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## Hazardous Materials, Public Health and Safety

This section evaluates potential health, safety, and environmental impacts related to hazardous materials that could result from implementation of the CalVTP. It describes the existing hazards and safety concerns within the treatable landscape and the nature of potential impacts that could occur as a result of the vegetation treatment activities.

Comments on the Notice of Preparation related to hazardous materials, public health, and safety included concern over the use of herbicides and prescribed fire accelerants and related health effects (see Appendix A). ~~No accelerants are proposed for use under the CalVTP and t~~The potential for health effects ~~of~~from use of fuels, other accelerant materials, herbicides, and other potentially hazardous materials proposed for use are addressed in Section 3.10.3, “Impact Analysis and Mitigation Measures.”

### Environmental Setting

Hazards include conditions that could potentially affect health and safety. Examples include exposure to hazardous materials, such as chemicals or hazardous waste, or to physically hazardous situations, such as those that may occur in areas of high wildfire potential or in proximity to airports. Hazardous materials are defined, and potential hazards are summarized below.

#### Hazardous Materials

##### Definitions

California Health and Safety Code Section 25501 defines *hazardous materials* as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. *Hazardous materials* include, but are not limited to, hazardous substances, hazardous waste, and any material that a handler or the administering agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

A *hazardous chemical* is any chemical whose presence or use poses a physical or health hazard. The Federal Occupational Safety and Health Administration (OSHA) Laboratory Standard defines it as a chemical for which there is significant evidence, based on at least one study conducted in accordance with established scientific principles, that it may cause acute or chronic health effects to exposed employees. The term *health hazard* includes chemicals that are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins (affecting the liver), nephrotoxins (affecting kidneys), neurotoxins (affecting brain and nervous system), agents that affect the hematopoietic (blood) system, and agents that damage lungs, skin, eyes, or mucous membranes.

##### Potential Existing Hazards and Contamination

Hazardous materials, if present in soils, can be disturbed and dispersed by vegetation treatment activities, particularly those using heavy equipment. Soil contamination generally occurs in areas that are or have been previously developed, especially with industrial-type uses. Soil contamination can also occur in areas where pesticides have been historically applied, as well as in areas that have historically been mined or used for defense activities (e.g., an air force base). Contamination can also be associated with leaking utilities (e.g., leaking petroleum or gas pipelines, or leaking transformers on utility poles), or accidental spills. The treatable landscape is in tree, shrub, and grass fuel types, sometimes near developed areas. Some of the treatable landscape may contain limited remnant contamination from previous defense, agricultural, or pesticide use; contamination from nearby urban areas; or may have been exposed to leaks from pipelines, transformers, or utility poles.

As described in Chapter 1, “Introduction” and Section 2.3.1, “Past and Current Treatments,” vegetation treatment currently occurs around the state under several other wildfire risk reduction programs implemented by various federal, state, and local agencies. In 2017–2018, CAL FIRE treated approximately 33,000 acres in California using the same treatment activities as proposed under the CalVTP. Therefore, transportation, use, and storage of hazardous materials associated with vegetation treatments occurs in the treatable landscape under existing conditions. These include common household hazardous materials such as fuels, oils, lubricants, solvents, and detergents for equipment and vehicle use and maintenance.

Additionally, naturally occurring asbestos (NOA) may exist in serpentine rock units within the treatable landscape. NOA is further addressed in Section 3.4, “Air Quality.”

##### Pesticides/Herbicides

###### Background Information

A pesticide is any substance intended to control, destroy, repel, or attract a pest. Herbicides are a common type of pesticide that target weeds and other unwanted plants (DPR 2014). The terms pesticide and herbicide are used interchangeably herein.

Herbicides can be used selectively to control specific types of vegetation or non-selectively to clear all vegetation on a particular area. The process of registering a pesticide is a scientific, legal, and administrative procedure through which the U.S. Environmental Protection Agency (EPA) examines:

* the ingredients of a pesticide;
* the particular site or crop where it is to be used;
* the amount, frequency, and timing of its use; and
* storage and disposal practices.

