

UPHE opposes the US Forest Service's "fuels reduction" strategies

"Thinning forests to protect from wildfire smoke makes no more sense than thinning your brain to protect you from Alzheimer's." --Dr. Brian Moench, UPHE President

Utah Physicians for a Healthy Environment (UPHE) is an organization of health care professionals concerned about the adverse impacts of environmental degradation on public health. We became concerned about the human health consequences of smoke from intentional, or "prescribed" and "slash pile" burns, when supporters showed us pictures and videos of what state and federal agencies are doing in the Wasatch Mountains. We are not forest ecologists. However, in the era of an accelerating climate crisis and an obvious global wildfire epidemic, how forests are managed has become a major public health issue, and for that reason we were compelled to investigate the issue and to take a position. And as with medical research, we strive to align that position with the best science and the opinions of the most trustworthy experts.

1. US Forest Service (USFS) research is clouded by obvious conflict of interest

The USFS's mandate includes acting as a facilitator for the logging industry, and historically it has consistently played that role. It promotes the timber and wood products industry with videos like [this](#), including burning wood for heat, the most polluting way possible to heat a home ([and more carbon intensive than using coal](#)), while simultaneously claiming thinning creates healthier forests. The agency receives some of its funding selling trees to the timber industry. This obvious conflict of interest is institutionalized, and warrants suspicion towards USFS research that finds commercializing forests makes them healthier.

Consider these parallels. If the FDA heavily promoted Prozac, received revenue from Prozac sales, and published research showing its efficacy, the conflict of interest inherent in that research would be obvious. If the BLM made videos promoting quarter pounders, received a small percentage of Big Mac sales, and published research showing that cattle grazing and beef consumption is good for you and the planet, a reasonable person would question the veracity of the research. If the US Dept. of Agriculture had a website promoting Pop Tarts, the public would have every reason to be skeptical of research funded by the USDA that extolled the health benefits of Pop Tarts and other highly processed foods.

The Forest Service is skilled in the language of euphemisms. Terms like "logging," "thinning," "clear cutting," "chain saws," and "burning," carry disconcerting connotations. The USFS will never say they use "bull dozers," instead they employ "mechanical fuels treatments. They use comforting or even medical terms like "prescribed," "treatment," "fuels reduction," "habitat enhancement," "sustainable," "resilient," "good fire," "restoration," and "overstory removal." These are green washing terms.

The USFS uses language like this on their website, and in promotional films.

["Wood is good. Wood products build the way to healthy forests of the future."](#)

“...sustainably harvesting wood to make wood products is good for the health of forests.”
“How a forest is like a garden...Much like a garden, forests need to be meticulously maintained. Thinning, for instance, is when trees are harvested from a dense, crowded forest. Loggers remove certain trees in places where the competition for light and nutrients is intense. Like weeding a garden, thinning leaves a population of healthy, vigorous trees that will grow healthier and stronger as a result.” Comparing millions of acres of forests to a garden that needs weeding is ecological nonsense.

Wood may be a commodity necessary in modern society, but that fact has nothing to do with whether harvesting wood is actually “good for the forests.” For the USFS to coningle those goals raises a red flag about any research that would rationalize timber harvesting as good for the forests. If USFS sponsored research is untainted and scientifically valid, it should at least generally agree with independent research. That does not appear to be the case.

We reached out to forest ecologists, researchers, and experts not connected to the USFS and asked them their opinion of the strategy of the USFS’s campaign of landscape scale` “fuels reduction” to reduce wildfire risk and “restore forest health.” In the position statement below we borrow their opinions on forest management.

2. “Fuels reduction “ forest management is climate malpractice.

Proponents of “fuel reduction” strategies are either ignorant of the climate consequences, or are engaged in cynical climate denial every bit as much as the fossil fuel industry.

Even though the catastrophic fires in LA County were not forest fires (they were urban fires) they are just the latest example of human tragedy, suffering, and environmental and economic disaster being wrought upon communities throughout the globe by the climate crisis. At the same time as the LA fires, most of the US was facing severe, dangerous cold from a “polar vortex,” with snow in Florida, Texas, and Louisiana, including eight inches of snow in New Orleans. This is another increasingly frequent weather extreme phenomenon of North American winters also likely [connected to the climate crisis](#).

