

5.16 Effects Associated With Hazardous Materials

This section primarily relates to the use, transportation, storage, and disposal of hazardous materials that are likely to result from the Proposed Program or the Alternatives. The term “hazardous material” refers to both hazardous substances and wastes. A material is defined as hazardous if it appears on a list of hazardous materials prepared by a federal, State, or local regulatory agency, or if it has characteristics defined as hazardous by such an agency. Two other types of materials that are regulated separately from hazardous chemicals and materials are biohazardous materials (i.e., that contain biological material capable of causing disease in humans) and radioactive materials (i.e., that spontaneously emit ionizing radiation). Neither of these two types of materials will be generated by the Proposed Program or the Alternatives, so will not be analyzed.

Herbicides may be categorized as hazardous materials. However, only the transport and storage of herbicides are analyzed in this chapter. The use and disposal of herbicides and their adjuvants and diluents and the fate of their degradates are analyzed separately in Section 5.17, *Effects of Program/Alternative Implementation Associated With Herbicides*.

The primary hazard(s) not related to accidental chemical contamination include injury, loss, or death from escape of prescribed fire, and/or exposure to hazardous materials generated from combustion of non-target substances (e.g., burning buildings).

5.16.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines, an impact would be considered significant if the Proposed Program and Alternatives would:

- a) Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- b) Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- c) Create hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of sensitive receptors (see Glossary for definition, includes for example existing or proposed schools, hospitals, assisted living facilities, etc.).
- d) Expose people or structures to the risk of loss, injury or death involving escape of prescribed fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.
- e) Create a public nuisance.

5.16.2 Determination Threshold

For the purposes of the following evaluation, impacts from the Proposed Program or the Alternatives are considered “significant” within an appropriate time frame and ecological context if they cause relatively high magnitude, persistent, or permanent changes to:

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- a) Population size, distribution, viability, or recovery potential of a special status species.
- b) Levels of water contaminants above the limits established by Regional Water Quality Control Boards.
- c) Conflicts with local, State, or federal biological resource protection plans, policies, and regulations.
- d) The health or safety of workers associated with the implementation of manual, mechanical, or chemical treatment measures.
- e) Public health or safety of sensitive subpopulations (existing or proposed schools, hospitals, assisted living facilities, etc.) through the routine transport or storage of hazardous materials.
- f) Workers or the public through reasonably foreseeable upset and accident conditions involving the release of hazardous materials.

5.16.3 Data and Assumptions

Section 4.16 contains a description of the types of fire retardant chemicals proposed for use in the VTP. Section 5.17 contains a list of the herbicides proposed for use in the VTP and associated risks.

Landscape Constraints 1, 2, 3 and 5 and Minimum Management Requirements 1, 2, 3 5, 6, and 14 specifically apply to Hazards and Hazardous Materials.

5.16.4 Direct Effects Common to all Bioregions From Implementing the Program/Alternatives

Table 5.16.1 summarizes the information from the balance of this subchapter on the effects of implementing the Program across the state by bioregion in terms of wildfire intensity and frequency. In this case, a significant effect is one where implementation of the Proposed Program or one of the Alternatives caused relatively high magnitude, persistent, or permanent changes to special status species, water quality, worker health and safety, public health and safety, etc. (see Determination Thresholds above).

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Bioregion	Prescribed Fire	Mechanical	Hand	Herbivory
Klamath/North Coast	NA	NA	NA	NA
Modoc	NA	NA	NA	NA
Sacramento Valley	NA	NA	NA	NA
Sierra	NA	NA	NA	NA
Bay Area	NA	NA	NA	NA
San Joaquin	NA	NA	NA	NA
Central Coast	NA	NA	NA	NA
Mojave	NA	NA	NA	NA
South Coast	NA	NA	NA	NA
Colorado Desert	NA	NA	NA	NA

^{1/} Key to effects; adverse effects are those effects which degrade the diversity, structure, size, integrity, abundance or number of; or are outside the natural range of variability, for the resource at issue. Beneficial effects are those effects that improve the diversity, structure, size, integrity, abundance or number of; or are within the natural range of variability, for the resource at issue. SA/SB – significant adverse effects are those effects that are substantial, highly noticeable, at the watershed scale; and often irreversible. MA/MB - moderately adverse or beneficial effects - those effects that can be detected beyond the affected area, but are transitory and usually reversible. NA/NB - negligible adverse or beneficial effects - those effects that are imperceptible or undetectable.

