inflation Reduction Act of 2022 includes the largest federal climate change investment in American history. This is part of a series of measures designed to meet our pledge under the Paris agreement to reduce greenhouse gas emissions by 50% by 2030. Biden also just created a new Office of Environmental Justice in the White House. The administration has strengthened regulation of hydrochlorofluorocarbons and methane and set lofty goals for electric vehicles and clean electricity, but needs to do more to ramp up clean electricity standards and tax carbon emissions. His Department of Interior suspended its controversial oil and gas leasing program in the Arctic National Wildlife Refuge in the summer of 2021, stopped production of the Keystone Pipeline, and said it would issue new rules to block oil and gas leases on more than 13 million of the 23 million acres that form the National Petroleum Reserve in Alaska. However, the administration has auctioned off large swaths of federal waters in the Gulf of Mexico for oil drilling and approved the huge Alaskan Willow oil drilling project, despite intense opposition. To obtain the vote of one U.S. senator and thus avoid a government default, a recent bill suspending the debt ceiling (signed by Biden) included approval of all permits for a West Virginia natural gas pipeline and curtailed environmental reviews of the project. Biden's efforts have been stymied somewhat by a Republican House and a divided Senate, along with a conservative Supreme Court that last year curbed the Environmental Protection Agency's ability to regulate carbon emissions from power plants, among other limits.

Unfortunately, efforts by the US and the rest of the world are too little, but hopefully not too late. The future does not have to bring an apocalyptic hellscape. The problem of climate change is solvable, with enough brainpower and money, along with social and political will. If our country could harness the intellectual and financial resources to send men to our moon, 240,000 miles away and revolving around our planet at 2,800 miles per hour, and return them safely to the earth, which itself rotates at 1,000 miles per hour while speeding around the sun at 18 miles per second, we can certainly reverse climate change.

This will require increased public education, elimination of fossil fuel subsidies, a shift to a green economy (part of the Green New Deal, which President Biden only partially supports), and major changes in our transportation and consumption habits. Clean energy jobs pay better and are less dangerous than fossil fuel sector jobs. Not to minimize the consequences for those working in fossil fuels, who might require some retraining for clean energy jobs, there are 25% more professional dancers and almost 5 times as many professional bowlers as coal miners in the United States, yet these professions have not been aggressively courted by politicians. The cost of solar, wind, and hydropower are coming down, and when subsidies and externalities are considered, renewables make economic sense. And while some companies are pursuing biofuels, carbon capture and storage (or reuse), atmospheric modification through cloud seeding, and even solar reflection to limit climate change, these technologies have their own inherent risks and are likely unsustainable and/or too expensive or impractical.

Almost 100 years ago, the inventor of the lightbulb, Thomas Edison, said: "I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that." And while

some support increasing nuclear power, which they claim is safe, costs are prohibitive, accidents still possible (as we saw in Fukushima, Japan in 2011), and safe, long-lasting storage of radioactive waste cannot be guaranteed. The only safe nuclear reactor, at least for the next 4.5 billion years, is the one 93 million miles from earth which generates abundant solar energy.

Many of us have been inspired by courageous teenage activist Greta Thunberg, who has bluntly confronted world leaders, blaming them for their inaction. Her passionate, righteous anger has helped to agitate young people worldwide. Thunberg has adopted the mantra of activist Angela Davis, who said, "I am no longer accepting the things I cannot change. I am changing the things I cannot accept." Protests and individual and group lobbying of recalcitrant legislators at the local, state, and national level can make a difference.

Finally, it is incumbent upon all of us to demand change and to hold our government accountable, for as Edward R Murrow warned, "A nation of sheep will beget a government of wolves." We must not underestimate the power of citizens to effect revolutionary change. Remarkably, our nation's historical low voter turnout ranks in the bottom ¼ compared with other democratic countries. Furthermore, the rich vote more often than the poor, whites more than ethnic minorities, and the elderly more than younger people, although this has begun to change. Award-winning writer Alice Walker wrote, "The most common way people give up their power is by thinking they don't have any." So please educate yourself and vote in every election. When you vote, ask yourself not just how a particular candidate or initiative will benefit you, but how your vote might benefit your community, your country, the world, and future generations. Each vote you cast helps to determine your legacy.[7]

Reference

1 While there were some drops in pollution during the coronavirus pandemic, consequent to more people working from home and thus lower transportation-related energy consumption, overall trends are likely to continue.

2 For more on the ACSH, see Donohoe MT. Corporate front groups and the abuse of science: the saga of the American Council on Science and Health. Z Magazine 2007 (October):42-6. Available at https://zcomm.org/zmagazine/corporate-front-groups-and-the-abuse-of-science-by-martin-donohoe/. Referenced version available at http://phsj.org/wp-content/uploads/2007/11/corporate-front-groups-abuse-of-science-with-background-and-refs.doc. Open-access slide shows on the ACSH and corporate malfeasance and public health can be found on the Public Health and Social Justice website at https://phsj.org/wp-content/uploads/2019/02/Confronting-Pseudoscience-and-Threats-from-a-Corporate-Front-Group-The-American-Council-on-Science-and-Health-2.ppt and https://phsj.org/wp-content/uploads/2019/02/Corporate-Control-of-Public-Health-Case-Studies-and-Call-to-Action.ppt, respectively.

3 Donohoe MT. Complicit. Social Medicine 2020;13(1):1-7. Full text pdf available at https://www.socialmedicine.info/index.php/socialmedicine/article/view/1123 (and in Spanish at (https://www.medicinasocial.info/index.php/medicinasocial/article/view/1147).

4 Cutler D, Dominici F. A Breath of Bad Air: Cost of the Trump Environmental Agenda May Lead to 80 000 Extra Deaths per Decade. JAMA. 2018;319(22):2261-2262. Available at https://jamanetwork.com/journals/jama/fullarticle/2684596.

5 Add to this Trump's appallingly anti-science, anti-public health, and negligent response to the coronavirus pandemic, which contributed significantly to the over 1 million deaths which occurred in the U.S., which was affected more than almost any other nation. The damage to the US scientific enterprise and reputation of public health agencies such as the CDC will take decades to repair. Both Scientific American and the New England Journal of Medicine come out strongly against another Trump presidency.

6 After winning the electoral college (but not the popular vote) and becoming president, Donald Trump withdrew the U.S. from the Paris Agreement, leaving it as only country opposed, but

upon taking office, President Joseph Biden re-committed the United States to the Agreement.

7 For further information on global warming, corporate malfeasance and public health, pseudoscience, and many other topics, visit the Public Health and Social Justice website at http://www.publichealthandoscialjustice.org or http://www.phsj.org, where you can also find open-access slide shows, articles, and links to over 1,000 organizations. The Environmental Health subpage at https://phsj.org/environmental-health/ includes information on what you can do to minimize your own carbon footprint, along with how to become more involved in the fight against climate change.