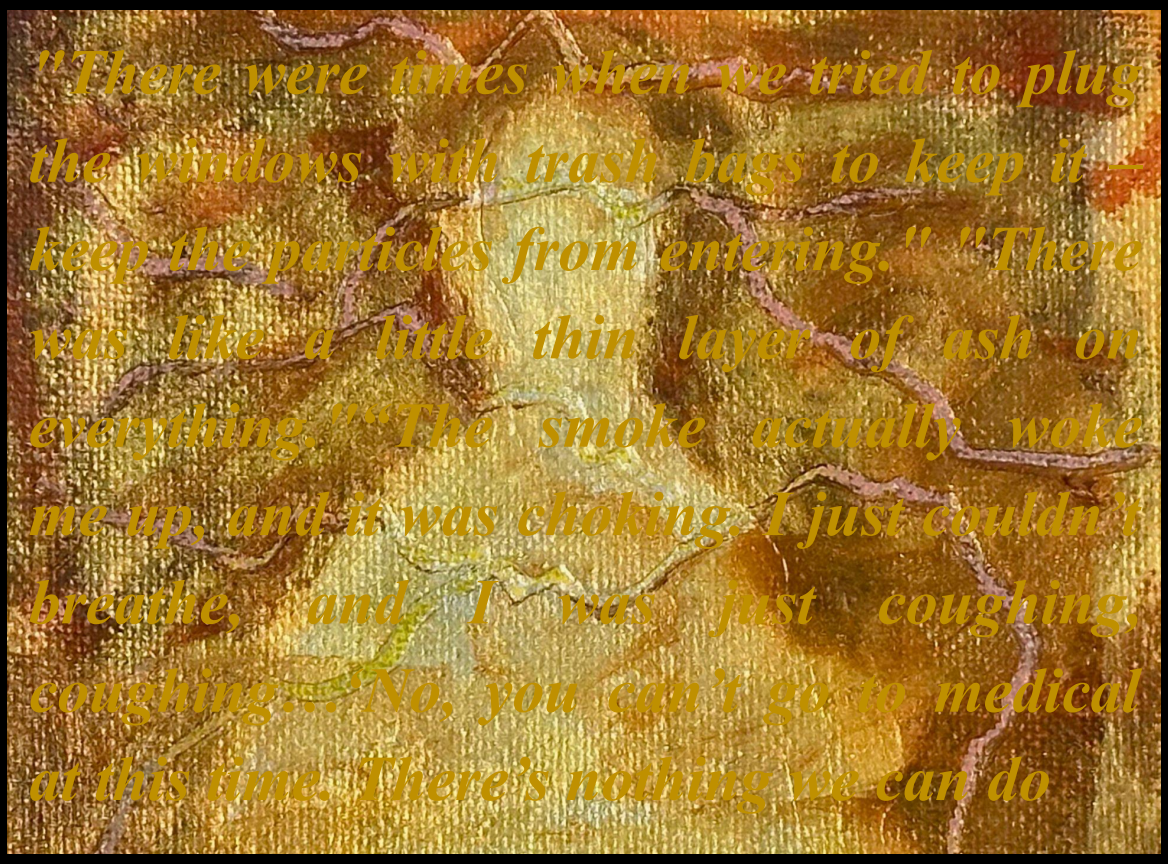
Air Pollution

Four Mile Correctional Facility

COLORADO



PRISON AGRICULTURE LAB

Meadhbh Gannon, 2025

Four Mile Prison

Four Mile Correctional Center (FMCC) is a minimum security men's prison tucked away in Cañon City, Fremont County Colorado. The facility is located within the East Cañon Complex alongside Arrowhead Correctional Center, Centennial Correctional Facility, Colorado State Penitentiary, Fremont Correctional Facility (Center For Land Use, n.d.). These facilities are surrounded by farmland run by Colorado Correctional Industries (CCI) with farming programs that serve as vocational training opportunities, idleness reduction and cost saving purposes. In the past decade, a number of CCI farming and manufacturing operations have been discontinued, among them their tilapia and cheese productions. In 2015, multinational supermarket Whole Foods committed to stopping the sale of inmate produced tilapia and cheese sourced from Colorado Correctional Industries prison labor (BBC, 2015). Active agricultural operations at FMCI include hay crops, composting and game bird cultivation for sale on the open market (Colorado Correctional Industries, n.d.). While there has been little mention of their domesticated water buffalo herd since reports in 2013, some recent sources suggest the prison does still manage roughly 250 buffalo that are cared for by inmates (Wilde, 2025).

