

SITE PREPARATION

APPLICABLE OREGON FOREST PRACTICES RULES

Fire control

- 629-042-0005: Forest protection plans
- 629-042-0100: Liability of forestland owner or operator, further defined
- 629-042-1000: Purpose
- 629-042-1005: Definitions
- 629-042-1010: Intent
- 629-042-1015: Certified burn manager certification requirements
- 629-042-1045: Certified burn manager prohibited actions and activities
- 629-042-1050: Limitations on the use of certified burn managers
- 629-042-1055: Landowner required and prohibited actions

Smoke management

- 629-048-0010: Purpose
- 629-048-0200: Alternatives to burning
- 629-048-0210: Best burn practices; emission reduction techniques
- 629-048-0230: Burn procedures
- 629-048-0300: Registration of intent to burn
- 629-048-0320: Reporting of accomplishments

Treatment of slash

- 629-615-0000: Purpose
- 629-615-0100: Maintenance of productivity and related values
- 629-615-0200: Mechanical site preparation near waters of the state
- 629-615-0250: Protection of soil productivity during mechanical site preparation
- 629-615-0300: Prescribed burning

Chemical and other petroleum product rules

- 629-620-0000: Purpose
- 629-620-0100: Preventing, controlling and reporting leaks and spills of chemicals and other petroleum products
- 629-620-0200: Protection of water quality during mixing of chemicals
- 629-620-0300: Locations of mixing, transfer and staging areas for chemicals and other petroleum products
- 629-620-0400: Protection of the waters of the state and other resources when applying chemicals
- 629-620-0500: Disposal of chemical containers
- 629-620-0600: Daily records of chemical applications
- 629-620-0700: Chemical and other petroleum product rules: effectiveness-monitoring and evaluation
- 629-620-0800: Notification of community water system managers when applying chemicals

By law, new trees need
to outgrow weeds
and brush to survive
their first few years.
Site preparation is
integral to making
this happen.

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CONTROLLING VEGETATION

Forest landowners and managers may choose to use various chemicals, including pesticides and fertilizers, to help grow healthy and productive forests. Among the most commonly used chemicals in forestry are herbicides, a type of pesticide used to control the growth of weeds and other unwanted plants while a new forest is being planted and established after a timber harvest.

But, if not handled and applied properly, including following the directions on the product label, these chemicals can be a health hazard for people and aquatic life. This section describes the Oregon Forest Practices Act (OFPA) requirements to ensure safe use of these products.

Pest control requirements

Oregon's pest control requirements ensure that:

- Products are not found in the soil, air or water in quantities that could damage water quality, animals or aquatic life.
- Plants in riparian management areas (RMAs) and sensitive resource sites are protected from potential harm from chemicals.

Pest control chemicals

Pest control chemicals are called pesticides. There are several broad classes, and some are used in the forest more than others. Common pesticides include:

- **herbicides**, which are chemicals used to control plants
- **insecticides**, which are chemicals used to control insects
- **rodenticides**, which are chemicals used to control rodents
- **fungicides**, which are chemicals used to control fungi

Petroleum products are discussed in the Harvesting chapter; some are used in conjunction with pest control chemicals. These products include:

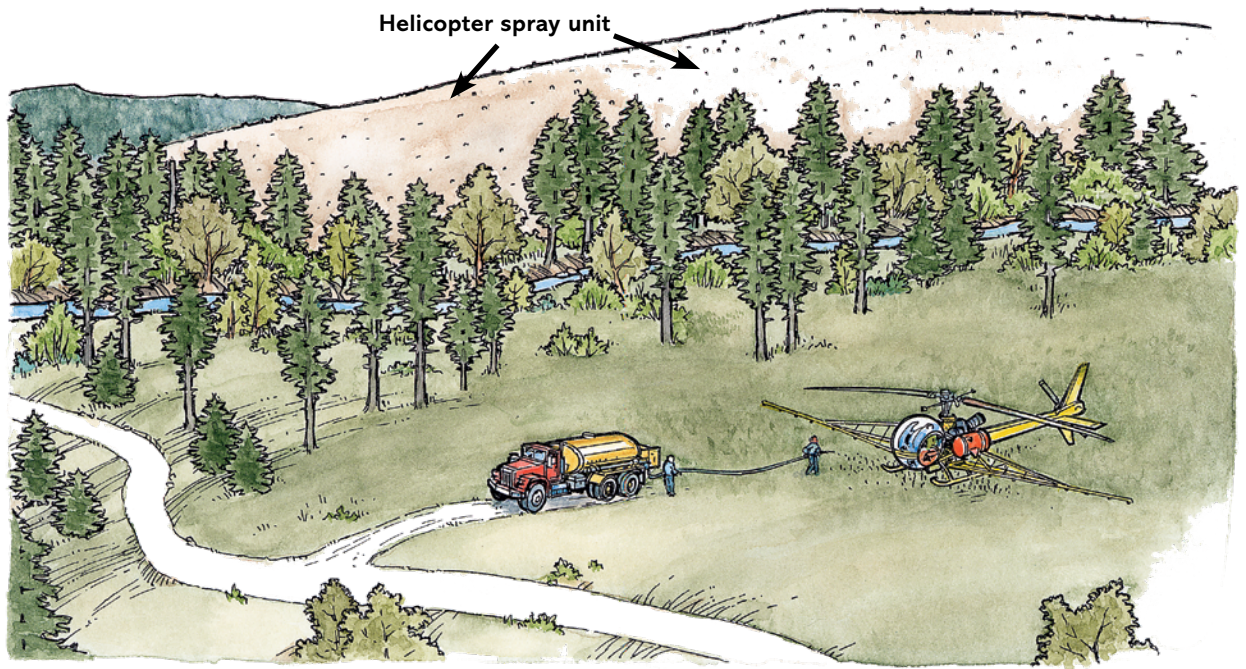
- **oils**, which are sometimes mixed with and used as carriers for pesticides
- **"adjuvants,"** which are mixed with pesticides to control drift and help chemicals adhere to foliage
- The state encourages forest landowners and operators to use integrated pest management (IPM) strategies. In this approach to pest and vegetation control, chemicals are just one of a variety of pest control methods available. Find out more about IPM at: oregon.gov/oda/programs/Pesticides/RegulatoryIssues/Pages/IPM.aspx.



Hand-operated backpack sprayers and mechanized ground equipment are widely used.



Helicopters are a cost-effective method for applying herbicides on larger forest ownerships. Drones are also becoming more common.



To avoid spills and environmental damage, care must be taken when mixing chemicals, transferring chemicals from containers to equipment, fueling aircraft or heavy equipment, cleaning tanks or equipment, and locating landing or staging areas for aircraft or equipment.