In evaluating a pesticide registration application, EPA assesses a wide variety of potential human health and environmental effects associated with use of the product. The company that is seeking EPA-registration for the pesticide must provide data from studies that comply with EPA testing guidelines. EPA then develops risk assessments that evaluate the potential for (1) harm to humans, wildlife, fish, and plants, including endangered species and non-target organisms, and (2) contamination of surface or ground water from leaching, runoff, and spray drift (EPA 2018a). Risk assessment is crucial to the process of making decisions about pesticides, both new and existing. New pesticides must be evaluated before they can be used, and existing pesticides must be re-evaluated periodically to check that they continue to meet the appropriate safety standards (EPA 2017). The EPA also evaluates and approves the language that appears on each pesticide label to ensure the directions for use and safety measures are appropriate to address potential risks. Following label directions is required by law and is necessary to ensure safe use (EPA 2018a).

The EPA and individual states register and license pesticides in the U.S. under the authority of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). California state laws that regulate pesticide use, which are enforced by the California Department of Pesticide Regulation (DPR), are more restrictive than federal regulations and most other states. For example, pre-registration and registration requirements in California are more stringent than in other parts of the U.S. DPR reviews the studies submitted to the EPA and evaluates their findings, as well as state laws, to determine if additional label requirements or studies are needed.

###### Current Pesticide Use

Under CAL FIRE’s current vegetation management practices, herbicides are used in select locations in the SRA and are applied on the ground from equipment on vehicles (including all-terrain vehicles and tractors equipped with booms for downward spray application) or by manual application devices. Herbicides are applied at the direction of a licensed Pesticide Control Advisor (PCA), and applied to green leaves with a backpack applicator or spray bottle, wick (wiped on), or wand (sprayed on) or applied as pellets to the ground surface. Herbicides are also applied to trees around the circumference of the trunk on the intact bark (basal bark), to cuts in the trunk or stem (frill, or “hack and squirt”), to cut stems and stumps (cut stump), or injected into the inner bark with a hypo-hatchet. The following is a list of herbicides currently used by CAL FIRE in the SRA:

* Borax (tetraborate decahydrate);
* Clopyralid (monoethanolamine salt);
* Glyphosate (isopropylamine salt, potassium salt, dimethylamine salt & diammonium salt);
* Hexazinone;
* Imazapyr (isopropylamine salt);
* Sulfometuron Methyl;
* Triclopyr (butoxyethyl ester & triethylamine salt);
* Nonylphenol 9 Ethoxylates (NP9E);
* Cleantraxx (penoxsulam & oxyfluorfen);
* Velpar (hexazinone); and
* Indaziflam.

As described in Chapter 2, “Program Description,” CAL FIRE complies with all EPA and DPR pesticide label directions. Restricted use herbicides are applied per written recommendations from a licensed PCA and by an herbicide applicator certified by DPR. CAL FIRE obtains a permit from the applicable County Agricultural Commissioner (CAC) prior to applying restricted herbicides, as required by DPR. CAL FIRE complies with all federal and state laws regarding the transport, storage, and disposal of herbicides, and recommendations provided on the herbicide label and by the licensed PCA. More information on federal and state regulations related to pesticides and herbicides is provided below in Section 3.10.2, “Regulatory Setting.”

###### Human Health Risks and Toxicity

As with all potentially toxic substances, whether exposure to a pesticide causes harm depends on the dose, how someone is exposed, how sensitive an individual may be to the toxin, and the toxicity of the pesticide involved. People can be exposed to pesticides in three ways: breathing (inhalation exposure), getting it in the mouth or digestive tract (oral exposure), and contact with the skin or eyes (dermal exposure). Inhalation exposure can happen if someone breathes air containing pesticide as a vapor, as an aerosol, or on small particles like dust. Oral exposure happens when someone eats food or drinks water containing pesticides. Dermal exposure happens when someone’s skin is exposed to pesticides. This can cause irritation or burns. In more serious cases, skin can absorb the pesticide into the body, causing other health effects. Some pesticides evaporate more easily than others, so they are more likely to be inhaled. Some break down quickly on surfaces; others last longer. A pesticide applied as a liquid spray may drift more easily than dry granules, depending on meteorological conditions. A dry pesticide plowed into the soil can encounter groundwater but is not as likely to drift through the air. All these factors affect the potential risk of human exposure and are considered when DPR makes rules for pesticide use (DPR 2014).