Figure 1 Satellite imagery of Four Mile Correctional Facility and surrounding area. From *Satellite Image Gallery*, by Prison Agriculture Lab, n.d. Used under fair use for educational purposes.

Fremont County has long been considered Colorados Correctional Capital, with both state and federal institutions represented within its borders. Over 1600 jobs within the county can be attributed to the correctional facilities with an entire page on the Fremont government website dedicated to the prison industry as a defining characteristic of the county (Fremont County, Colorado, 2025). There is even a museum located in Cañon City called "Museum of Colorado Prisons." While not the first location that comes to mind with national air pollution concerns, Colorado has seen a rise in wildfires and smoke pollution over the past decade. This combined with the particle pollution generated by specific types of farming activities presents potential health risks to incarcerated individuals and workers.

Colorado Air Quality

Forecast - Air Quality Summary

Tuesday	Ozone	Fine Particulates	Carbon Monoxide	Nitrogen Dioxide
Denver - Boulder	MODERATE	MODERATE	GOOD	GOOD
Colorado Springs	MODERATE	GOOD	GOOD	NOT AVAILABLE
Ft. Collins	MODERATE	MODERATE	GOOD	GOOD
Greeley	MODERATE	MODERATE	GOOD	GOOD
Grand Junction	MODERATE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Pueblo	MODERATE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Aspen	MODERATE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Colorado River Valley	GOOD	UNHEALTHY for sensitive groups	NOT AVAILABLE	NOT AVAILABLE
Four Corners Area	GOOD	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Lamar	NOT AVAILABLE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
San Luis Valley	NOT AVAILABLE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Steamboat Springs	NOT AVAILABLE	UNHEALTHY for sensitive groups	GOOD	NOT AVAILABLE
Telluride	NOT AVAILABLE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Wednesday	Ozone	Fine Particulates	Carbon Monoxide	Nitrogen Dioxide
Denver - Boulder	MODERATE	MODERATE	GOOD	GOOD
Colorado Springs	MODERATE	MODERATE	GOOD	NOT AVAILABLE
Ft. Collins	MODERATE	MODERATE	GOOD	GOOD
Greeley	MODERATE	MODERATE	GOOD	GOOD
Grand Junction	MODERATE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Pueblo	MODERATE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Aspen	MODERATE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Colorado River Valley	GOOD	UNHEALTHY for sensitive groups	NOT AVAILABLE	NOT AVAILABLE
Four Corners Area	GOOD	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Lamar	NOT AVAILABLE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
San Luis Valley	NOT AVAILABLE	MODERATE	NOT AVAILABLE	NOT AVAILABLE
Steamboat Springs	NOT AVAILABLE	UNHEALTHY for sensitive groups	GOOD	NOT AVAILABLE
Telluride	NOT AVAILABLE	MODERATE	NOT AVAILABLE	NOT AVAILABLE

Figure 2. CO Dept of Public Health Air Quality summary, CDPHE, n.d.

The most commonly tracked air quality indicators in Colorado include Ozone, Fine Particulate Matter (PM2.5), Carbon Monoxide and Nitrogen Dioxide. Along the Front Range of Colorado, one of the greatest challenges is ozone level. Colorado is frequently out of compliance with federal ozone standards. Other major sources of pollution include increased oil and gas development and wildfire smoke (CDPHE, n.d).