Chemical use requirements from other government agencies

It isn't enough to follow OFPA requirements — the use of chemicals and other petroleum products on forestlands is also subject to the following laws and regulations:

- The Oregon Department of Agriculture (ODA) pesticide control laws apply to commercial operators, who must be trained and licensed so that they understand and follow product label requirements. These laws include the requirement that pesticides not be applied in a faulty or negligent fashion, meaning they must not drift from the target area, resulting in harm to people, their property or the environment. ODA requires reporting pesticide use locations, chemicals, amounts and purposes, through its Pesticide Use Reporting System. Contact ODA for current requirements.
- Oregon Department of Environmental Quality (DEQ) hazardous waste laws require that chemical containers and other chemical waste be properly disposed of, and that spills be cleaned up and reported.
- Oregon Occupational Safety and Health Division (OSHA) hazard communication rules include chemical-handling requirements aimed to protect worker safety and health.
- Oregon Water Resources Department (WRD) water use laws require notifying WRD and the Oregon Department of Fish and Wildlife (ODFW) before mixing chemicals with water taken from streams and lakes by sending copies of the original Notification of Operation forms when those are submitted to the Oregon Department of Forestry (ODF).

Each agency's website can be found through the State of Oregon main website, oregon.gov/Pages/agencies.aspx

Importance of planning ahead for any forest chemical use

The OFPA rules require specific timeframes and requirements for chemical use in forests that cannot be modified. These include:

- No waivers are granted for the 15-day waiting period for aerial chemical application operations.
- Written plans are required for any chemical application within 75 feet of a Type F, Type SSBT or Type D stream, or within 300 feet of a specified resource site such as a wetland, special bird nesting site, etc.
- Operators must notify community water system managers at least 15 days before applying chemicals near Type F, Type SSBT or Type D streams.
- Helicopter chemical spray operators must adhere to the required unsprayed buffer distance of 300 horizontal feet from dwellings and school campuses.

Helicopter application of pesticides

Follow these steps when planning an aerial application of pesticides on forestland:

- Notify ODF of the proposed pesticide application.
- Notify those who have registered to receive notice of any proposed pesticide application near their residence. (This requires a 30-day waiting period.)
- Notify ODF one day prior to the planned pesticide application.
- Maintain 50-foot, no-spray buffers for Type N streams with flowing water.
- Maintain a 300-foot, no-spray buffer around inhabited dwellings and school campuses.
- Maintain a 300-foot, no-spray buffer around qualifying domestic water sources.
- Maintain a 75-foot, no-spray buffer for Type F and Type D streams.
- Verify completion of the pesticide application with ODF.

Locating chemical mixing, transfer and helicopter staging areas

Follow these guidelines for locating mixing, transfer and helicopter staging areas:

- Locate the above activities only where a chemical spill would not enter any water bodies.
- Avoid locating mixing, transfer and aerial staging areas within 110 feet of Type F, Type SSBT or Type D streams.

Other precautions that will help protect water and other forest resources include following the labels on chemical products, and maintaining the vegetation left along waterways in compliance with water protection requirements.



Spill kits are used to contain hazardous materials.

How to handle leaks

Avoid chemical leaks by maintaining all equipment in a leak-proof condition during transport, on-site storage and application. Take these steps if a leak occurs:

- Stop using equipment until the leak is corrected.
- Take immediate action to stop and contain leaks or spills.
- Take precautions to prevent leaks or spills from entering water.
- Report any spill that enters or may enter waterways to ODF immediately.
- Report any spill of more than 42 gallons of petroleum, or 25 gallons (or about 200 pounds of a liquid or solid) of pesticide, to the Oregon Emergency Response Center (OERS) at 800-452-0311. Also report spills of any amount that reach streams or other water bodies to the OERS.

Required practices and safe distances when mixing and applying chemicals near water

When using water from a stream or water impoundment for mixing chemicals, prevent chemicals from entering waterways by:

- providing an air gap or reservoir between the water source and mixing tank
- using pumps, suction hoses, feed hoses and check valves that are used only for water

Table 6-1 Buffer requirements for pesticide applications to forestland

	Herbicides, rodenticides and biological insecticides (and all other chemicals except fungicides, non-biological insecticides and fertilizers)			Fungicides and non-biological insecticides		
	Helicopter applications	Other aerial applications ¹	Ground applications	Helicopter applications	Other aerial applications ¹	Ground applications
Water bodies	All distances are horizontal distances from the high-water level			All distances are horizontal distances from the high-water level		
Type D streams	75 ft. or RMA width ²	60 ft.	10 ft.	300 ft.	300 ft.	10 ft.
Type F and Type SSBT streams	75 ft. or RMA width ²	60 ft.	10 ft.	300 ft.	300 ft.	10 ft.
Type N streams with flowing surface water at time of application	50 ft.	N/A	N/A	60 ft.	60 ft.	N/A
Type N streams with ponded surface water (not flowing) at time of application	50 ft.	N/A	N/A	50 ft.	N/A	N/A
Significant wetlands ³	60 ft.	60 ft.	10 ft.	300 ft.	300 ft.	10 ft.
Stream-associated wetlands	Buffer according to the stream type			Buffer according to the stream type		
Large lakes (>8 acres)	60 ft.	60 ft.	10 ft.	300 ft.	300 ft.	10 ft.
Other lakes with fish use	60 ft.	60 ft.	10 ft.	300 ft.	300 ft.	10 ft.
Areas of standing open water >1/4 acre at time of application	60 ft.	60 ft.	10 ft.	300 ft.	300 ft.	10 ft.
Infrastructure and structures	All distances are horizontal distances			All distances are horizontal distances		
Water intakes ⁴	300 ft. ⁵	N/A	N/A	300 ft. ⁵	N/A	N/A
Schools (starting at boundary of school campus tax lot)	300 ft. ⁶	60 ft. ⁷	N/A	300 ft. ⁶	N/A	N/A
Inhabited dwellings (starting at edge of dwelling structure)	300 ft. ⁶	60 ft. ⁷	N/A	300 ft. ⁶	N/A	N/A

All pesticide applicators must be licensed by the ODA (oregon.gov/oda/programs/Pesticides/RegulatoryIssues/Pages/IPM.aspx), and attend continuing education classes to maintain their license.

NOTES FOR TABLES 6-1 AND 6-2:

- Comply with pesticide labels which may require wider buffers than shown in Tables 6-1 and 6-2.
 - Where two or more protected resources coincide, apply the most protective buffer.
 - Direct application of pesticides and fertilizers is not allowed within the minimum buffers in the tables.
- 1 "Other aerial applications" includes applications by unmanned aircraft systems (drones) and fixed-wing aircraft.
 - 2 Apply the wider of the two buffer widths, either 75 feet or the RMA width in effect on July 7, 2020, which excludes Type SBBT streams in the Siskiyou Georegion. (ORS 527.768 to 527.798.)
 - 3 Significant wetlands include: wetlands >8 acres, estuaries, bogs and important springs in eastern Oregon.
 - 4 Protected water intakes means, "water uses qualifying for a spray buffer" (defined in SB 1602 and ORS 527.786(4)), and identified from Oregon Water Resources Dept. and e-notification registrations.
 - 5 Buffer is required when helicopter pesticide application unit and water intake are in the same "sixth-level hydrologic unit."
 - 6 The landowner or school board requesting the pesticide application may choose to forego all but the inner 60 feet of this buffer.
 - 7 Other aerial herbicide applications only, not other pesticides, ORS 527.762.