Herbicide transport and storage

The primary hazard posed by transport and storage of herbicides and their adjuvants in VTP projects is contamination of surface and ground water. Contaminated water could then impact organisms dependent on the water supply, including plants, animals and humans. Accidental discharges/spills of these hazardous fluids during transport or storage are a possibility on every project where they are used. Large (>1,320 gallons), permanent storage containers will not be used on any VTP project, due to the remote nature of the projects.

Heavy machinery fuel, lubricants, coolants, etc.

The primary hazard posed by fuels and chemicals used on machinery in VTP projects is contamination of surface and ground water. Contaminated water could then impact organisms dependent on the water supply, including plants, animals and humans. Accidental discharges/spills of these hazardous fluids are the primary mechanism for introducing them into the environment and are a possibility on every project where hazardous materials are used. None of the VTP treatment types use or discharge hazardous materials as a means of treating vegetation, except herbicides, which are discussed in Section 5.17. Large (>1,320 gallons), permanent storage containers will not be used on any VTP project, due to the remote nature of the projects.

Fire retardants

The types of fire retardants used during VTP prescribed fire projects as well as those used during emergency suppression are described in Chapter 4. The primary threat posed by fire

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retardants is contamination of surface waters and subsequent impacts to aquatic organisms. Fire retardant chemicals such as ammonium polyphosphate and ammonium sulfate are especially harmful to aquatic organisms, particularly salmonids (USDI BLM, 2005; CAL FIRE, 2007). Fire retardant foams are typically more harmful than other fire retardant chemical forms (USDI BLM, 2005).

CAL FIRE only uses fire retardant chemicals that have been tested and approved by the US Forest Service. The US Forest Service has set up a material testing laboratory specifically designed to test the impacts of fire retardants on ecological and human health. The laboratory is called the Wildland Fire Chemical Systems (WFCS) laboratory, which conducts tests in compliance with standards established by the Environmental Protection Agency (EPA) and the American Society for Testing and Materials (ASTM). Chemicals that are shown to have acceptably low risks are added to an approved list, the Qualified Products List (QPL). CAL FIRE only purchases fire retardants included on the QPL.

Tests conducted for the WFCS by Labat-Anderson, Inc. in 1994 and 1996 concluded that impacts to terrestrial and aquatic organisms due to exposure to fire retardants under normal use were minimal after mitigations. The mitigations included measures to avoid introduction of fire retardant chemicals into water bodies (CAL FIRE, 2007). Studies conducted by Labat-Anderson, Inc. in 2003 found that risks to human health were minimal for burn crews due to use of protective personal equipment (PPE). There was a higher risk for adult and children citizens not wearing PPE that were exposed to fire retardants. However, there is a very low risk of exposing citizens to fire retardants during prescribed fire activities- because access to treatment sites can be closely controlled (CAL FIRE, 2007).

Escaped prescribed fires

A recent federal review of prescribed burns for the period 1996-2004 indicated that 99% of prescribed burns were “successful”, which means that they did not escape (Dether, 1995). The four federal agencies reviewed were the Forest Service, US Fish and Wildlife Service, Bureau of Land Management and National Park Service. These federal agencies conduct 4,000 to 5,000 prescribed burns annually, of which 40 to 50 escape or have near miss (minor but controlled escape) incidents.

It is assumed that prescribed fires within the VTP will have a similar success rate of approximately 99%. Thus for the Proposed Program, which will implement approximately 400 prescribed fire projects each year (Table 5.0.1), it can be expected that approximately 4 will escape or have a near miss incident each year.

The main effects of an escaped burn include one or more of the following (CAL FIRE, 1981):

- Burn more area than planned, i.e. more of a watershed, and burn at a higher intensity than planned.
- Burn improvements such as homes, barns, fences, or crops.
- Cause arcing of powerlines.
- Require additional resources for suppression.

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Due to the unplanned and accidental nature of escaped burns it is not possible to prevent them entirely. All reasonable measures to prevent escapes are standard practice and are incorporated in the prescribed fire burn plans.

Alternatives 2 and 3 propose to burn slightly more acres per year (~24 more projects per year), Alternatives 1 and 4 propose far fewer acres of prescribed burns. Thus the number of escaped prescribed fires could be slightly higher for Alternatives 2 and 3 compared to the proposed program, and far fewer for Alternatives 1 and 4.