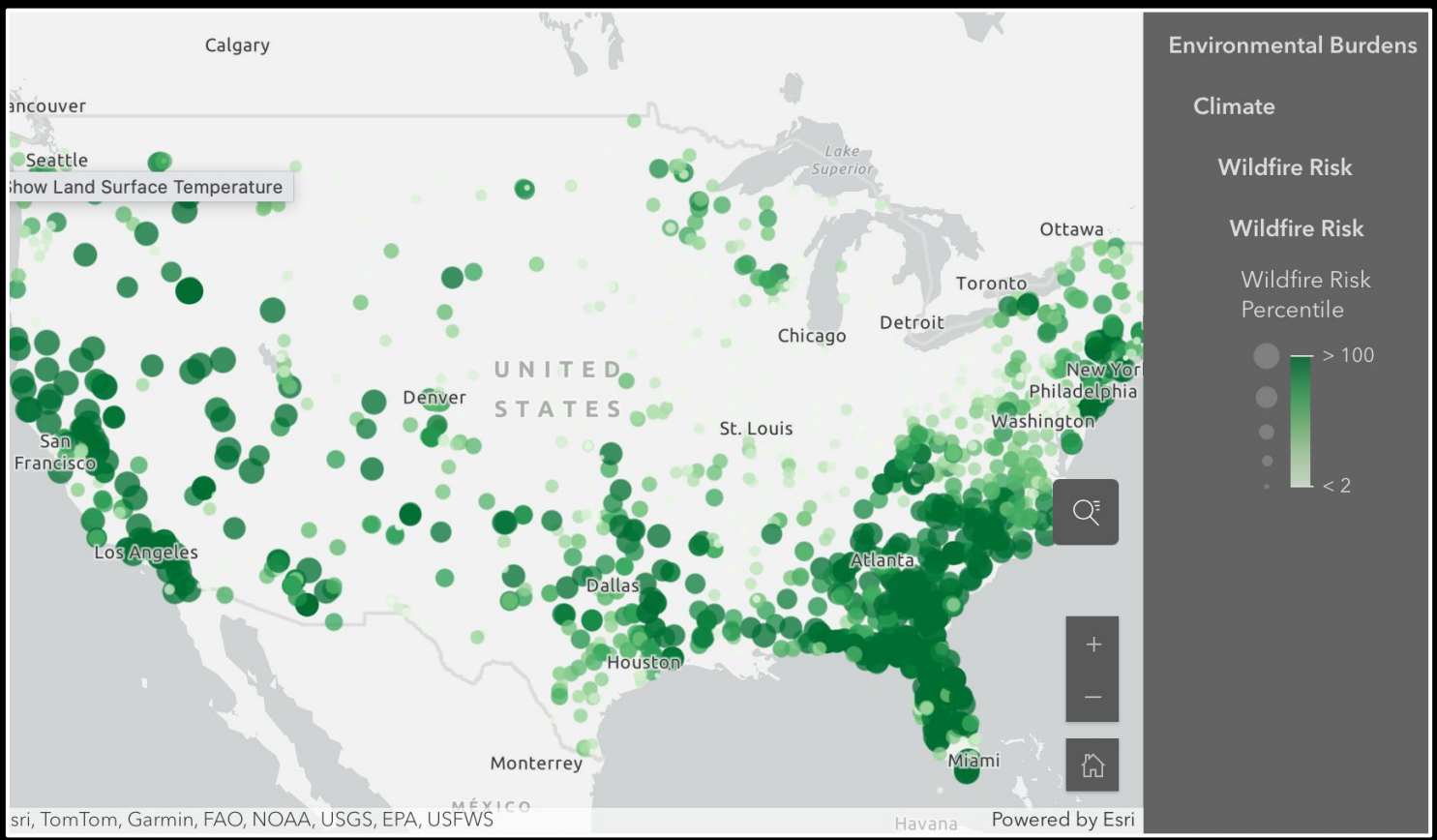


Figure 3. Wildfire Risk map From *GIS map of wildfire risk* [Map], by Prison Agriculture Lab, n.d. Used under fair use for educational purposes