Table 6-2 Buffer requirements for fertilizer applications to forestland

	Fertilizers	
	Aerial applications	Ground applications
Waters of the state	All distances are horizontal distances from the high-water level	
Type D streams	100 ft.	100 ft.
Type F and Type SBBT streams, domestic-use portions	100 ft.	100 ft.
Type F and Type SBBT streams, non-domestic-use portions	No direct application	No direct application
Type N streams, large and medium size	No direct application	No direct application
Type N streams, small size	N/A	N/A
Significant wetlands ³	No direct application	No direct application
Stream-associated wetlands	Buffer according to the stream type	
Large lakes (>8 acres with or without fish)	No direct application	No direct application
Other lakes with fish use	No direct application	No direct application
Areas of standing open water >1/4 acre at time of application	No direct application	No direct application
Infrastructure and structures	All distances are horizontal distances	
Water intakes	N/A	N/A
Schools (starting at boundary of school campus tax lot)	N/A	N/A
Inhabited dwellings (starting at edge of dwelling structure)	N/A	N/A

Protect water from chemicals

When applying chemicals aerially or from the ground, protect water and other forest resources by following the requirements of the chemical product label and by meeting additional protection measures required by the OFPA. Follow these guidelines to protect streams and other water bodies from harm from chemicals:

- Maintain vegetation required to be protected when applying herbicides near or within RMAs or waterways.
- Consider weather conditions such as temperature, relative humidity, wind speed, wind direction, atmospheric temperature inversions and precipitation, which may strongly affect the deposition and drift of chemicals during aerial and pressurized, ground-based chemical applications. Apply chemicals only under weather conditions that will protect non-targeted forest resources and comply with the product label and Oregon law.
- Do not directly apply chemicals by aircraft within 60 feet of the following waters, unless label requirements are more stringent:
 - > significant wetlands
 - > aquatic areas of Type F, Type SSBT and Type D streams
 - > aquatic areas of large lakes
 - > aquatic areas of other lakes with fish use
- Do not apply chemicals from the ground within 10 feet of the following waters, unless more stringent requirements apply:
 - > significant wetlands
 - > aquatic areas of Type F, Type SSBT and Type D streams
 - > aquatic areas of large lakes
 - > aquatic areas of other lakes with fish use

Term to know

BIOLOGICAL INSECTICIDE

means any insecticide containing only naturally-occurring active ingredients including, but not limited to, viruses, bacteria, semiochemicals (pheromones) or fungi.

- > other areas of standing open water larger than one-quarter acre at the time of the application
- Do not directly apply fertilizers within 100 feet of Type D streams, and the domestic use portions of Type F or Type SSBT streams. For other water bodies, untreated strips are not required to be left by operators when applying fertilizers. However, operators must not apply fertilizers directly to aquatic areas of other Type F or Type SSBT streams or to large and medium Type N streams; significant wetlands; aquatic areas of large lakes; aquatic areas of other lakes with fish use; or other areas of standing open water larger than one-quarter acre at the time of the application.
- Do not apply fungicides directly, or non-biological insecticides by aircraft, within 300 feet of significant wetlands; aquatic areas of Type F, Type SSBT and Type D streams; aquatic areas of large lakes; aquatic areas of other lakes with fish use; or other areas of standing open water larger than one-quarter acre at the time of the application. Do not apply fungicides directly, or non-biological insecticides by aircraft, within 60 feet of the aquatic areas of Type N streams containing flowing water at the time of application.



When using chemicals on forestland, it's important to read and follow the product label instructions to protect water and other natural resources.

- Submit plans for alternate practices that modify the above requirements to the ODF forester. Approval of such plans must be based on written findings by the ODF forester determining that the proposed alternative practice meets one of the following conditions:
 - > An alternative practice is essential to control a fungus or a population of an insect species to reduce damage to, and to better provide for, the overall maintenance of forest resources protected under the OFPA.
 - > Operational or weather condition constraints placed on the application by the plan for alternate practice, in addition to the requirements of the forest practice rules and the product label, will reduce the potential for the fungicide or non-biological insecticide to drift outside the operation area or to enter the water bodies.
 - > Adequate documentation is submitted indicating the potential toxicity to humans and fish populations, or to aquatic invertebrate populations, is lower than the documented toxicity of the fungicide chlorothalonil or the non-biological insecticide carbaryl, as used in forestry prior to Sept. 4, 1996.
- Ensure that aerial chemical applications are parallel to the edge of the water when applying chemicals within 100 feet of:
 - > significant wetlands
 - > aquatic areas of Type F, Type SSBT and Type D streams
 - > aquatic areas of large lakes
 - > aquatic areas of other lakes with fish use
 - > other areas of standing open water larger than one-quarter acre at the time of the application

Effectiveness-monitoring and evaluation

In cooperation with state agencies, landowners and other interested parties, ODF will conduct monitoring to evaluate the effectiveness, workability and operability of the chemical and other petroleum product rules. ODF and its co-operators place a high priority on assessing monitoring needs and securing adequate resources to conduct the necessary monitoring and will work with the Oregon Legislature to secure the necessary resources, funding and coordination for effective monitoring. ODF will report annually to the Oregon Board of Forestry about current monitoring efforts, and will present findings and recommendations for changes to practices in a timely manner. The Board of Forestry will consider the findings and recommendations when taking appropriate action regarding forest practice regulations.

