



Appendix: Outreach & Education Resources

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Important Safety Notice: Please Read First

This appendix provides general guidance to help individuals understand wildfire risk and make informed decisions. Conditions vary by location, and no single guide can address every situation.

Key Considerations:

- **This is a Guide, Not a Rulebook:** These are recommendations to help you get started. They are not laws or guarantees.
- **Do Your Own Research:** We encourage you to look deeper into these topics and find the best solutions for your specific property. What works for one home might not be right for another.
- **Consult the Experts:** If you are unsure about a project, please talk to your local fire department or a professional contractor.
- **External Links:** We have included links to other helpful websites. We do not control those external resources and are not responsible for their content.

By using this guide, users acknowledge that the authors and affiliated organizations assume no liability for any damage or injury that may occur. Users are responsible for prioritizing safety and exercising appropriate judgment at all times.

Alaska Firewise: Homeowner Responsibility and the Home Ignition Zone (HIZ)

The core message of the Alaska Firewise guide is that emergency response resources may not be able to reach every structure during a wildfire event, making individual action a critical component of risk reduction. A "Firewise" structure is one that is resistant to ignition and is supported by maintained defensible space, increasing its likelihood of withstanding a wildland fire independently.

The primary focus of this guidance is the creation and ongoing maintenance of a Home Ignition Zone (HIZ) surrounding a structure. This area is commonly defined by three zones extending outward up to 100 feet.

Key Action Areas for Community Outreach

Outreach efforts should emphasize educating residents on the following risk reduction practices:

| Action Area | Mitigation Steps |
|--|---|
| Zone 1: Immediate (0-15 ft) | This zone is the most critical. Remove all conifers, dry/dead vegetation, and highly flammable shrubs. Maintain a 3-foot non-combustible perimeter (e.g., rock or gravel) around the structure. Keep decks and areas beneath them free of debris and combustible items (like wood piles). |
| Zone 2: Intermediate (15-30 ft) | Thin conifer trees, so crowns are approximately 15 feet apart (measured between extending branches). Prune lower tree limbs to a height of 6-8 feet to reduce "ladder fuels." Remove shrubs beneath the trees. |
| Zone 3: Extended (30-100 ft) | Continue thinning conifers to 10-15 feet between branches. Remove or thin black spruce clusters and continue pruning lower limbs. The goal is to interrupt the path of ground fire and keep embers from spreading. |

| | |
|-----------------------------|--|
| Home Hardening | <p>Encourage the use of fire-resistant roofing materials and keeping roofs and gutters clean of leaves, needles, and moss. All exterior vents (attic, foundation) should be covered with 1/8-inch metal screening to prevent ember entry.</p> |
| Access & Safety | <p>Promote mandatory marking of property addresses with reflective numbers (at least 4 inches high) visible from the road/driveway. Ensure driveways are at least 12 feet wide with a turnaround area for emergency vehicles.</p> |
| Community Engagement | <p>Encourage participation in the Firewise Communities/USA program, which requires collaborative development of a CWPP and the annual sponsorship of a "Firewise Day" event (such as chipping or cleanup days) to implement mitigation actions collectively.</p> |

Table 1. Key Action Areas for Community Outreach



Image 1. Firewise Booklet, <https://forestry.alaska.gov/Assets/pdfs/homelfirewise09.pdf>

Spruce Bark Beetle Mitigation and Prevention Strategies

Mitigation efforts must focus on two key areas:

1. Reducing the beetle population in order to prevent its spread (Pest Suppression)
2. Reducing the accumulated fuels to minimize wildfire risk (Hazardous Fuels Reduction).