Pollution at Four Mile

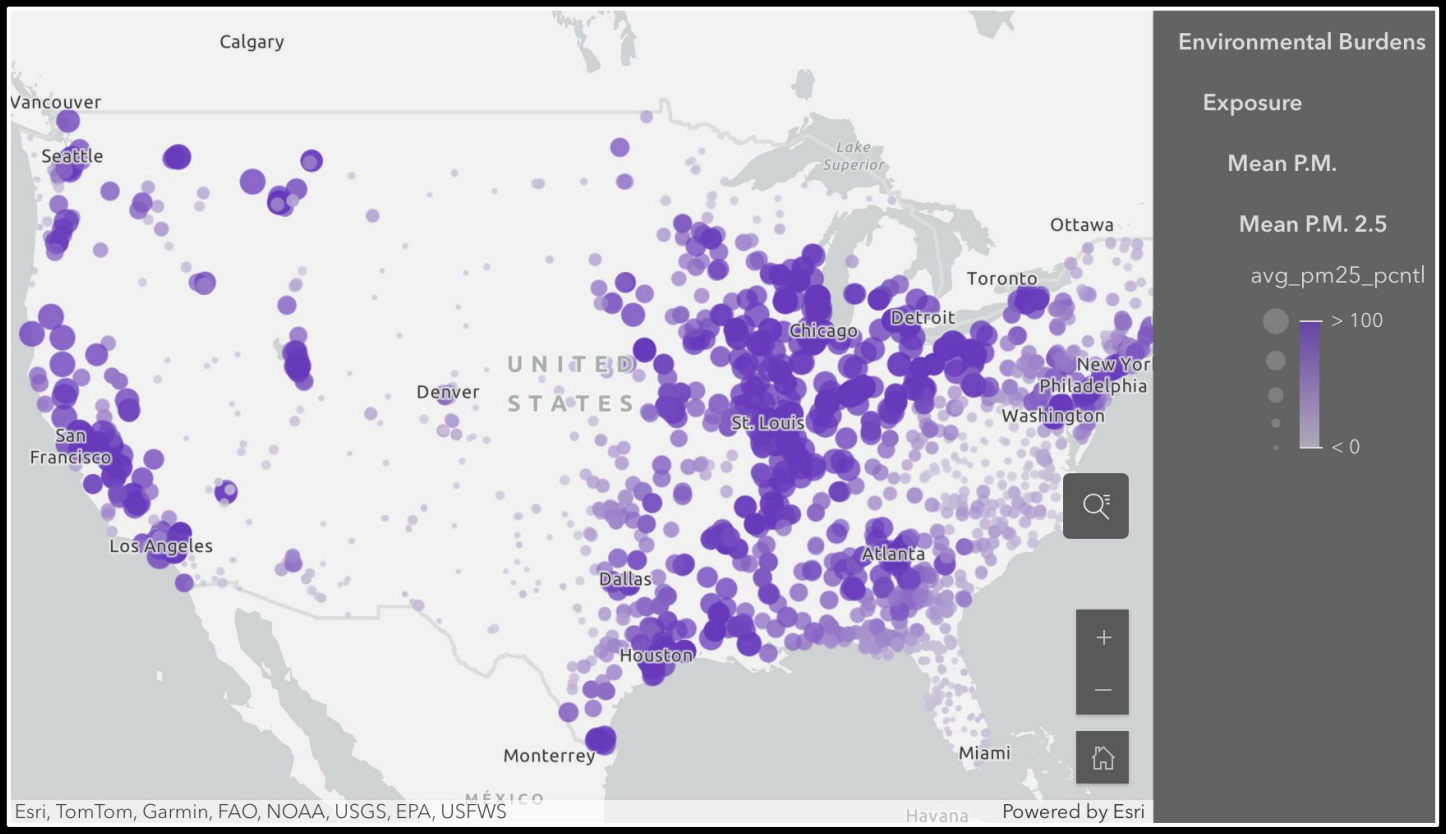


Figure 4. Mean PM2.5 map. From *GIS map of mean PM2.5 exposure* [Map], by Prison Agriculture Lab, n.d. Used under fair use for educational purposes

When it comes to PM2.5 exposure, Four Mile Correctional Center would not be considered a facility in the top percentile of vulnerability to particulate exposure. Its vulnerability score sits at 43.05 out of 100 when compared to all other prisons in the United States that have been included in Prison Agriculture Lab's data (PAL, n.d). This measure is based on data collected from 2000 to 2016 (PAL, n.d.) and does not necessarily indicate the current state of exposure. Cañon Colorado appears to experiences good air quality conditions for the general population (Plume Labs, n.d). However, most counties along the Front Range of Colorado are not immune to serious spikes in air pollution, including prolonged smoke exposure during wildfire season (Xing et al., 2016). In fact, agricultural operations themselves generate particulate matter that is harmful to human health. While few states have extensive research looking at the relationship between prisons, agriculture and elevated PM2.5 levels, studies out of Texas illustrate a broader U.S. trend of higher PM2.5 levels in counties with state-run correctional facilities (Block, 2023).

Colorado Prisons

Wildfires have grown significantly in both frequency and intensity across Colorado over the past decade, posing a significant threat to people and infrastructure. In 2020 alone, the state experienced three of the largest wildfires in its recorded history, the Cameron Peak, Pine Gulch, and East Troublesome fires. All recent major fires impacted the whole of the Front Rage of Colorado, which includes Fremont County located in the southeastern part of the region. There is little public record of the impact these fires had on those housed or working in agriculture during the time of these fires. However, these fires would have exposed individuals at Four Mile to thick smoke and elevated PM2.5 levels.