###### Sensitive Receptors

Pesticides affect different people differently. Children may be more sensitive to some pesticides than adults. Compared to adults, they breathe in more air and eat more food relative to their body size, increasing their exposure. Also, their developing bodies may not break down some chemicals as effectively as adults. People of any age with asthma or other chronic diseases may be more likely than healthy individuals to get sick after pesticide exposure. Some individuals are also more sensitive to the odor or other irritant effects of certain pesticides. However, people in the greatest danger of pesticide exposure are those whose exposure is highest, such as workers who mix or apply pesticides (DPR 2014).

##### Fuels and Other Associated Accelerant Materials

There are several types of equipment and associated fuels or other accelerants that may be used to ignite prescribed burns. Drip torches and fusees are the primary ignition and firing tools that CAL FIRE and other agencies use; however, other devices such as the Terra torch/helitorch and projected aerial devices (i.e., Very Pistol, FireQuick flare launcher, and Polystyrene spheres) may be used. Drip torches use a gasoline/diesel fuel mixture that is dispensed by hand from a cylindrically shaped aluminum container. Fusees are similar to railroad flares and are often put on a stick, ignited, and used as a hand ignition device. Terra torches and helitorches use gasoline mixed with a gelling agent, such as alumagel (aluminum carboxylates), which solidifies the gasoline into a jelly-like form. The gelled gasoline helps the operator carefully target ignition locations. It is ignited by a propane lighter and projected. Spheres can be dispensed from a helicopter into a target area. Just prior to release, a small amount of ethylene glycol is automatically injected into each sphere by the dispensing machine. Within 20 to 30 seconds, the sphere ignites. Flare launchers such as a Very Pistol uses a flare that burns for approximately 6-8 seconds (USFS 2002).

The fuel and other associated materials (e.g., gelling agents) that form the basis for the targeted ignition process in each of these methods are collectively referred to as *accelerants*. When accelerants, or any other substances, are oxidized during the burning process, new chemicals may be formed. Many of these are gaseous or particulate chemicals that are quickly dispersed and diluted in the open air. However, it is possible that some solid or liquid residues may remain on the soil after these accelerants are used to start a prescribed burn (USFS 2002). As described in the Risk Assessment for Residues of Fire Accelerant Chemicals (USFS 2002), possible routes of exposure to humans are drinking water, ingestion of fish, and incidental soil ingestion.

#### Wildfire hazards

Wildland fires are seasonally common in certain forests, woodlands, grasslands, chaparral, and other high-fuel areas. The treatable landscape is located in many areas considered to have high wildland fire risk. CAL FIRE designates the SRA according to fire hazard severity zones: moderate, high, and very high. These zones are based on local vegetation type (fuel loading), slope, and weather. CAL FIRE implements fire fuel management practices in the SRA, where wildfire hazards are present, to minimize and manage the potential risk. CAL FIRE also has the primary responsibility for wildland fire response in many State Park units, reserves, and wildlife areas owned by CDFW, and lands owned and managed by other state, regional, and local agencies as well as private entities. In areas closer to communities, mutual aid agreements also exist with local fire protection agencies. Fire hazard severity zones throughout the SRA are depicted in Figure 1-2 of Chapter 1, “Introduction.”