In the case of the LA County fires, another recently recognized climate factor [played a large role](#)—hydroclimate volatility, i.e. abrupt, large or frequent vacillation between precipitation extremes. [“The extreme weather shift over the last two years in Southern California is one of many such dramatic swings that scientists have documented worldwide in recent years.”](#) The unusually wet winters of 2023 and 2024 stimulated the growth of vegetation the region, followed by record breaking heat and dry weather since then that desiccated vegetation in Los Angeles County, leaving the area highly vulnerable.

The science and empirical evidence behind the global warming/climate crisis is indisputable. Last year (2024) was globally the [hottest year](#) ever. Warning from climate scientists are [increasingly dire](#). The World Meteorological Organization’s [State of the Climate 2024 Update](#), released in Nov. 2024, once again issues a Red Alert:

...at the sheer pace of climate change in a single generation, turbo-charged by ever-increasing greenhouse gas levels in the atmosphere. 2015-2024 will be the warmest ten years on record; the loss of ice from glaciers, sea-level rise and ocean heating are accelerating; and extreme weather is wreaking havoc on communities and economies across the world.”

Any public policy that accelerates this trend is contrary to the science, irrational, and a betrayal of humanity across the globe. The climate crisis was called the greatest threat to global public health by [more than 200 medical journals](#) in 2021. It is also well understood that if there is still a window for averting an accelerating climate disaster in future decades, triggered by multiple irreversible tipping points, that [window is very short](#), now only [about five years](#).

But the climate crisis is also the dominant threat to our forests, and will grow even more so in the future. Any policy however well-intended or otherwise meritorious, is irrational unless it prioritizes above all else, its impact on climate, especially the short-term impact.

That means, for example, even policies intended to improve certain wildlife habitat, but require forest thinning, must be suspended if they also worsen the short-term atmospheric carbon equation. Even policies that may have long term climate benefit, like removing conifers to presumably make room for more fire resistant trees like aspen, must be suspended simply because of their immediate impact on atmospheric carbon.

The climate crisis was called the greatest threat to global public health by [more than 200 medical journals](#) in 2021. Beyond destroying forest carbon absorption, burning the logged biomass releases all that pollution and carbon into the atmosphere immediately.

In 2021, over 500 scientists signed an [open letter](#) to President Biden and other world leaders urging them to reject the pseudo solution of encouraging harvesting and burning wood biomass in climate mitigation strategies and warned that “this burning of wood will increase warming for decades to centuries.”

Cutting down one tree immediately ends its carbon absorption. Burning that tree in a slash pile, a fire place, or a pellet stove sends all that carbon into the atmosphere immediately. Cutting down a million trees for virtually any reason cannot be depicted as anything other than climate malpractice.

2. Is Forest Management Required for Forest Health?

The narrative that our forests are tinderboxes because they are massively “overgrown and unhealthy” due to decades of fire suppression, and “fuel reduction treatments,” i.e. logging, are the cure, is largely a myth promoted by the timber industry, politicians, and their allies in the USFS. The myth has been debunked by numerous independent experts, both in this country and abroad.

USFS studies claiming historical forests were much less dense than today have been [heavily criticized](#) by independent researchers. While there may be an overall a comparative increase in the number of small trees, there are fewer large trees, and [less total biomass](#) due to decades of logging, and therefore less carbon stored in most of our forests than they would otherwise naturally have.

The USFS [claims](#) that thinning to mimic historic density allows remaining trees to survive drought better because they have less competition for sunlight, moisture, and soil nutrients. Other research shows it's far from that simple. Canadian researchers found that the benefits of thinning were [limited to "a few insects and pathogens,"](#) and there were negative effects on "root rot severity," and that "thinning should not be promoted as a tool that will universally increase the resistance and resilience of forests." [Another study](#) showed that the death of a tree can enhance or suppress the growth trajectory of a neighboring tree depending on the size of the neighbor and the species. In other parts of the world thinning forests [decreases tree species diversity](#), and decades later thinned forests still have [decreased stem density and basal area](#).