Pest Suppression & Outbreak Prevention

The goal is to remove infested material before the new generation of adult beetles emerges (typically May-July) and to maintain the health of remaining live spruce trees.

| Strategy | Action/Timing | Prevention Goal |
|--------------------------------------|--|---|
| Sanitation Harvest (Removal) | Identify and remove currently infested spruce trees (those with reddish-brown boring dust, pitch tubes, or fading green needles) during the winter or early spring (October - April), well before the May-July flight period. | Removes the source of the next generation of beetles from the forest. |
| Infested Wood Processing | Immediately after felling, process or destroy all infested material (logs, stumps, slash >4"). Methods: Debarking: Remove and burn bark to kill larvae. Chipping/Milling: Chip or mill wood to eliminate habitat. Burning: Fully burn wood and slash (per regulations). Splitting Firewood: Split small, stack in sun to dry; store one winter's supply only; keep away from live spruce trees. | Prevents beetle larvae from completing their life cycle and emerging. |
| Tree Vigor/Health | Apply preventative insecticides (e.g., permethrin or carbaryl) to the lower trunk of high-value live spruce trees before the May flight period. | Increases the tree's natural defense against attack. |
| Chemical/Pheromone Protection | Systemic injections (e.g., emamectin benzoate) can also be used. Anti-aggregation pheromones (MCH) can be deployed as a preventative strategy for a localized area to deter beetles from mass-attacking a stand. | Protects uninfected trees from initial attack. |
| Minimizing Tree Damage | Avoid wounding or cutting healthy spruce trees during the beetle's adult flight period (May-July) and take care during construction, as damaged trees release odors that attract beetles. | Reduces creation of new, attractive host material. |

Hazardous Fuels Reduction Treatments

The primary goal of fuel reduction is to break up the continuity of the fuel layers (crown, ladder, and surface fuels) to reduce fire intensity and the potential for crown fires.

| Treatment | Description | Wildfire Risk Goal |
|---|--|--|
| Salvage Harvesting / Thinning | Removal of all dead and highly susceptible (older, weakened) live spruce trees to create a less dense, mixed-species forest. Hand thinning has proven effective in reducing dead tree density and improving the health of remaining trees. | Reduces overall fuel loading and limits crown fire potential by increasing the distance between tree canopies. |
| Ground Fuels Treatment | Mechanical treatment (mastication, mowing, chipping) of the heavy surface fuels (dead branches and logs) left after tree fall, or after a salvage harvest. | Reduces surface load and creates a discontinuous fuel bed, slowing ground fire spread and reducing heat intensity. |
| Pruning (Ladder Fuels) | Pruning lower branches on remaining live spruce trees (up to 8-10 feet) to eliminate "ladder fuels" that allow a ground fire to climb into the tree canopy and start a crown fire. | Breaks the fuel connection between the ground and the tree crowns. |
| Defensible Space | Implementation of Firewise principles around homes and infrastructure, clearing woody debris and reducing vegetation density for at least 30 to 100 feet from structures. | Increases structure survivability by creating a zone where fire intensity is reduced. |
| Reforestation / Species Conversion | Following treatment, plant or encourage the growth of less-susceptible, fire-resistant tree species (like birch, aspen, or black cottonwood) to diversify the stand and create natural fuel breaks. | Builds long-term forest resilience against future beetle outbreaks and fire. |

Table 3. Hazardous Fuels Reduction Treatments

Best Management Practices for Spruce Firewood

Improperly handled spruce firewood is the most common way beetles are accidentally moved to new neighborhoods. Spruce beetles require the bark layer to complete their life cycle. The key objective of these BMPs is to destroy or eliminate the beetle habitat (the bark) before the spring flight season (May-July).

1. Harvest and Use Timing

- **Avoid the Flight Period:** Do not cut or move spruce from mid-May–July (>60°F); it attracts beetles.
- **Optimal Removal:** Cut and process infested wood in winter/early spring (Oct–Apr) before emergence.
- **Burn Quickly:** Burn bark-on firewood before May to kill larvae and adults.