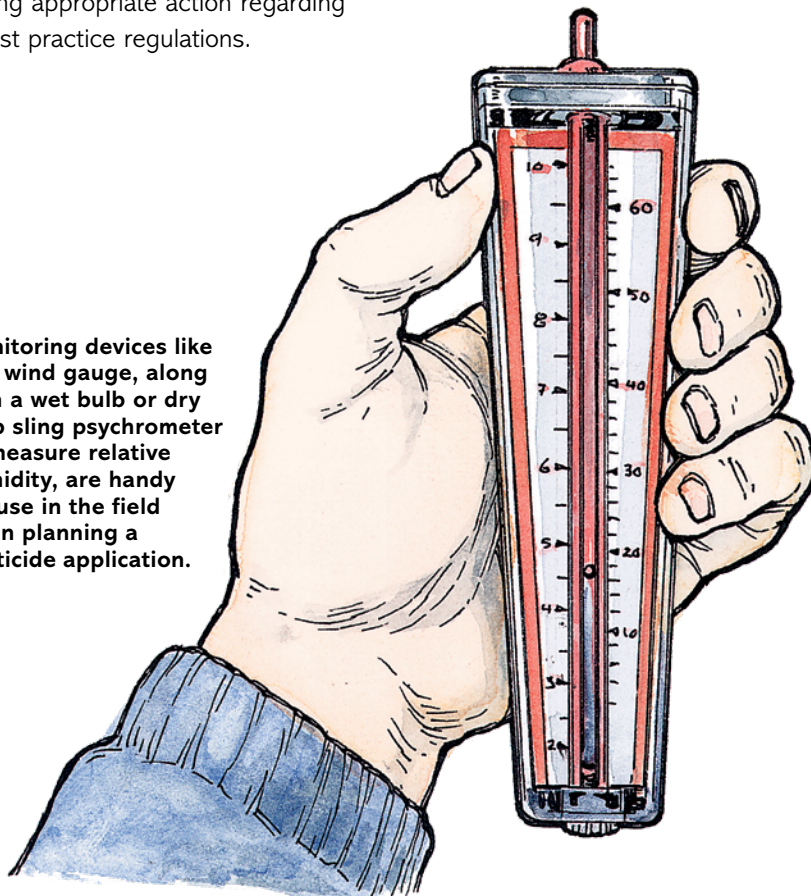
Disposal of chemical containers

Follow DEQ requirements for the disposal of chemical containers (oregon.gov/oda/programs/Pesticides/Water/Pages/PesticideStewardship.aspx). The flushing solution used to clean chemical containers may be applied to the operation area.

Consider weather conditions

Temperature, relative humidity, wind speed, wind direction, temperature inversions and rainfall may affect the deposition and drift of pesticides during both aerial and pressurized, ground-based applications. Only apply chemicals when weather conditions protect non-target forest resources and comply with product labels.

Monitoring devices like this wind gauge, along with a wet bulb or dry bulb sling psychrometer to measure relative humidity, are handy for use in the field when planning a pesticide application.



Application records

Daily records must be kept for broadcast chemical applications (applied in a sweeping manner rather than directed at a specific target point) by aircraft or pressurized ground equipment (backpack sprayer or motorized tank sprayer). Templates are available on the ODF website. Information required for each day that chemicals are applied include the following:

- legal description of the area treated
- acreage of the area treated
- brand name or EPA registration number of the chemical used, carrier used and application rate
- date and time of application
- air temperature, relative humidity, and wind velocity and direction, measured within the operation area and recorded hourly for aerial applications, and at the beginning and end of the day for ground applications
- name of the applicator
- name of contractor and pilot for aerial applications
- name of contractor and employee for ground-based applications

Daily records also are required for pesticide applications other than those by aircraft or pressurized ground equipment, such as “hack and squirt” applications.


Information needed for each day that chemicals are applied in those cases includes:

- legal description of the area treated
- acreage of the area treated
- brand name or EPA registration number of the chemical used, carrier used and application rate
- date and time of the application
- name of applicator

Fertilizer applications require a record of the following:

- legal description of area treated
- acreage of area treated
- date and time of the application
- name of person making the application

All these records must be maintained by the operator for three years from the date of chemical application and available at the request of ODF.

		<div style="text-align: center;">  <h2 style="margin: 0;">Daily Chemical Application Record Form</h2> <p style="margin: 0;">Revised October 2018</p> </div>	
O R E G O N D E F O R E S T A T E	A P P L I C A T I O N	<p>This form outlines daily chemical application information an applicator must record to meet requirements of the Oregon Departments of Forestry (ODF) and Agriculture (ODA), and the U.S. Department of Agriculture (USDA). An applicator may use a different form if the required information is included. The applicator must retain the ODA and ODF-required records for 3 years, and the USDA-required records for 2 years.</p>	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Landowner and Location Name, address, and telephone of person or business who owns or controls the property:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Legal Description of Application Area (Township/Range/Quarter-quarter section):	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Notification # :	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Unit # :	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Applicator Applicator(s) (Name(s) of Person(s) Applying Chemical, Including Supervisor if Trainee or Apprentice):	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Applicant License Number(s) for private applicator (including Supervisor if Trainee or Apprentice): Applicator Contractor:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Application Information Supplier of Pesticide Product:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Pesticide EPA Registration Number:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Manufacturer, Product Name, (Formulation*):	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Fertilizer Formulation:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Number of Acres Treated with chemicals:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Chemical Product Application Rate (Per Acre):	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Total Amount of Chemical Product Applied:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Carrier Used: <input type="checkbox"/> Water <input type="checkbox"/> Other	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Identification of Application Equipment Used (Truck #, Sprayer #, Backpack #, Etc.):	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	If Aerial, F.A.A. Aircraft Number:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Application Method: <input type="checkbox"/> Aerial <input type="checkbox"/> Ground (<input type="checkbox"/> Pressurized & Broadcast <input type="checkbox"/> Other	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Crop or site of application (enter "forest" for forestry applications):	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Date of Application:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Beginning Time:	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Ending Time:	
ODF Only: For Aerial Pesticide Applications Measure and Record Weather Information Hourly;			
For Ground-Based Pressurized Broadcast Pesticide Applications Measure and Record Weather Information at the			
Beginning and End of Each Day's Application:			
Time:			
Air Temperature (°F)			
Relative Humidity (%)			
Wind Speed (mph)			
Direction wind coming from (e.g., N or NNW)			
Applicator Signature:			

¹ Oregon Department of Forestry requirements (per OAR 629-620) for all chemical applicators.

² Oregon Department of Agriculture requirements (per OAR 634.146 for commercial and public pesticide applicators, commercial operators, pesticide consultants, and private applicators using restricted-use pesticides or power driven equipment.

³ U.S. Department of Agriculture requirements for private pesticide applicators using restricted use products.

* Optional information for ODF

This form may be used for your records and is available from ODF.

Notification of community water system managers

Chemical applicators must notify water system managers of planned chemical operations at least 15 days before an operation begins when:

- Chemicals will be aerially applied within 100 feet, or ground-applied within 50 feet, of domestic portions of Type F, Type SSBT or Type D streams.
- The community water system watershed area is not larger than 100 square miles.

The water system manager may request additional information. ODF maintains a list of community water systems that must be notified.

SLASH MANAGEMENT

Often, when a timber harvest finishes, some portion of treetops, limbs and defective wood remain on the site. Called slash, this material may require treatment to ready the site for successful reforestation (site preparation), to reduce wildfire hazards or both. Piling, burning and chipping are examples of slash treatments. Slash treatment and site preparation can be done simultaneously or accomplished as a two-step process.