[Emerging research](#) shows logging damages remaining trees, and does not "restore" forest health. Through underground mazes of roots, fungi, and bacteria called "mycorrhizal networks," trees share resources like water and nutrients, helping each other survive stresses. Forest thinning may reduce competition for water and sunlight and initially allow more growth, but it also heats up and dries out the forest floor, and disrupts these mycorrhizal networks leaving remaining trees more vulnerable to disease, pest attack, wind, and drought, [shortening their life span](#). In particular when the largest, oldest trees are cut down, it diminishes the survival rate of younger trees.

Forest trees provide the same benefits as urban trees, such as stabilizing local climate by [transferring heat](#) from land surfaces to higher in the atmosphere and buffering temperature extremes. On a global scale, forests reduce earth's temperature about [0.5 degrees C](#). Trees release water vapor and biogenic volatile organic compounds (BVOCs) which [promotes cloud formation](#), and [contributes further](#) to cooling and formation of condensation nuclei, more cloud formation, and ultimately precipitation.

Because prescribed burns are performed during late fall and early spring, when snow pack is still in the Western mountains, the black carbon from prescribed burn smoke lands on snow pack reducing its albedo, warming the snow, [accelerating snow pack loss](#) in the West, and accentuating the impact of our already crippling drought. The solar energy absorption of black carbon nanoparticles, is the [second largest](#) contributor to the climate crisis after CO2. Intact forests play an enormous role in sustaining global and regional terrestrial water cycles.

3. Do "fuel reduction" strategies decrease wildfire risk?

The extent and interconnectedness of forest root systems was illustrated by the largest, most destructive wildfire in New Mexico's history, the April, 2022 Calf Canyon fire that burned 341,471 acres and lasted five months. It started when slash piles burned in January of that year

by the USFS had not been fully extinguished, and months later, in a dry spring, strong winds reignited them. Fire had [spread underground along tree roots](#) eventually reaching the surface and ignited when winds fanned the flames.

A [USFS review](#) of the Calf Canyon disaster drew these conclusions:

1. “Execution of the mechanical thinning prescription resulted in an open canopy that increased the amount of solar radiation and in-turn increased the rate of snowpack sublimation and snowmelt. In addition, the open canopy may have increased post-thinning windthrow that increased surface fuel loading significantly between thinning and pile burning treatments.”
2. Climate changes have narrowed the window for “safe” prescribed and slash pile burning, meaning there is a highly likelihood of those piles not being burned in time.
3. Converting live trees to dead trees by cutting them down increases their ignition risk.

The USFS claims that nationally less than 1% of their prescribed burns escape. But even if that statistic is true, more telling are these statistics. In the spring of 2022, three wildfires were ignited in the Santa Fe National Forest by three separate USFS escaped prescribed burns. In the Santa Fe National Forest during the past 25 years, over 784,000 acres have burned by wildfire, and [almost 435,000 acres were burned due to escaped prescribed fire ignited by two federal land management agencies](#). Just over 253,000 acres burned by all other human-caused fires. Less than 97,000 acres were burned due to lightning strikes.

In these two huge escaped USFS prescribed burns, entire communities were forever destroyed, including 900 structures, among them 340 homes, thousands of people were displaced, and a bucolic way of life was forever uprooted. Three people died from post-fire flooding. The cost of recovery efforts will exceed \$5 billion.

Heavy equipment often damages trees that are left after a “thinning.” [Trees within 10.5 m](#), are at particular risk for collateral damage and mortality.

The most widely cited forest ecologist in the world, [Dr. David Lindenmayer](#), author of 48 books on forests, says, [“logged forests always burn at greater severity than intact forests.”](#) The climate crisis has become [the main driver](#) of Western forests’ new fire vulnerability. Fire frequency, intensity, speed, and ultimate scale of destruction are directly related to persistent drought, abnormally high temperatures, wind penetration, and human activity, not tree density or [“excessive fuels.”](#) Two of those factors are primarily [climate related](#), and forest thinning increases all four on a local level.