2. Processing and Storage

| Strategy | Action | Purpose |
|--------------------------|---|---|
| Split Immediately | Cut logs into stove-sized pieces and split them as soon as possible. | Splitting speeds up the drying process and exposes the inner bark and larvae to air, drying them out and killing them. |
| Debark Wood | Strip all bark off the firewood. This is the single most effective way to eliminate beetle habitat. | The beetles and larvae feed and develop exclusively in the inner bark (phloem); removing the bark removes their food and shelter. |
| Proper Stacking | Stack the wood loosely and off the ground (on pallets or concrete) in a single row. Ensure maximum air circulation and exposure to sunlight. | Promotes rapid drying (seasoning), making the wood unsuitable for beetle colonization or survival. |
| Storage Location | Never stack spruce firewood directly against or beneath a live spruce tree. Store it in an open area, ideally 100 ft away from any susceptible trees. | Prevents beetles emerging from the pile from immediately attacking nearby live host trees. |
| Limit Inventory | Store only enough spruce firewood for the single upcoming winter's use. Do not stockpile infested wood. | Minimizes the time beetles have to emerge from the pile and attack surrounding trees. |

Table 4. Processing and Storage

3. Infested Material Disposal

If you have a large amount of recently infested spruce that cannot be split and burned immediately, consider these alternative methods for destruction:

- **Chipping/Mastication:** Chip the infested material into small pieces (less than 1 inch thick). The chipping process kills many beetles, and the resulting chips dry too fast to support the rest.
- **Solarization:** Stack the infested logs (not more than two layers high) in a sunny location and tightly cover the pile with a thick (6-10 mil) clear plastic tarp, sealing the edges with soil. The sun will heat the wood, cooking the larvae inside.
- **Burn Slash and Stumps:** Completely burn any spruce slash (branches and small diameter wood) greater than four inches in diameter. Grind or debark any remaining stumps to eliminate the lower bark where beetles may overwinter.

These guidelines should be communicated clearly to all residents who rely on spruce for firewood to help ensure community-wide cooperation in preventing the spread of this destructive pest.

Plant A Tree: An Alaska Guide to Tree Care

Select the right tree for the right place

Consider soil conditions, exposure to sun and wind, human activity, drainage, hardiness zone and space constraints. Most tree roots grow in the top 4-18 inches of soil and extend far beyond the drip line up to five times the height of the tree. How much space will your tree need above and below ground when it is mature? Remember that the width of the mature tree is as important as the height when considering location.



Image 2. Alaska Guide to Tree Care,

<https://forestry.alaska.gov/Assets/pdfs/community/publications/2024/Part%20A%20-%20Right%20Tree,%20Right%20Place.pdf>

US Fish & Wildlife Services K-12 Role of Fire in Alaska

Fires burn thousands of acres in Alaska each year. Because fires affect all Alaskans, it is important that everyone understands the Role of Fire in Alaska. Fires caused by lightning are a natural part of the boreal forest and tundra ecosystems. They help maintain a diversity of vegetation ages and types, providing habitat for a greater abundance and diversity of wildlife. On the other hand, fires caused by careless humans can have an adverse effect.

This curriculum has been developed to help teach Alaskans about the role of fire in the boreal forest and tundra ecosystems. Although these two ecosystems are treated as separate units, it is important to emphasize that forest and tundra areas are often found mixed together throughout the state.



Image 3. Role of Fire in Alaska curriculum,
<https://www.arlis.org/docs/vol 1/83599936/index.html>

Family and Household Evacuation Planning: An Alaskan Checklist

For communities residing in the Wildland-Urban Interface (WUI) throughout Alaska, effective and tailored evacuation planning is a critical component of safety and resilience. Due to unique geographic, climatic, and infrastructure challenges-including vast distances, extreme weather fluctuations, and intermittent communication services-standard national preparedness plans must be adapted to the realities of Alaskan life. The following checklist is designed to provide authoritative, easily digestible guidance for families in roadside and remote communities, ensuring readiness for a rapid wildfire evacuation.

Emergency Communication Plan (Remote Areas)

Establishing reliable communication is paramount when cellular service is limited or non-existent. A tiered communication strategy ensures that family members can account for one another regardless of infrastructure status.