When it comes to weathering wildfires specifically, many prisoners would fall into the category of sensitive groups. The prevalence of asthma (as well as other health conditions) is high among incarcerated populations, exacerbating impacts of poor air quality. Many of prison facilities in Colorado are also old with poor ventilation and do not have the infrastructure manage smoke or pollution (Shaw, 2025). A study published in Natural Hazards review found that a third of Colorado's prisons were at a medium to high risk of impact from wildfires (Glade et al., 2023).

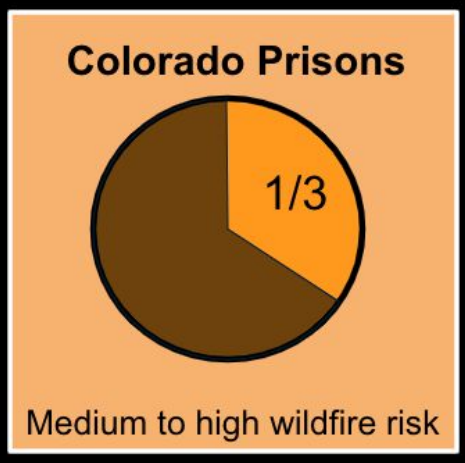


Figure 5. CO prisons at risk

For Fremont County specifically, the Glade et al. (2023) study found that the county was overrepresented when it comes to prison wildfire exposure. This is in part because of the high number of correctional facilities located in the area that have been flagged as at risk. Glade et al. (2023) also found that prisons such as Four Mile facility are more likely to be found in high risk locations like Fremont when compared to other types of facilities such as schools or youth detention centers. Of those prisons deemed as having elevated-exposure across Colorado, 24 were rural and only 7 were located in urban environments (Glade et al., 2023). Eastern Cañon Complex facilities stands out in the study as overrepresented due to its rurality and the cluster of multiple prison structures. The following factors were found to correlate with high risk locations:

- ***Older facility***
- ***Rural location***
- ***Housing male population***
- ***More likely to be impacted by smoke exposure***

These findings illustrate that despite Colorado not having a high national profile when it comes to prison air quality concerns, Four Mile itself is an example of a high risk location flying under the radar. With risks posed by indoor smoke from wildfires and ambient air pollution (outdoor pollution in the environment) from ozone or occupational material, there are multiple forms of air pollution that can be hazardous to prisoners.

Hay Farming

Hay farming brings about a whole range of respiratory health risks due to airborne particle exposure. Nearly every stage of cultivating and processing hay can yield some form of exposure to particles, from preparation all the way to harvest. During mowing, workers are exposed to grass pollens, dust, and small plant particles. This is especially the case during dry or windy conditions. Risks increase greatly during what is called "tedding," a process of fluffing and spreading hay to dry. This can release fine dry fragments, leaf bits, and even mold spores into the air. At this stage there is an especially high risk of developing conditions like Farmer's Lung or Organic Dust Toxic Syndrome. Raking and tedding can release dust spores, making this a moderate to high risk activity. Baling is considered high risk with regard to particles because compressing hay into bales creates dense clouds of dust and mold with workers often in close proximity or directly handling the hay.