Slash management has many benefits: It can help reduce wildfire hazard; expose tree planting spots, making them easier to reach; and remove vegetation that will compete with newly planted seedlings.

Statutory written plan

A statutory written plan is required if burning will occur within 100 feet of protected resources. If there is potential for the burning to affect components of a riparian management area (RMA) or other site-specific resource, precautions like putting a fire line around the pile should be taken to protect the resource. This and other precautions should be spelled out in the plan.

Burn registration and procedures

Register, notify and pay registration fees to Oregon Department of Forestry (ODF) prior to burning. Once the unit has been burned, details about how much fuel burned, ignition and weather information must be reported by the next business day. Burn fee amounts depend on the completed acreage and burn type (landing pile vs. broadcast). Local ODF district staff issue approvals for ignition with assistance from state meteorologists. Oregon's highly successful Smoke Management

Plan meets both air quality and landowner objectives, yet it requires understanding and patience by all parties (oregon.gov/ODF/Fire/Pages/Burn.aspx).

Slash treatment and site preparation

Here are some guidelines for slash management and site preparation:

- Anticipate the slash that the timber harvest is likely to generate, and how it will affect the current wildfire hazard of dead and dying trees, needles and branches on the forest floor, etc. If the harvest is not expected to raise wildfire hazard above your forest's natural wildfire hazard, slash treatment becomes less of a concern. ODF can help you determine whether or not the harvest will raise the natural wildfire hazard.
- Plan on reforestation if it's a Type 1 or Type 3 harvest (see Table 1-1 in the Planning chapter for information about different timber harvest types). The harvest site will likely require some slash treatment because Type 1 and Type 3 harvests leave enough slash to make finding suitable spots for tree planting difficult. Also, if natural forest regeneration is the plan, there may not be enough bare soil to provide a natural seedbed without some slash treatment.
- Consider increased air quality standards and visibility limitations, which can limit the days when slash burning is allowed, especially near larger communities. Plans for slash treatment and any related site preparation that involves using fire should consider the possibility of significant restrictions on burning.
- Remember that, even though onsite slash burning is the traditional treatment to reduce or eliminate slash, newer equipment and technologies provide alternatives, including chipping slash to provide material for biomass energy production. When choosing this option, proximity to biomass energy facilities and road access for chip vans should be considered.
- Minimize slash in water bodies such as streams, springs, ponds and wetlands; as slash rots, it can deplete water oxygen levels.



Slash after timber harvest and before treatment.

Reduce slash during timber harvest

Whole-tree harvesting and cut-to-length harvesting are two methods that can reduce slash on the harvest unit (see the Appendix). Because whole-tree harvesting generates significant slash at the landing as yarded trees are topped and delimbed, there may be an opportunity to chip the material and sell it as fuel for biomass energy, eliminating the need for further slash treatment.

In cut-to-length harvesting, a mobile processor cuts, tops and delimbs the tree in the same area. Often, the machine operator can drop the slash in its travel path and crush it enough to reduce the wildfire hazard while leaving openings for later tree planting.

Reduce slash accumulation

Here are some ways to reduce slash:

- Fell and buck trees carefully, to minimize breakage.
- Consider selling woody debris for biomass energy generation.
- Combine machine-crushing of limbs, along with lop and scatter through on-the-ground chainsaw work.
- Grind slash on-site when possible.

Treat slash and prepare the site for tree planting

Typically, slash is treated by machine, burning or a combination of both.

Two machines commonly used for treating slash are excavators and bulldozers equipped with a grapple. Excavators have the advantage of making cleaner slash piles for burning. Confine these ground-based machines to gentle terrain. While they are effective, both machines can cause excessive soil disturbance and water quality problems when they are not used carefully.



This crawler tractor, equipped with a grapple, picks up whole trees and moves them to a landing or roadside.



After limbs and tops are removed at the landing, this slash material is piled and then ground or burned. Whole-tree harvesting brings slash to a central location and disposes of it efficiently, leaving the forest floor ready for replanting trees.



To reduce wildfire hazard, slash can be crushed, cut or lopped, so that it lies close to the ground for rapid decay. This method is effective for light timber harvests, but usually is not adequate slash treatment for heavily harvested areas.



Slash piles free of soil burn cleaner, reduce soil erosion and protect productive topsoil.



When treating slash, stay clear of wet areas.



An excavator has the advantage of picking slash up rather than pushing it. Taller, more compact piles burn efficiently, with little soil disturbance.



The same machine that brings whole trees to the landing may carry slash back and scatter it on the forest floor. This returns nutrients and organic matter to the soil for the next forest. It also protects soil from erosion, especially in skid trails. The fire hazard is minimal because the slash is crushed and close to the ground.

Pros and cons of burning timber harvest slash

PROS

- Reduces fuel loads and related fire hazards.
- Works on steep slopes where vehicles cannot be used.
- Reduces available habitat for unwanted mountain beaver, rabbit and mice that may damage new tree seedlings.
- Controls brush that may compete with new tree seedlings.
- Provides adequate tree planting spots.
- Releases some nutrients and improves soil fertility.

CONS

- Can be costly and risky — the landowner is liable if the fire escapes.
- Burning in winter or spring reduces risk but requires planning and flexible scheduling.
- Potentially unpopular with neighbors and communities because of the smoke generated by burning.
- Extra work and expenses are required to burn during the wet season.
- Requires initial ODF notification, plus often a burning permit, a burn plan and a fee before burning.

