



# Smoke Safety Checklist for Prescribed Fire Practitioners

Smoke emissions generated during prescribed fires can impact the short- and long-term health and safety of practitioners and the community. **Use the list below to reduce your exposure and protect your health.**

## How Can Practitioners Reduce Smoke Exposure?

You can reduce smoke exposure by taking steps to eliminate smoke-related hazards before, during, and after burns.

### Before the Burn

- **Think about ways to remove or reduce sources of smoke exposure.** When designing and planning burns, burn unit boundaries can be adjusted to minimize smoke exposure. For example, carrying burn units to the top of a slope reduces the need for holding crews to stand on mid-slope lines where smoke exposure is often highest.
- **Address smoke-related hazards during safety briefings.** If you are in a leadership role (e.g., burn boss), normalize talking about and mitigating smoke impacts.
  - Provide N95 respirators to participants who wish to use them.

### During the Burn

- **Use respiratory protection to reduce smoke exposure.** Use properly fitted N95 respirators to reduce exposure to PM<sub>2.5</sub>. Bandanas and surgical masks are not sufficient for protecting against harmful smoke particles. Note that N95 respirators do not protect against hazardous gases.
- **Monitor your physical symptoms and the symptoms of your team** to identify when exposure is becoming hazardous. If you experience stinging eyes, headache, or develop a scratchy throat, reassess your positioning and move to cleaner air.<sup>4</sup>
- **Rotate crews between high-exposure tasks** (e.g., holding) **and lower-exposure tasks** (like patrolling or firing) to limit exposure.<sup>4,16</sup> Holding crews should be encouraged to move to cleaner air whenever possible.
  - For burn participants that are more susceptible to smoke impacts, limit their participation to roles where smoke impacts are less likely (e.g., the upwind side of the unit).
- **Minimize contact between food and contaminated clothes** to reduce textile-to-food ingestion.<sup>17</sup>
- **Minimize smoldering combustion** to reduce production of unhealthy smoke components.
- **When safe to do so, plan to minimize securing/cold-trailing activities** (e.g., putting out stumps and logs), allowing areas to burn out naturally. Minimize “dry” securing during the smoldering phase of burns. Use water to suppress dust and ash.
- **Try consolidating (“bone-piling”) logs so they can burn out naturally** rather than physically extinguishing every smoke source.<sup>4</sup>

- **If resources and project objectives allow, maximize heat and lofting** to reduce the smoke that remains near the surface where people can be exposed.

## After the Burn

- **Host your after-action review (AAR) in a smoke-free area.**
- **After the burn, PPE can continue to release toxic compounds into the air.**<sup>18,19</sup> Take off smoke-laden clothing before getting into your vehicle or going indoors.
- **Bag and store contaminated gear as soon as possible in a well-ventilated area** away from your living quarters or sleeping area. Clean all contaminated gear and equipment as close to the fire line as possible.
- **If possible, use a different washing machine for your fire clothes** than for your everyday clothing. Organizations that burn frequently may consider having a designated washer and drier for employees' PPE.

**If you plan on wearing a mask on a prescribed burn, wear a “particulate respirator” that has been approved by the National Institute of Occupational Safety and Health (NIOSH).** These respirators will say “NIOSH” and either “N95” or “P100” on them. Choose a respirator that has two straps that go around your head; ensure that the respirator fits securely over your nose and chin.<sup>20</sup> Those with facial hair will not be able to achieve a completely secure seal.

Though respirators can reduce smoke exposure, they can also make it more difficult to breathe, increasing the risk of heat-related illness. Be sure to take breaks often and drink water. Also be aware of your proximity to heat and embers when wearing a respirator, as most of them are made of synthetic materials.



**Prescribed fire practitioners wearing N95 respirators when pile burning.**  
PC: David Benterou

Recurrent or ongoing exposure to smoke may compromise your respiratory function and pose both short- and long-term health risks. By learning about potential hazards, evaluating smoke exposure, and taking the appropriate precautions to mitigate exposure, you as a prescribed fire practitioner can better protect your health while implementing prescribed fires. To learn more about smoke and its effects on prescribed fire practitioners, please visit: <https://ucanr.edu/program/uc-anr-fire-network/prescribed-fire>.

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