| Priority | Action/Method | Alaskan Adaptation & Focus |
|-----------|---------------------|--|
| P1 | Check-in Contact | Designate one primary out-of-state contact person. This individual should be the sole point of information consolidation. In-state communication lines are often overwhelmed during a disaster. |
| P2 | Communication Tools | Ensure at least two redundant methods of communication are operational. Suggested back-ups: - VHF/UHF Radio: Program local community and emergency channels (e.g., specific VHF marine or common amateur radio channels). Establish a family check-in channel and time (e.g., 8:00 AM and 8:00 PM daily). - Satellite Phone/InReach/SPOT: If available, ensure subscriptions are active and batteries are charged. |
| P3 | Family Plan Meeting | Define and practice a method for family members to check in with the out-of-state contact upon safe arrival at a temporary location. This should be via text message (which often works when voice calls fail). |
| P4 | Hard Copy | Keep a laminated list of crucial phone numbers |

| | | |
|-----------|--------------------|---|
| | Contact List | (family, local responders, and the out-of-state contact) in your Go-Bag. Relying on digital contacts may fail if devices are lost or run out of power. |
| P5 | Alert Registration | Ensure all adult family members are registered for local community, borough, or state emergency alerts (e.g., KPB Alerts and Smart911). Know how to access regional information via local AM/FM radio stations. |

Table 5. Emergency Communication Plan (Remote Areas)

State of Alaska Smart 911 Alerts

Sign up here:

<https://www.smart911.com/smart911/ref/login.action?pa=alaskaforestry>

Or by scanning the QR code below:



State of Alaska Wildfire Evacuation Map

Visit the interactive evacuation map online at:

bit.ly/AKFireEvacMap

Or by scanning the QR code below:



The Alaskan 72-Hour Kit (Go-Bag Adaptation)

While a 72-hour kit (Go-Bag) is standard nationally, Alaskan conditions—which necessitate self-sufficiency for longer periods and demand protection against rapidly changing, cold weather—require key modifications. Given remote logistical challenges, it is recommended to prepare for a minimum of 7 days, with easily portable gear for the first 72 hours.

| Category | Standard Requirement | Alaskan Go-Bag Adaptation (Beyond Standard) |
|-------------------------------|---|---|
| Warmth & Shelter | Space blanket, light clothing. | Extreme Cold Gear: Waterproof, windproof outer layers, wool or synthetic layers (no cotton), insulated winter boots, high-quality sleeping bags rated to 0F or lower, and multiple pairs of insulated mittens/gloves. |
| Water & Sustenance | 1 gallon of water per person per day, non-perishable food | Water Filter/Treatment: Include portable water filters and chemical purification tablets. Alaska has abundant water sources, but purification is essential. High-Calorie Food: Focus on dense, high calorie, long-shelf-life items (e.g., dried meats, |

| | | |
|--------------------------------|---------------------------------------|--|
| | | hardtack, fat-based rations) that require minimal preparation. |
| Tools & Subsistence | Flashlight, radio, first aid kit | Specialized Tools: Small hatchet or axe, multiple waterproof fire-starting methods (e.g., fire steel, waterproof matches, chemical tinder), robust fixed-blade knife, and basic subsistence tools (e.g., snare wire, fishing line/hooks). |
| Finance & Documents | Cash, ID, insurance papers | Crucial Documentation: Include hard copies, and digital copies saved on an encrypted USB drive, of: Birth Certificates/Passports, Insurance Policies (homeowner's and vehicle), Deed/Title to Land or Cabin, and, if applicable, Tribal Enrollment or Certificate of Indian Blood (CIB) cards for identification and access to temporary support resources. |
| Power | Extra batteries for flashlight/radio. | Redundant Power: Include a solar/hand-crank charger for cell phones and rechargeable devices, along with fuel for any generators or lanterns (stored separately). |

Table 6. Alaskan 72-Hour Kit (Go-Bag Adaptation)

Pre-Designated Evacuation Routes and Staging Areas

In rural Alaska, road networks are limited, and conditions can deteriorate rapidly due to fire or smoke. Evacuation planning must include non-traditional transport methods and remote staging locations.