Tips for burning slash piles

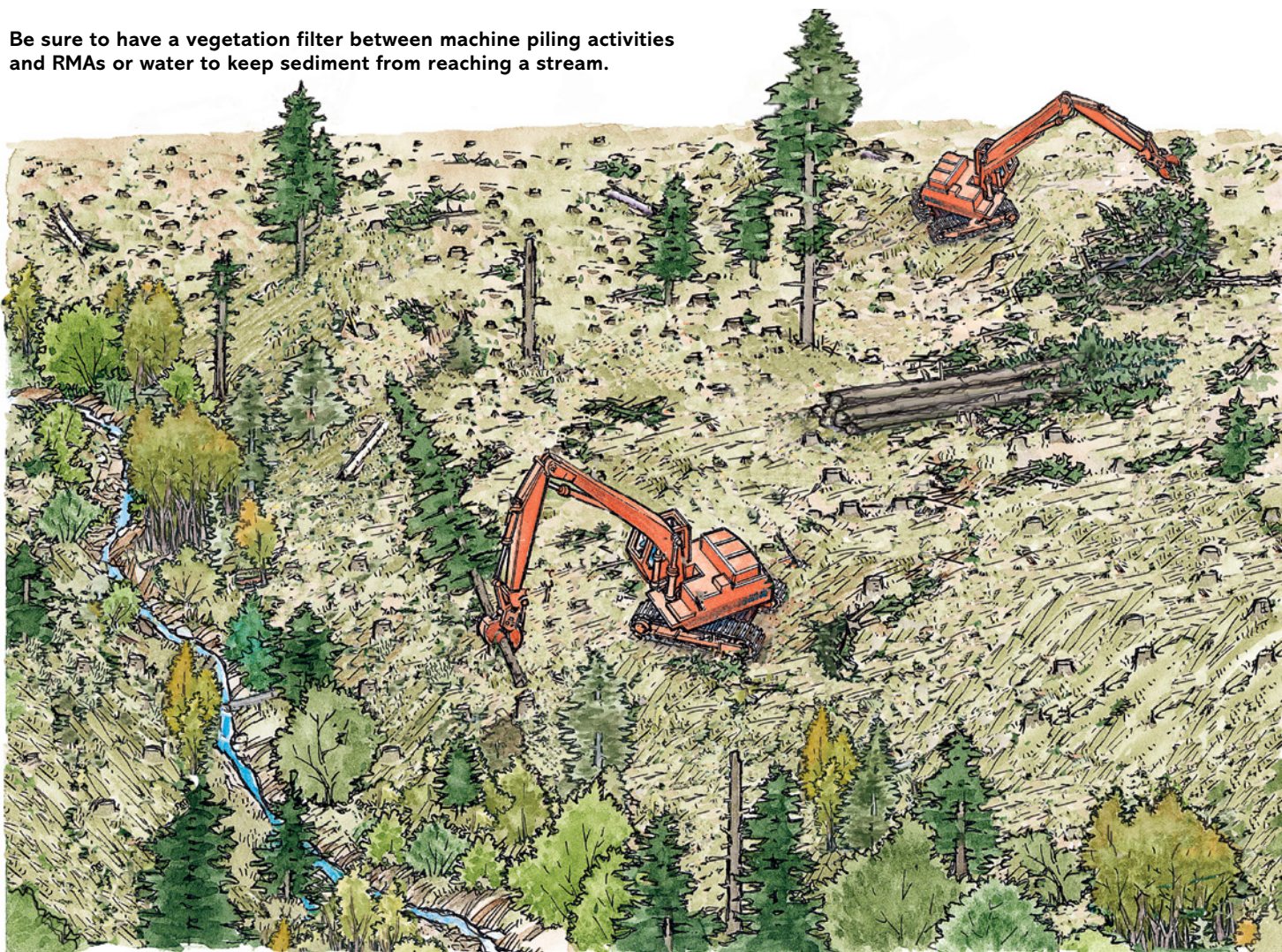
- Use pile covers. During the dry season, cover a portion of the pile with a waterproof barrier. These covers reduce pollutants by allowing rapid ignition and more complete combustion when burning is allowed. Covered piles allow for safer burning during more desirable wet periods. Drier woody material within the pile favors more rapid and complete combustion, which has fewer pollutants and improves smoke dispersal.
- Burn only approved covers. A plastic sheet (polyethylene) is the only inorganic cover that may be burned legally with a pile. Other covers may be used to keep piles dry but must be removed prior to burning.



- Well-built piles burn better. Properly-constructed burn piles (or windrows) burn more completely, and with less smoke and air pollution. These piles are compact, tall and relatively clean of dirt. They can be constructed by a log loader, excavator or dozer with a brush blade or by hand.
- Burn under proper fuel weather conditions. Conduct burning and light piles only during weather periods approved by ODF for safe burning and good smoke management. Burning during wet weather can achieve project objectives while reducing (but not eliminating) the need for fire control measures, due to decreased risk of escape.
- Some piles may not need to be burned. Not every slash pile or downed log needs burning. Small, scattered piles of woody debris can be left unburned for use as wildlife habitat, unless mountain beaver (boomer) or other pests are a problem. Oregon forest law also requires larger clearcut harvests to retain two pieces per acre of down wood that must not be piled or burned.



Be sure to have a vegetation filter between machine piling activities and RMAs or water to keep sediment from reaching a stream.



Requirements for mechanical site preparation near water

When mechanical site preparation is necessary in RMAs or near water, conduct operations in such a way that sediment or debris does not enter water bodies. Provide adequate distance between disturbed soils and waters of the state to filter sediment from runoff.

Machine piling (see illustration above) is not allowed:

- in RMAs
- on sites with surface or gully erosion
- where subsoil may be exposed, or subsoil compaction is likely to occur



Keep slash out of streams or other waterways. Slash can deplete oxygen levels as it rots and can be a debris torrent hazard in steep reaches.

Using water to help control the slash burn

If you need to draw water from a stream, lake or other water body as part of the burn operation, you must notify both OWRD and ODFW at least 15 days before the water is drawn. Copies of the original ODF Notifications of Operation forms may be used, but specific information about the water use must be included.

Avoid burning slash and other forest fuels

A number of alternatives to burning may be used to reduce, consume or otherwise eliminate timber harvest slash and other forest fuels. These options may be attractive when considering burning costs, unpredictable timing (smoke management) and the risk of fire escape. However, the alternatives can introduce their own costs and other concerns and should be weighed carefully against the advantages of a well-planned burn project.

Non-burning alternatives to treat excess forest fuels include, but are not limited to:

- do nothing and leave woody fuels onsite if slash is light
- cut-to-length or whole-tree harvesting (see the Appendix)
- pre-commercial thinning of smaller or excess trees
- skidding or yarding of unmerchantable wood or tops to the landing
- lopping and scattering of slash on the forest floor
- chipping or grinding on-site or at the log landing
- debarking and/or chipping of pulp fiber at the landing
- mechanical crushing of slash
- cutting or digging tree planting spots prior to reforestation
- herbicide treatment to kill unwanted and competing vegetation

Use of biomass

Interest and activity in biomass is growing. Biomass utilization involves removing slash and other excess woody debris from forests and then chipping or grinding it into fuel for renewable energy generation. Find out if it's an option for you by determining if tonnage prices cover the costs (of biomass collection, processing and transport), and integrating plans for biomass utilization with other timber harvest and management objectives. With new biomass energy facilities that reduce transport costs and other related efficiencies, plus market incentives, biomass is becoming a more attractive option for landowners.



Prescribed burning with a helitorch is becoming a less common way to reduce slash as whole-tree cable harvesting and other approaches become more common.



Forest slash, also known as biomass, has many uses, including renewable energy generation.

PREScribed BURNING

A controlled or prescribed burn can help achieve reforestation, maintain forest health, improve wildlife habitat and reduce fuel and wildfire hazard, as long as it follows guidelines and requirements that protect air and water quality, and fish and wildlife habitat. State regulations governing prescribed burning ensure that necessary burns are planned and managed to maximize benefits and minimize potential detrimental effects.