Beyond that, [daily fire weather](#) (therefore climate) is the most important predictor of fire severity, followed by the age of the forest (older forests were less vulnerable). Industrial plantation forestry, with spatially homogenized trees is also associated with increased fire severity, but pre-fire forest biomass is not an important predictor. Furthermore, dead trees left standing can actually [reduce wildfire severity](#).

Forest management like prescribed burns and thinning, usually require road building and skid trails leaving lasting ecosystem damage: soil compaction, surface erosion, increased stream sedimentation, degraded water quality and aquatic habitat, reduced biodiversity, spread of invasive vegetation, and suppression of forest regeneration. [Over 89%](#) of forest fires are human caused, and roads invariably increase human presence in the forest, meaning ultimately more fires. Furthermore, it is usually human-ignited fires that start in or near populated areas. Of human caused wildfires, [95% occur within half a mile of a road](#). Only 3% start in wilderness, backcountry areas. [Over 53%](#) more wildfires occur within 200-meters of a road than would be predicted by a random distribution. Nor do roads serve as effective fire breaks.

The most destructive fires are those that spread [abnormally rapidly](#). Thinning and prescribed burns further open the door for invasive grasses, like [cheat grass](#), which is highly flammable but also [fire tolerant](#). The authors of a [recent study stated](#):

“It is also known that invasive grasses can drive increases in size, occurrence, and frequency. Because grass-fueled fires are some of the fastest, it may follow that fire speed may have also increased where vegetation transitions have occurred, for example, from forest or shrubland to invasive grassland.”

Slash pile burning opens another door for invasive grasses to take hold. What is left after the burn is essentially a mini superfund site, with sterilized soil, and a battery of toxic chemicals. [“The extreme temperatures also retard native establishment.”](#)

In the US, six different invasive grasses have been tied to a [150% increase in fire frequency](#) compared to uninvaded areas. One invasive grass now spreading in Oregon, *Ventennata*, has created fuel loads [50 times greater](#) than in areas free of the species

The chance of wildfire encountering a thinned area is only about [1% a year](#). After one year, any wildfire reduction influence will steadily diminish. It typically takes only 2-3 years for the flammable biomass on a prescribed burn site to return to or exceed the amount pre-burn, depending on precipitation. Here is a time lapse video of forest regrowth over only two months after a prescribed burn in Georgia.

<https://shorturl.at/6UfB1>

Regrowth would not be as quick in the drier West, but the issue is still the same over a longer time frame. Therefore, for numerous reasons, forest treatments can enhance fuels and fire probability unless repeated every year or two, a completely unrealistic schedule.

Throughout western forests, including Utah’s Wasatch and Uinta Mountains, thousands of slash piles sit waiting to be burned, presumably during late fall or early spring when the risk of intentional spread is at its minimum. But many of them will still be there during the hot summer, the peak of fire season. If some of the rationale for forest thinning and prescribed burns is to reduce “ladder fuels” that can ignite the forest canopy from the forest floor, the height and scope of these slash piles seem a contradiction of that rationale. If an ignition source throws a spark into one of these slash piles in the heat of summer, “fuels reduction treatment” can be

transformed into a concentrated new fuel source, drier, higher, and in some circumstances more dangerous than underbrush used to create it.

Even a USFS [sponsored study](#) concluded: “Extreme environmental conditions...overwhelmed most fuel treatment effects...This included almost all treatment methods, including prescribed burning and thinning...Suppression efforts had little benefit from fuel modifications.”

A long list of other research that found “fuels treatments” like thinning and prescribed burns do not decrease wildfire severity and risks can be found [here](#).



As the climate continues to warm, the risks of uncontrolled prescribed burning will also increase.

Any policy however well-intended or otherwise meritorious, is irrational unless it prioritizes above all else, its impact on climate, including the short-term impact. That means, for example, policies intended to improve certain wildlife habitat, but require forest thinning, must be suspended if they also worsen the short-term atmospheric carbon equation. Even projects intended to replace more wildfire susceptible tree species like conifers with more resistant species like aspen over the long term, will have a negative effect on the short-term carbon equation, and must therefore be suspended. For virtually any public policy that impacts our

climate, those climate consequences, especially those with immediate impact on atmospheric carbon, like prescribed burns and forest thinning must be suspended.