| Area | Best Practice and Checklist Item | Alaskan Logistical Consideration |
|--------------------------|---|--|
| Primary Route | Designated Road Exit: Identify the main road leading away from the WUI and confirm traffic flow protocols with local emergency services. | Road Capacity: Be aware that wildfire smoke can cause sudden, dangerous drops in visibility. Consider pre-positioning a vehicle and extra fuel/Go-Bags at the farthest point of your driveway or access road. |
| Secondary Route | Alternative Exit: Identify a secondary, non-road route (e.g., a well-maintained gravel road or logging path) that bypasses potential choke points. | Alternative Transport: Assess and prepare for evacuation via ATVs, Snowmachines, or other non-highway vehicles. Pre-verify the year-round navigability of these trails and the location of community fuel caches or refueling points. |
| Air-Water Options | Last Resort Exit: Identify the nearest local transportation hubs capable of mass evacuation. | Remote Assets: Locate the nearest certified bush plane strips (Airstrip Identifies/ASDI), public helipads, or designated safe harbors/launch ramps for |

| | | |
|--|--|---|
| | | boats. Ensure boat fuel tanks are topped off during fire season. |
| Local Staging Area | Short-Term Rally Point: Designate a clear, accessible assembly point outside the immediate danger zone, such as a local school, community hall, or major intersection. | Visibility and Access: Choose a site that is known, easily identifiable in low visibility (smoke/weather), and safe from potential fire paths (e.g., a large gravel pit or open tundra). |
| Regional Staging Area | Long-Term Shelter: Identify a specific, pre-determined shelter location or contact point in a neighboring community or regional hub (e.g., Anchorage, Fairbanks). | Accountability: Communicate this regional destination to your P1 out-of-state contact so they can track your movement and relay messages if direct communication fails. |
| The "5 P's of Evacuation" Checklist | Adopt the national "5 P's" for immediate evacuation readiness (People/Pets, Prescriptions, Papers, Personal Needs, Priceless Items). | Alaskan Addition: Always include "Appropriate Protective (Winter/Waterproof) Clothing" and Power/Fuel for your chosen evacuation vehicle (Snowmachine/ ATV /boat). |

Table 7. Pre-Designated Evacuation Routes and Staging Areas

Fuel Breaks in Alaska: Mitigation and Design

Fuel breaks are strategically located areas where vegetation (fuel) is modified, reduced, or removed to diminish fire spread and intensity, giving firefighters safer access and a tactical advantage. In Alaska, where the Wildland-Urban Interface (WUI) often features highly flammable black spruce forests, fuel breaks are essential for community protection.

Types of Fuel Breaks

In Alaska, two primary types of fuel breaks are commonly used, often in combination:

1. **Shaded Fuel Breaks:** These are the most common and ecologically preferred type. They involve selectively thinning the lower, most flammable vegetation (ladder fuels) and removing dead or diseased trees (like those affected by spruce beetles). The remaining, larger, more fire-tolerant trees are spaced sufficiently to prevent crown fire spread. The overstory canopy that remains helps shade the forest floor, maintaining soil moisture and inhibiting the growth of highly flammable fine fuels.
2. **Linear/Clear-Cut Fuel Breaks (Firebreaks):** These are wide strips where nearly all

vegetation is removed down to mineral soil or low-growing, fire-resistant ground cover. While effective for fire containment, they are often avoided in sensitive areas due to the risk of permafrost thaw and erosion. They are typically reserved for strategic anchor points or utilized along existing transportation corridors (like roads or utility rights-of-way).

Maintenance Requirements

A fuel break is only as effective as its maintenance schedule. In Alaskan environments, rapid regrowth, especially of highly flammable species like black spruce, means continuous monitoring and maintenance are necessary. Maintenance activities include:

- Mechanical Treatment: Using equipment (like roller choppers or masticators) to retreat the units and reduce re-sprouting vegetation.
- Manual Removal: Hand-crews removing encroaching ladder fuels and hazard trees.
- Pile Burning: Removing woody debris and slash generated during construction or maintenance, often done during winter months when snow cover minimizes risk

Annual or biennial inspection and maintenance every 3 to 10 years (depending on vegetation type and growth rate) are typically required to maintain the design criteria.

Prescribed Fire and Broadcast Burning

Prescribed fire, including broadcast burning, is a critical fuel reduction technique often used in conjunction with fuel breaks. It is employed to reduce surface and ladder fuels (like dead grasses, slash piles, and small shrubs) across larger areas, acting as either a preparatory step for fuel break construction or as a cyclical maintenance tool.