Prescribed burning includes burning piles, understory burning, or broadcast-burning, which entails burning slash across the entire unit. As a controlled fire, it consumes tree harvest slash, unwanted vegetation or other wildland fuels. When used under carefully monitored conditions, including local wildfire hazard, weather, fuel moisture, proximity to populated areas and time of day, it can be an efficient and effective forest management tool. Burning should be prescribed for specific purposes and conducted by professionals with experience lighting, controlling and extinguishing such fires. Prescribed burning removes fuels that could otherwise make a future wildfire far more destructive when those fuels have accumulated to hazardous levels. It can also prepare sites for reforestation by adding nutrients and removing thick logging slash and competing vegetation.

It is common for controlled burns to be integrated with mechanical thinning or tree harvest operations that redistribute and reduce excess woody fuel-loading. This keeps prescribed burning feasible and safe. Safe burning requires careful attention to forest fuel loads and the location of the planned burn. Removal of a portion of the fuels through timber harvest is a common part of an integrated management strategy.



On steep slopes, prescribed burning can be an effective way to limit soil disturbance while controlling fuels and enhancing reforestation.

Options for treating excess fuels and unwanted vegetation by burning include:

- piles at the roadside or log landing
- “jackpot” or windrow piles in the timber harvest unit
- broadcast-burning of slash in the harvest unit
- spot-burning of unpiled slash concentrations
- under-burning below a well-spaced tree canopy

Prescribed burning can be a valuable management tool, but forest landowners and operators must follow important steps to control smoke and the risk of the fire escaping and causing a wildfire.

Prescribed burns versus wildfire

Wildfires are destructive, polluting, unpredictable, dangerous and costly to control. In contrast, prescribed burning uses small, prescribed fires during ideal meteorological conditions, when smoke can be reduced and kept away from communities. Prescribed burning is only allowed when weather conditions favor good fire control and smoke dispersal to maintain air quality. In areas such as central and eastern Oregon, carefully prescribed forest thinning and prescribed burning can mimic the natural, low-intensity wildfires that historically “managed” many forests. Although prescribed burning generates smoke and carries some risk of escape, the catastrophic wildfires they help to avoid by reducing fuels can cause much greater problems.

Avoid smoke problems

The Oregon Department of Forestry (ODF) regulates burning on forestlands throughout Oregon under the state’s Smoke Management Plan, which is widely regarded as the most successful forest burning program in the western U.S. ODF monitors weather conditions and provides daily forecasts, and issues burning instructions to landowners who have registered to conduct burning projects. ODF coordinates thousands of burning requests statewide from private and public forest landowners and managers. ODF’s strict oversight and regulation of forest burning projects help to minimize air quality impacts and smoke intrusions into populated and smoke-sensitive receptor areas.

OREGON’S SMOKE MANAGEMENT PLAN GOALS

- protect public health and reduce long-term air pollution from wildfires
- minimize burn smoke intrusions into designated cities and wilderness areas
- maximize burning opportunities while minimizing smoke emissions
- help accomplish forestry fuel reduction and reforestation objectives
- actively monitor and report accomplishments for continuous improvement
- self-fund the program with burning registration fees

ODF administers the Smoke Management Plan, including handling burn permits and fees, burn condition monitoring and approvals, and annual reporting. See oregon.gov/ODF/Fire/Pages/Burn.aspx.

Requirements for burning on forestlands

Prescribed burning involves some risk. A prescribed burn must be well planned and conducted under strict environmental and meteorological conditions to keep the fire fully confined. Burn managers must prevent the burn from becoming uncontrolled by using skilled burn crews, installing fire lines and ensuring containment through adequate equipment and personnel.

The potential liability for suppression costs and damage to adjoining property may deter some landowners from burning projects, since the liability from fires from other forest operations also applies to prescribed burning. In addition, allowable burning days and other restrictions can be more stringent for forestlands near population centers and locations where smoke disperses more slowly, such as the Willamette Valley and the Medford area.

Burning projects on forest lands must address the following:

- Any burning activity must be registered with the Oregon Department of Forestry (ODF) by obtaining a burning permit at least seven days before the planned ignition. A written burn plan is required in some situations.
- Fees are due with burning permit registration and are calculated on a per-acre basis that varies according to site location, burn acreage and burn type (e.g., landing, piles, broadcast).
- Burn plans and implementation must consider protection of air, water quality, and fish and wildlife habitat.
- Burning must protect trees left after timber harvest, riparian buffers and soil productivity.
- Burning must maintain vegetation required under the forest practice rules, including riparian management areas (RMAs) for streams, lakes and wetlands (see below).
- Burn area and intensity should be limited to only what is needed for reforestation or fuel hazard reduction.
- At least one day before igniting the burn, the landowner or operator must call the local ODF office for clearance to burn, which is subject to favorable conditions.
- Those requesting ignition approval should be prepared to provide specific information about the burn, including fuel load amounts and the planned ignition time.
- Ignition activity must not start — or if already begun, must be discontinued — if weather or other conditions change and are no longer within ODF-approved limits.
- Burn completion must be reported to ODF within one business day following each day’s ignition for all prescribed burning.

Burning near streams, lakes and wetlands

Burning near streams, lakes and wetlands involves additional resource risks, therefore a written plan is required when burning is expected within:

- 110 feet of Type F, Type SSBT and Type D streams
- 100 feet of large lakes
- 300 feet of significant wetlands
- The written plan should describe, as needed, how detrimental effects will be minimized:
- in RMAs
- on highly erodible soils
- for any required wildlife trees, snags, down logs and understory vegetation

Planning and conducting prescribed burning

Comply with the rules of Oregon's Smoke Management Plan and be sure to:

- Protect reproduction and residual timber, humus and soil surface.
- Consider possible detrimental effects of prescribed burning to RMAs, streams, lakes, wetlands and water quality, and how these effects can be best minimized.
- Lay out the unit and use harvesting methods that minimize detrimental effects to RMAs, streams, lakes, wetlands and water quality during the prescribed burning operation.
- Fell and yard the unit to minimize accumulations of slash in stream channels, and within or adjacent to RMAs.
- Minimize fire intensity and the amount of area burned to that necessary to achieve reforestation, forest health or hazard reduction needs.

Operators must describe in a written plan how detrimental effects will be minimized when burning within:

- 110 feet of Type F, Type SSBT and Type D streams
- 100 feet of large lakes
- 100 feet of wetlands larger than eight acres (non-estuaries), bogs and important springs in eastern Oregon
- 300 feet of estuaries, especially when burning on highly erosive soils such as decomposed granite soils and slopes steeper than 60%

During prescribed burning, operators must protect resources required to be retained for riparian habitat protection, such as live trees, snags, downed wood and understory vegetation. When the operator has taken reasonable protection precautions, but a detrimental effect occurs, the intent of the rule is considered to have been met if the overall integrity of the RMA is maintained. Operators must not salvage trees killed by prescribed fire in an RMA if the trees were retained for the purpose of protecting riparian habitat.