Thinning and prescribed burns are associated with [high forest carbon storage losses](#). They result in a [net tree mortality](#)—i.e., they kill more trees and carbon storage vegetation than they prevent from being killed, and therefore they only add to the climate crisis at the worst possible time.

4. Direct public health consequences

Live trees are pollution sponges whether in a forest or urban setting. They [sequester particulate pollution](#), absorb ozone, carbon monoxide, nitrogen oxides, and ultrafine particulate pollution through the [same stomata](#) they absorb CO₂. When those trees are lost, so is their ability to absorb pollution.

Burning “slash piles” of thinned trees and branches, as the USFS and BLM are doing throughout the West, is an assault on public health. For multiple reasons wood smoke is the [most toxic type](#) of air pollution the average person ever inhales, whether it comes from a fireplace, wood stove, a wildfire, or a prescribed burn. VOCs emitted from wood combustion are [more reactive](#) than VOCs from industrial emissions.

Although research is somewhat conflicting, compared to flaming combustion, smoldering combustion, i.e. from lower temperature, higher moisture fuel, typical for prescribed burns and slash pile burning, [emits more PM2.5](#) per unit of fuel consumed.

The EPA calculates that, nationwide, almost as much total PM_{2.5} is generated by prescribed burns as from wildfires. In fact, in the Southeastern US, prescribed burns are responsible for [much more PM2.5](#) than wildfires. We have seen no research to support the assumption that landscape scale prescribed burns reduce the total amount of biomass smoke pollution the public is subjected to. In fact, most research shows the opposite for two reasons. 1. Prescribed burns are largely ineffective in stopping high intensity wildland fires and therefore prescribed burns only add more pollution to the public’s exposure (see above section). 2. In general, lower intensity burns with incomplete combustion, like prescribed burns, are [more toxic](#), including producing [more dioxins](#), than an equal amount of biomass burned at higher intensity.

5. “Fuels reduction” projects are often paired with massive herbicide use.

The USFS believes it is acceptable to [use herbicides](#) on a landscape scale if doing so allows them to meet their wildlife management objectives. Forest managers promote herbicide use as an [“integral part”](#) of modern forestry practice because they claim it [increases forest wood volume](#) and even biodiversity. But ten years after their use, herbicides (typically glyphosate) can still be shown to [reduce plant species diversity](#) in the understory. But the human health impacts are far more alarming, and are usually dismissed or [completely misunderstood](#) by those who make decisions on their use in forestry.

As biologic poisons, pesticides (herbicides and insecticides) have always been recognized as a hazard to human health, and their use has been controversial since at least 1962 with the publishing of Rachel Carson's *Silent Spring*. The idea that widely distributing biological poisons would leave beneficial plants, animals, and humans unharmed never made scientific sense, and in recent decades, a growing body of research confirms they do damage to far more of the biological world than just pests. But now the danger of the use of pesticides is likely exponentially greater.

A second dimension of concern emerged in the 1990s with research that showed many pesticides (including the most commonly used herbicides containing glyphosate) were also endocrine disruptors, i.e. they mimicked or antagonized critical human hormones at extremely low dose exposure, adding an entirely new level of scientific evidence of their harm to human health. Endocrine disruptors have been identified as causing a wide spectrum of harm, especially at the earliest, most critical stages of human development; in utero, infancy, and childhood. Clinical consequences include developmental disorders, reproductive toxicity, multiple cancers, immunosuppression, and damage to the brain and nervous system.

Because of this research, in 1996, Congress mandated EPA test all pesticides for endocrine disruption potential. Twenty-nine years later that still has not happened and [EPA's regulatory process largely ignores the issue](#). Independent researchers meanwhile have strengthened the evidence of harm from endocrine disruptors. Glyphosate is still the most commonly used herbicide, despite increasing resistance developing in many plant species. It is now recognized as an [endocrine disruptor](#). A detailed case against the use of glyphosate can be found [here](#).

A third dimension of public health harm from pesticides has emerged in the last few years that almost certainly dwarfs the previous two. Scientists from throughout the world are finding [PFAS in many of the most commonly used pesticides](#). The presence of PFAS can be both intentional and inadvertent, i.e. intentionally incorporated into the active ingredient, as inactive ingredients used to enhance efficacy, or from leaching from storage containers.