In Alaska, using prescribed fire presents unique challenges. The ideal burning window (low snow, high humidity, moderate winds) often coincides with the peak wildfire season. This requires extremely careful planning, monitoring, and certified personnel to ensure safe execution, but the Alaska Division of Forestry values its role in proactive hazard fuel management.

Special Considerations for Alaska

Alaskan fuel break design and construction must account for unique environmental factors, CWPP Appendix

primarily related to the presence of permafrost and the nature of the boreal forest.

- **Permafrost Protection:** In areas underlain by permafrost, removing the insulating layer of organic matter (like moss and peat) can cause the underlying frozen ground to thaw, leading to ground collapse, erosion, and infrastructure instability (thermokarst). Shaded fuel breaks are preferred here as they maintain the canopy and organic layer to stabilize the ground. Any activity must minimize disturbance to the duff layer.
- **Spruce Beetle Impact:** Widespread spruce beetle infestations in Southcentral and Interior Alaska create immense dead and dry fuel loads. Fuel breaks must be strategically designed around these heavily impacted areas to provide defensible boundaries against extremely high-intensity fires.
- **Access and Egress:** Fuel breaks are often designed to double as access or staging areas for fire suppression crews, and their location must align with community evacuation routes and infrastructure protection needs.
- **Timing:** Due to short construction seasons, project timing is critical. Work often occurs in winter to take advantage of frozen ground conditions, allowing heavy machinery access while minimizing impact on sensitive soils and wetlands.

By properly integrating these considerations, fuel breaks can dramatically improve wildfire resilience for Alaskan communities.

Fuel Breaks with Benefits

Can we find "win-wins" in a rapidly changing northern wildfire environment?

Imagine a winter trail system, berry picking hotspot, disc golf course, outdoor classroom, airstrip or community garden that also happens to be positioned to protect your community from wildfire risk. Sounds like a win-win, right? Our project combines scientific and Indigenous and local knowledge to map new local solutions to reduce fire risk that also meet other community needs and visions.




Table 8. Fuel Breaks with Benefits

Evacuation Planning: A Community Commitment

Effective wildfire safety is a shared responsibility, and the successful execution of an evacuation plan hinges on the active participation and preparedness of every resident. To empower this level of preparedness, this plan utilizes the robust, phase-based planning framework established in the [State of Alaska Division of Homeland Security and Emergency Management's Evacuation Planning Guidebook](#).

This comprehensive state resource defines evacuation not as a surrender to disaster, but as a proactive strategic movement to safety. It provides a standardized, clear, and actionable roadmap for community leaders and residents alike, outlining the full lifecycle of an emergency from initial threat

identification through safe return.

By adopting the guide's phased

approach- particularly the three-step public messaging system of "Ready, Set, Go"- we ensure clarity during crisis. The "Ready" phase empowers you to maintain your household emergency plan and evacuation kit; the "Set" phase requires heightened situational awareness and final preparations; and the "Go" phase is the definitive instruction to evacuate. Ultimately, successful evacuation planning is the mechanism that transitions residents from victims of circumstance to masters of their own safety, fostering a truly resilient community that can confidently face the threat of wildfire.



EVACUATION PLANNING GUIDE

2024



Protecting and Evacuating Livestock

Wildfire is a significant threat to agricultural operations, impacting livestock health, infrastructure, and livelihoods. Proactive planning is essential for ranch owners and hobby farmers to protect their animals and ensure safety during a wildfire event. This section details both the mitigation strategies necessary to harden the farm/ranch and the critical steps required for an efficient livestock evacuation.

Mitigation: Protecting Livestock from Smoke and Fire

Proactive land and infrastructure management significantly reduces the risk of loss from direct fire and safeguards herd health during prolonged smoke events.