### Regulatory Setting

#### Federal

The EPA is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Relevant federal regulations pertaining to hazardous materials are contained mainly in Code of Federal Regulations (CFR) Titles 29, 40, and 49. Hazardous materials, as defined in the CFR, are listed in 49 CFR Section 172.101. Management of hazardous materials is governed by the following laws:

* Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S. Code [USC] Section 6901 et seq.);
* Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, also called the Superfund Act) (42 USC Section 9601 et seq.); and
* Superfund Amendments and Reauthorization Act (SARA) of 1986 (Public Law 99-499).

These laws and associated regulations include specific requirements for facilities that generate, use, store, treat, and/or dispose of hazardous materials, which are applicable primarily to the program’s use of herbicides. The EPA provides oversight and supervision for federal Superfund investigation/remediation projects, evaluates remediation technologies, and develops hazardous materials disposal restrictions and treatment standards.

##### Resource Conservation and Recovery Act

RCRA establishes a framework for national programs to achieve environmentally sound management of both hazardous and non-hazardous wastes. RCRA was designed to protect human health and the environment, reduce/eliminate the generation of hazardous waste, and conserve energy and natural resources. RCRA also promotes resource recovery techniques. A waste would legally be considered hazardous if it is classified as ignitable, corrosive, reactive, or toxic. Under RCRA, the EPA regulates hazardous waste from the time that the waste is generated until its final disposal (“cradle to grave”). The Hazardous and Solid Waste Amendments of 1984 both expanded the scope of RCRA and increased the level of detail in many of its provisions. The Hazardous Waste Management subchapter of the RCRA deals with a variety of issues regarding the management of hazardous materials, including the export of hazardous waste, state programs, inspections of hazardous waste disposal facilities, enforcement, and the identification and listing of hazardous waste. Under RCRA regulations, commercial chemical products such as pesticides and herbicides would become “solid wastes” (and thus, potentially, hazardous wastes) at the point where the project proponent decides to discard them, if the pesticide product is listed in 40 CFR 261.31 or 261.33, or exhibits a hazardous waste characteristic identified in 40 CFR 261.21 through 261.24 (Cornell University 2017).

##### Comprehensive Environmental Response, Compensation, and Liability Act and Superfund Amendments and Reauthorization Act

Hazardous substances are a subclass of hazardous materials. They are regulated under the CERCLA and SARA. Under CERCLA, the EPA has authority to seek out the parties responsible for releases of hazardous substances and ensure their cooperation in site remediation. CERCLA also provides federal funding (the “Superfund”) for remediation. SARA Title III, the Emergency Planning and Community Right-to-Know Act (EPCRA), requires companies to declare potential toxic hazards to ensure that local communities plan ahead for chemical emergencies. The EPA maintains a National Priority List of uncontrolled or abandoned hazardous waste sites identified for priority remediation under the Superfund program. The EPA also maintains the Comprehensive Environmental Response, Compensation, and Liability Information System database that contains information on hazardous waste sites, potentially hazardous waste sites, and remedial activities across the nation.

For releases of hazardous substances, the federal government has established [Superfund Reportable Quantities (RQs)](https://www.epa.gov/epcra/cercla-and-epcra-continuous-release-reporting). CERCLA would apply to the CalVTP if a hazardous materials release were to occur during treatment activities above an established RQ for the substance.

##### Emergency Planning Community Right-To-Know Act

EPCRA was included under the SARA law and is commonly referred to as SARA Title III. EPCRA was passed in response to concerns regarding the environmental and safety hazards posed by the storage and handling of toxic chemicals. EPCRA establishes requirements for federal, state and local governments, Indian tribes, and industry regarding emergency planning and “Community Right-to-Know” reporting on hazardous and toxic chemicals. SARA Title III requires states and local emergency planning groups to develop community emergency response plans for protection from a list of extremely hazardous substances (40 CFR Section 355 Appendix A). The Community Right-to-Know provisions help increase the public’s knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. In California, SARA Title III is implemented through the California Accidental Release Prevention Program.