For Alternative 1 effects due to hazards and hazardous materials are likely to be lower than the proposed program because the acreage treated is much lower. For Alternative 2 there will not be any potential effects due to herbicide transport or storage as use of herbicides is not included in this Alternative (including up to 1 year prior to initiation of the project and up to 3 years after completion of the project). Effects from the Proposed Program are equivalent for Alternative 3 due to similarity in treatment types and acreage treated. The frequency of escaped prescribed burns is likely to be lower for Alternative 4 because the acreage treated with this treatment type is lower than for the Proposed Program.

5.16.5 Bioregion-Specific Direct Effects of Implementing the Program/ Alternatives

Effects are expected to be similar across bioregions.

5.16.6 Determination of Significance

MMRs 1 and 5 and 6 and Mitigation Measures 5.16-5 through 7 and 5.16-9 are considered sufficient to prevent significant impacts to sensitive species or significant contamination of surface or ground water due to spills or accidental discharges of hazardous materials. Compliance with all Federal and State laws, codes, and regulations will minimize to less than significant levels any potential impact that may result from the transport, storage, handling, and disposal of the hazardous materials.

Escapement of prescribed burns is rare but cannot be avoided. However, implementation of Mitigation Measures 5.16-1 through 3 will allow for containment of most burns at a small size, rehabilitation of burned areas, and compensation of landowners for damages.

If fire retardants are kept away from watercourses (Mitigation Measure 5.16-4) the likelihood of contamination of the water column is extremely low and should avoid significant impacts to aquatic organisms.

The potential impacts from hazards and release of hazardous materials will not have a significant adverse impact on the following items due to the infrequency of their occurrence, avoidance measures incorporated into the VTP program, CAL FIRE internal policies, and the proposed mitigations:

- a) Population size, distribution, viability, or recovery potential of a special status species.
- b) Water quality contamination above the limits established by Regional Water Quality Control Boards.

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- c) Conflicts with local, State, or Federal biological resource protection plans, policies, and regulations.
- d) The health or safety of workers associated with the implementation of manual, mechanical, or chemical treatment measures.
- e) Public health or safety of sensitive subpopulations (e.g., schools, hospitals) through the routine transport or storage of hazardous materials.
- f) Workers or the public through reasonably foreseeable upset and accident conditions involving the release of hazardous materials.

5.16.7 Similar Effects Described Elsewhere

Although effects from exposure to chemicals as well as potential pollution of air or water, related to implementation of the Proposed Program and alternatives, are described elsewhere in this document, this chapter is unique in considering effects of unplanned/accidental generation of hazards and hazardous materials indirectly related to program/alternative implementation.

5.16.8 Mitigation Measures for the Proposed Project

Mitigation Measure 5.16-1: Rehabilitation Measures. Rehabilitation measures, including revegetation and erosion control, shall be implemented when prescribed fires escape the project boundaries or burn at higher intensity than was planned.

Mitigation Measure 5.16-2: Landowner Compensation. Landowners that experience financial impacts due to escaped fires such as damage to agricultural crops, livestock, or structures shall be compensated based on appraised value of such losses by maintaining an insurance policy on each prescribed burn project for a minimum of five million dollars through the state insurance office.

Mitigation Measure 5.16-3: Emergency Fire Suppression. Emergency fire suppression equipment and personnel shall be made available as necessary to suppress escaped burns at the smallest practicable size. Prescribed fire projects shall not be allowed to proceed unless adequate backup fire suppression forces are available in the vicinity to respond as necessary.

Mitigation Measure 5.16-4: Restriction of Fire Retardants near Watercourses. Application of ground-applied fire retardants shall not occur within 100 feet of Class I or II watercourses and 50 feet of Class III watercourses.

Mitigation Measure 5.16-5: Equipment Maintenance. Project personnel shall regularly inspect and maintain hydraulic and fuel hoses on equipment so as to prevent leaks or breaks.

Mitigation Measure 5.16-6: On-site Spill Response Kits. An on-site spill response kit capable of cleaning up five gallons or more of fuel, hydraulic oil, or other fluids where grease, oil, fuel or other similar materials could pass into lakes or watercourses shall be maintained on site.

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Mitigation Measure 5.16-7: Project Personnel on On-site. Project personnel will never leave the area while equipment is being fueled.

Mitigation Measure 5.16-8: Hazardous Materials near Sensitive Receptor Sites. No hazardous emissions will occur nor shall hazardous or acutely hazardous materials, substances, or waste be handled within one-quarter mile of sensitive receptors.

Mitigation Measure 5.16-9: Notification of Spills. CAL FIRE shall immediately notify the Department of Fish and Game and Regional Water Quality Control Board when accidental contamination has occurred that may result in harm to fish or wildlife.