Fire-Safe Property Modifications

- **Defensible Space:** Establish and maintain a minimum of 100 feet of defensible space around all barns, outbuildings, and critical infrastructure (e.g., wells, pumps, feed storage).
- **Non-Combustible Zone (0-5 ft):** Maintain a 5-foot buffer immediately surrounding structures that is entirely free of combustible materials (e.g., gravel, bare earth, or noncombustible hardscaping).
- **Fuel Isolation:** Clear vegetation and debris from around propane tanks, fuel supplies, equipment, and hay or forage stacks. Store dry, highly flammable feed and bedding materials in structures separate from animal housing when possible.
- **Fire Breaks:** Strategically implement firebreaks (strips of disked, plowed, or scraped ground) around barns, pastures, and housing areas to minimize ignition risk from ground fire or embers.
- **Emergency Water Sources:** Clearly mark all water sources (tanks, ponds, pumps) for fire responder access. Ensure backup power (generators or off-grid systems) is available to run water pumps and supply livestock if primary power fails.
- **Access Routes:** Maintain wide, clear, and well-graded access routes and driveways for both emergency responders and rapid evacuation.

Herd Health During Smoke Events

- **Air Quality Monitoring:** Stay informed about local air quality indexes (AOI) and PM2.5 levels. If air quality is unhealthy, take protective measures.
- **Observe Symptoms:** Closely observe livestock for signs of smoke irritation, including frequent coughing, difficulty breathing (open-mouth breathing,

increased noise), excessive eye watering, nasal discharge, fatigue, or reduced appetite.

- **Reduce Stressors:** Reduce physical activity and postpone stressful events, such as weaning, changing groups, vaccinations, and long-distance transport, until air quality improves.
- **Hydration and Cooling:** Ensure constant access to clean, fresh water. Provide cooling measures, such as shade, fans, or misters, as heat stress can compound negative outcomes associated with smoke exposure.
- **Dust Control:** Reduce dust from feed or facilities by misting or sprinkling water.

Emergency Planning: Livestock Evacuation Best Practices

A detailed and rehearsed evacuation plan is the most critical tool for livestock protection. Early evacuation is always the safest option.

| Task | Details |
|---------------------------|--|
| Identification | Ensure all animals are permanently identifiable (brands, tags, microchips, or neck bands). Keep a clear photo of each animal with identifying marks. |
| Evacuation Sites | Identify primary and secondary pre-arranged safe holding facilities (fairgrounds, stockyards, or neighbor/friend properties). Confirm they can accommodate your animals. |
| Transportation | Pre-arrange transportation (trailers, drivers) and practice loading animals well in advance of fire season. |
| Evacuation Kit | Assemble and maintain an emergency kit containing 7-10 days' worth of food, water, and hay, plus a 2-week supply of essential medications/supplements. |
| Documentation Kit | Create a hard copy folder with critical documents: veterinary records, proof of ownership (brand registration), medication instructions, and current herd photos. |
| Emergency Contacts | Prepare a readily accessible list of veterinarian(s), pharmacy, local emergency services, and designated out-of-state and local contacts. |

Table 9. Pre-Evacuation Preparedness Checklist

Immediate Action Steps

1. **Evacuate Early:** Begin evacuation procedures as soon as pre-evacuation warnings or alerts are issued. Do not wait for a mandatory evacuation order.
2. **Move Calmly:** Use low-stress handling techniques to move animals slowly and calmly to avoid panic, injury, or stampeding.
3. **Record Movement:** Keep a clear, written record of which animals are loaded onto which transport vehicle and where they are headed. Take photos of loaded trailers as they depart.
4. **Implement Shelter-in-Place (If Necessary):** If evacuation is impossible, move animals to the safest area:
 - A heavily grazed or otherwise lightly-fueled pasture.
 - A large, non-combustible area with adequate emergency water (e.g., irrigated pasture, dry lot).
 - Leave all gates open so animals can move freely and escape if necessary.
 - Shut off electricity and propane at the main sources.

Management at Temporary Holding Facilities

- **Check-In/Records:** Present your animal records upon arrival at the temporary facility as required.
- **Health Separation:** Follow facility guidelines for separating sick, injured, or pregnant animals to maintain herd health standards.
- **Recovery:** Only return livestock to your operation when officially cleared by authorities. Upon return, inspect all feed and water sources for contamination and repair all essential fencing immediately.

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