Last year the CDC made an unprecedented recommendation that physicians consider testing their patients' blood for PFAS or "forever" chemicals. That they have never made any such recommendation for any other toxic chemicals speaks volumes about the unprecedented danger of these chemicals. In 2022, EPA made stunningly strict drinking water guidelines for forever chemicals; for the two main categories [.02 and .004 parts per trillion \(ppt\)](#). To give that a visual context, that is the equivalent of 1 drop of water in a lake the size of six Rose Bowl stadiums, and one drop of water in a lake the size of 30 Rose Bowl stadiums.



Then in April last year EPA made enforceable, nationwide drinking water standards for forever chemicals that are so strict it means EPA essentially believes there is [no safe level](#) of PFAS exposure. They made the standard equal to the [detection capability](#) of current technology, i.e. 4 ppt (parts per trillion).

Reflecting growing worldwide alarm in the scientific community, a pollution researcher at the UK's Liverpool John Moores University, Patrick Byrne, said PFAS are [“probably the greatest chemical threat the human race is facing in the 21st century.”](#) [Twenty-nine states](#) have adopted at least some laws to protect their residents from PFAS in consumer products and more is being planned.

Global contamination with PFAS now intersects with pesticide use because the evidence is overwhelming there is wholesale contamination of pesticides with PFAS chemicals, and many pesticides break down into still toxic, [short chain PFAS](#) type chemicals. [Seventy percent of pesticides](#) introduced to the market since 2015 qualify as PFAS compounds. As a former EPA scientist, Kyla Bennett [said](#), “If the intent was to spread PFAS contamination across the globe there would be few more effective methods than lacing pesticides with PFAS.”

There is already widespread PFAS pesticide contamination of every component of the global environment, including [drinking water and the food supply](#). Nearly [100% of humans](#) carry PFAS in their blood in very disturbing amounts, including newborns, and pesticides are a major reason. Women, fetuses, infants, and children are [more susceptible](#) to the health hazards of pesticides and PFAS. European scientists said, “The extent of this [contamination is shocking](#). It is a result of political failure at many levels.”

Pesticide use in forested areas is largely unrestrained, and decisions about mass spraying are made by private contractors, lumber companies, and government agency employees who have no expertise in the health consequences of the products they are exposing the public to. This lack of oversight is irrational, and it is now wholly unacceptable. There is strong evidence that the mass use of pesticides is now a serious, global public health threat on an unprecedented level because

of endocrine disruption and now PFAS contamination. Indeed these extremely hazardous chemicals are likely found in the emissions of pellet combustion.

5. Impact on water cycle

Forest trees provide the same benefits as urban trees, such as stabilizing local climate by [transferring heat](#) from land surfaces to higher in the atmosphere and buffering temperature extremes. On a global scale, forests reduce earth's temperature about [0.5 degrees C](#). Trees release water vapor and biogenic volatile organic compounds (BVOCs) which [promotes cloud formation](#), and [contributes further](#) to cooling and formation of condensation nuclei, more cloud formation, and ultimately precipitation. Thinning forests in the Wasatch and Uinta Mountains will adversely affect the regional water cycle.

Because prescribed and pile burns are done during late fall and early spring, when snow pack is still in the Western mountains, the black carbon from prescribed burn smoke lands on snow pack reducing its albedo, warming the snow, [accelerating snow pack loss](#) in Utah's mountains, accentuating the ongoing drought, and adding to the stress on forest trees. The solar energy absorption of black carbon nanoparticles, is the [second largest](#) contributor to the climate crisis after CO2. Intact forests play an enormous role in global and regional terrestrial water cycles. Cutting down trees on a large scale for any reason reduces the ability trees have to augment precipitation in the West.

6. Diversion of resources

Strategies focusing on individual home hardening in the wild/urban interface, do [help protect structures](#) by reducing fire risk. But thinning the forest miles away from structures and settlements is not a strategy to preserve forest health or reduce wildfire risk, and diverts resources away from effective community protection.