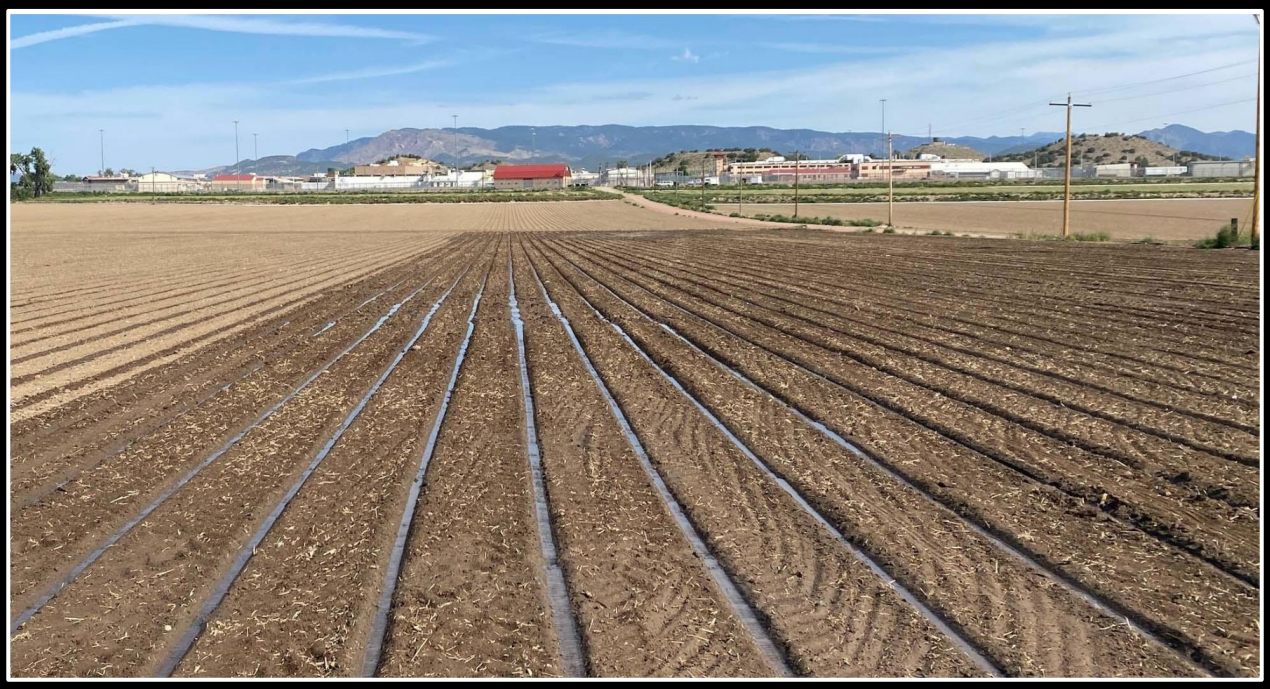


Figure 6. *Hay field prepped for planting*, at the CI Farm, Four Mile Correctional Center, Colorado Correctional Industries. **Source**: Colorado Correctional Industries (n.d.), https://cci.colorado.gov/farm

It is possible that Four Mile prisoners participate in hay planting, harvesting, baling and storage in order to sell CCI hay on the open market. Workers may also work with prepared bales indoors which is a point in the process where poor ventilation can lead to higher levels of exposure to dust, mold and even ammonia from decomposing hay. Hay at this large scale can even overheat and release gases and vapors that are harmful to human health. Across all phases, inadequate ventilation, certain weather conditions, and moisture content can impact the level of respiratory risks (Thaon, 2011). Though not related to Four Mile, there are examples of prisoner's alleging violation of the Eighth Amendment due to working in heavy corn dust without a mask. In the case of Jackson v. Cain 864 F.2d 1235, 1245 a prison worker had experienced nosebleeds, hair loss and facial sores from chronic dust exposure. In that case, The 5th Cir. court ruled that such conditions did not violate the prisoner's rights because there was nothing showing different practices from those in broader agricultural communities or an established law being violated (ACLU National Prison Project, 2010).

Particulate Matter and Health Impacts

Agricultural workers have an elevated risk of developing things like farmer's lung, organic dust toxic syndrome, bronchitis, asthma and other types of lung infections. Prison settings can amplify these risks depending on the availability of PPE (masks or respirators), how the prison structures mandated labor, as well as limitations in workers rights or supportive staff culture among the guards. Most prisoners are punished for trying to opt out of prison labor work even if they are ill.

Both crop cultivation and Colorado summers filled with smoke and wildfires leave prisoners exposed to different forms of particulate matter. Large-scale crop cultivation, poultry operations and composting are known to generate certain forms of dust, ammonia, fine organic particles, and other bioaerosols. These can be categorized as PM10 with some equipment also generating PM2.5. Exposure to "inhalable particulate matter" is known to cause respiratory issues and both short and long-term health effects (California Air Resource Board, n.d.).