Protection requirements may be modified through a plan for an alternate practice when the need for prescribed burning outweighs the benefit of protecting components required to be left within the riparian area, aquatic area or wetland. Approval of such a plan must consider the environmental impact and cost of alternative treatments.



It is possible to practice prescribed burning and save down logs.

CERTIFIED BURN MANAGER

Oregon's Certified Burn Manager Program provides oversight of training and certification to ensure the safe and effective use of prescribed burning. Participation in the program is voluntary. Learn more at oregon.gov/odf/fire/pages/prescribed-fire.aspx.

Burn manager certification requirements

A burn manager certificate can only be issued to an individual. Other entities, such as partnerships, corporations and limited liability companies, are not eligible for a certificate. Burn manager certificates are subject to the following conditions:

- The individual is authorized to conduct prescribed fires as permitted by the certificate.
- The ODF prescribed fire coordinator will not issue a certificate prior to the receipt of all documents and required fees.
- The ODF prescribed fire coordinator will assign a unique identification number to each certificate issued.
- A certificate is valid for five years, unless it is revoked or surrendered sooner.
- A certificate may be renewed only after having been valid for a minimum of four years.
- A certificate may not be renewed if:
 - > It was revoked pursuant to OAR 629-042-1035(2).
 - > It has been more than six years since it was issued.
- Certificates are not transferable.

Authorized entries:

- A certified burn manager (CBM), ODF prescribed fire coordinator or training provider may document successful completion of a classroom or field training requirement when they have personal knowledge that the person has properly completed the task being documented.
- Notwithstanding the above, the ODF prescribed fire coordinator may document successful completion of a training requirement if the requirements of OAR 629-042-1025(3) have been met.

Training

The ODF prescribed fire coordinator will provide a field certification book, which an applicant must complete before applying for an initial certificate, or applying for a new certificate because the previous one was not renewed. Prior to receiving a field certification book, an individual must submit

documentation to the ODF prescribed fire coordinator of successful completion of:

- classroom or correspondence training provided by an approved provider or the ODF forester
- a passing score on a test in accordance with OAR 629-042-1030

An applicant will not receive credit for training completed more than three years prior to the applicant's request for a field certification book. The ODF prescribed fire coordinator may waive this three-year limitation if the individual is applying for historical recognition.

After verification of documentation, the ODF prescribed fire coordinator will issue the applicant a field certification book, which consists of field training that the applicant must complete, including:

- general proficiencies
- pile burning proficiencies
- pile burning and broadcast burning proficiencies

To apply for a certificate to conduct pile burns and broadcast burns, all field training described in the field certification book must be verified as completed with a signature in the field certification book by a CBM or the ODF prescribed fire coordinator. The field certification book will be valid for three years after the date of issuance by the forester.

The ODF prescribed fire coordinator may consider classroom, correspondence, and field training requirements through historical recognition. In lieu of the initial training requirements above, an individual may submit one of the following to the forester:

- Completed copy of an incident qualification card. The Task Book must indicate successful performance in the planning and implementation of prescribed fire.
- Documentation that the individual holds a valid CBM certification in a state with comparable requirements to the state of Oregon.
- Evidence of experience equivalent to the initial training requirements as determined by the ODF prescribed fire coordinator. (The testing requirements must still be fulfilled.)



An individual must complete the following actions prior to applying for a renewal of a certificate:

- Sixteen hours of continuing education within the certification period. The continuing education must be related to prescribed burning and approved in advance by the forester.
 - > The ODF prescribed fire coordinator may approve training presented in a classroom, conference, correspondence course or other acceptable format.
 - > The ODF prescribed fire coordinator will not accept educational training that was completed more than five years prior to the applicant's date of application for renewal of a certificate.
- Supervision of one prescribed burn and participation in two additional prescribed burns during the certification period and prior to applying for a renewal.

Certified burn manager tests

The ODF prescribed fire coordinator will ensure the development and administration of, and set a passing score for, all tests required for burn manager certification. The same test may not be administered to an individual more frequently than once every 30 days.

Individuals taking the test must display approved, government-issued picture identification to the forester or authorized training provider before taking a test and are required to comply with all test-taking requirements established by the forester or authorized training provider. Individuals must successfully pass a test before requesting a field certification book from the ODF prescribed fire coordinator.

Individuals who are unsuccessful in passing the test may request a review of the decision by the Certified Burn Manager Advisory Committee within 30 days of receiving the test result. The committee will conduct the review at its next scheduled meeting after receiving the request for review. Following the review, the committee may either affirm or withdraw the test result by majority vote. The forester or the individual may appeal the committee's decision to the Board of Forestry. Any final resolution by the board will be prepared as a final order, and any further appeal of the final action must be made as prescribed by ORS 183.484.

Required actions and activities of certified burn managers

A CBM must complete the following activities before supervising a prescribed burn:

- Prepare or review a plan prepared in a format approved by the ODF prescribed fire coordinator prior to ignition of a prescribed burn.
- Notify ODF prior to ignition.
- Confirm that notification of a prescribed burn has been made to adjacent landowners prior to ignition.
- Be present on-site and maintain active supervision of the resources used on any prescribed burn, from ignition through mop-up.
- Be readily available to return to a prescribed burn until:
 - > the prescribed burn has achieved the conditions documented in the prescribed burn plan for transfer of responsibility to another person; or
 - > giving notice of termination of responsibility

A CBM must give notification to the local fire protection district when assuming responsibility for a prescribed burn and when those responsibilities terminate. Notification can be made by phone to the district where the burn is being conducted and must be made before ignition and within two hours of terminating responsibility.

A CBM must not permit any dangerous or adverse situation on a prescribed burn for which they have responsibility. Additionally, the burn manager must cooperate fully with any investigation undertaken by the forester pursuant to OAR 629-042-1035(1).

When reported or observed dangerous or adverse situations occur under the responsibility of a CBM, ODF will investigate, and the certificate may be revoked no sooner than 30 days from the date of notice.

Landowner responsibility when using a CBM

A landowner who uses a CBM to supervise a prescribed burn must make a genuine attempt to notify all adjacent landowners about the prescribed burn. Notification must be made not more than 90 days before ignition of the prescribed burn, and a copy of the prescribed burn plan must be provided to any nearby landowner who requests one.

Once the prescribed burn is ignited, a landowner must not terminate the CBM's responsibility unless:

- responsibility has been transferred to another CBM or the landowner
- the local fire district has been notified

Certified burn manager limitation

A CBM shall only supervise:

- prescribed burning activities as identified within an approved prescribed burn plan;
- prescribed burning they are certified to conduct; and
- prescribed burning conducted within a forest protection district, as identified in OAR 629-041-0500 through 629-041-0575.