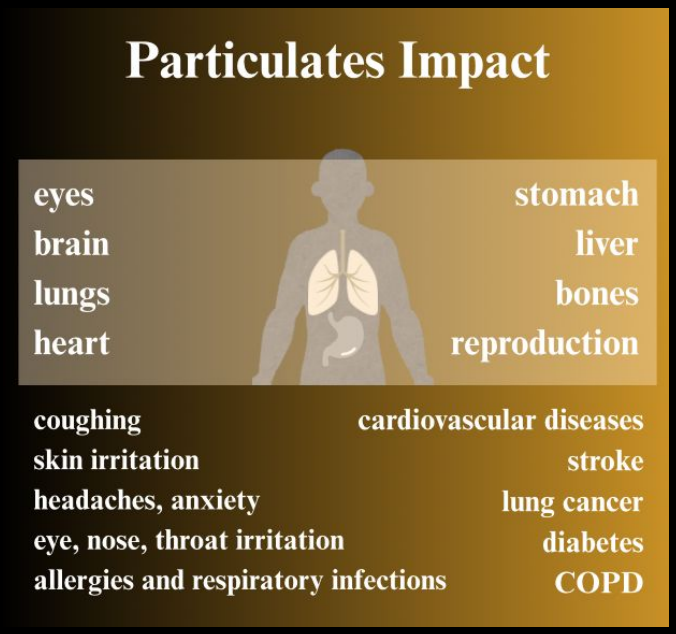


Figure 7. Health impact of particles

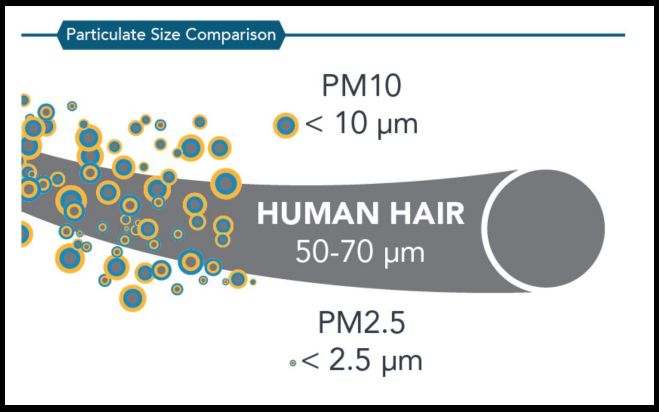


Figure 8. Air Resource Board Particulate Graphic, n.d.

PM2.5

PM2.5 is particulate matter with a diameter of 2.5 micrometers. The particles are so small that they can lodge deep in the lungs, triggering asthma attacks, heart attacks and even strokes. Sources of these particles:

Fire Smoke

Combustion

Chemical reactions in the atmosphere

Vehicle exhaust (gasoline, diesel)

PM10

PM10 are larger particles that can also lodge in the lungs or cause respiratory health issues. They are coarser but still small enough to lodge in the upper respiratory tract. Sources of these particles are from:

Dust

Pollen

Fire Smoke

Tilling and plowing

Uncertain Future

Three formerly incarcerated individuals reflect on their experience at Colorado facilities:

"There were times when we tried to plug the windows with trash bags to keep it – keep the particles from entering."

"There was like a little thin layer of ash on everything."

“The smoke actually woke me up, and it was choking. I just couldn’t breathe, and I was just coughing, coughing…I asked if I could go, like, to medical, and they were just like, ‘No, you can’t go to medical at this time. There’s nothing we can do for you.’”

Figure 9. *Graphic illustrating climate-related hazards experienced by formerly incarcerated individuals in Colorado (*Roudbari & Dashti, 2025).

Colorado wildfires and fires across the United States and Canada are likely to continue increasing in frequency and intensity (Gifford & Barbier, 2025). With them comes more air pollution in the state and more instances where incarcerated individuals will have to grapple with indoor and outdoor air concerns. Combine wildfires with other agricultural occupational risks related to particulate inhalation and prisoners health will be impacted.

Researchers, advocates, as well as incarcerated and formerly incarcerated people are calling for improved management of indoor air conditions and investment in disaster resilience and emergency preparedness for Colorado prisons. Some suggestions include developing evacuation plans, improving infrastructure and investment in controlled air inside prisons. Other strategies include improving policy and procedures related to working conditions and worker protections in Colorado. Staff training knowledge of best practices to reduce the exposure and harms caused by air pollution are also key solutions. In addition to these changes, further research and monitoring is desperately needed. Monitoring ozone, PM2.5, PM10 as well as other air quality indicators and tracking that data would allow for a deeper understanding of the systemic and environmental factors impacting prisons and prisoner health in the state of Colorado.

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