Some commonly used pesticides are included in the SARA Title III List of Extremely Hazardous Substances. This list identifies Threshold Planning Quantities (TPQs) and RQs for reach extremely hazardous substance. The TPQ is the amount of a substance in pounds in your possession at any one time that is at or above the listed quantity of active ingredients. Once this amount or more is in a person’s possession, it must be reported within 60 days according to Sara Title III requirements (University of Missouri 2019). EPCRA would apply to the CalVTP if any extremely hazardous materials are proposed for use at or above their established TPQs, or are released above the established RQ for the substance.

##### Occupational Health and Safety Administration

Enacted in 1970, the Occupational Safety and Health Act established this agency in order to ensure healthy working conditions in the U.S. There are approximately 2,100 OSHA inspectors, who, along with other experts and support staff, establish and enforce protective standards in the workplace. California, under an agreement with OSHA, operates an occupational safety and health program in accordance with Section 18 of the Occupational Safety and Health Act of 1970. The program applies to all public and private sector places of employment in the State, with the exception of federal employees, the U.S. Postal Service, private sector employers on Native American lands, maritime activities on the navigable waterways of the U.S., private contractors working on land designated as exclusive Federal jurisdiction, and employers that require Federal security clearances.

The OSHA Hazard Communication Standard (29 CFR Section 1910.1200) requires that workers be informed of the hazards associated with the materials they handle. For instance, manufacturers must appropriately label containers, Material Safety Data Sheets must be available in the workplace, and employers must properly train workers. Workers at hazardous waste sites must receive specialized training and medical supervision according to the Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations (29 CFR Section 1910.120).

Implementation of treatments under the CalVTP would require compliance with these federal and State safety standards and practices regarding workplace safety and providing a safe and healthy environment for workers.

##### Federal Insecticide, Fungicide, and Rodenticides Act

FIFRA provides the basis for regulation, sale, distribution, and use of pesticides in the United States. FIFRA authorizes the EPA to review and register pesticides for specified uses. The EPA also has the authority to suspend or cancel the registration of a pesticide if subsequent information shows that continued use would pose unreasonable risks. FIFRA has been amended by the Pesticide Registration Improvement Act of 2003, which provides for the enhanced review of covered pesticide products, to authorize fees for certain pesticide products, and to extend and improve the collection of maintenance fees.

As a part of the federal registration process, the EPA classifies each pesticide product as a “general use pesticide” or “restricted use pesticide” (RUP) based on the potential for the product to cause unreasonable adverse effects on human health or the environment. Only certified pesticide applicators or those under the supervision of a certified pesticide applicator may use a RUP. Certification is a statement by the certifying agency that the applicator is competent and authorized to use or supervise the use of restricted pesticides (EPA 2018b).

Individuals applying any type of pesticide must do so consistent with this federal law as well as state and tribal laws and regulations. In general, states have the primary authority within the state for compliance monitoring and enforcement for the use of pesticides in violation of labeling requirements. The equivalent regulations at the state level are described below in under “State.” FIFRA requirements, as enforced by the state (such as adhering to herbicide labels and application instructions), would apply to the use of herbicides under the CalVTP.

##### Worker Protection Standard

The EPA oversees pesticide use through the Worker Protection Standard (WPS). The WPS is a regulation for agricultural pesticides which is aimed at reducing the risk of pesticide poisonings and injuries among agricultural workers and pesticide handlers. WPS protects employees on farms, forests, nurseries, and greenhouses from occupational exposure to agricultural pesticides. The WPS contains requirements for pesticide safety training, notification of pesticide applications, use of personal protective equipment, restricted-entry intervals after pesticide application, decontamination supplies, and emergency medical assistance. The regulation covers two types of workers:

* Pesticide handlers: those who mix, load, or apply agricultural pesticides; clean or repair pesticide application equipment; or assist with the application of pesticides in any way.
* Agricultural workers: those who perform tasks related to the cultivation and harvesting of plants on farms or in greenhouses, nurseries, or forests.

The WPS requirements would apply to herbicide use proposed under the CalVTP to protect the health and welfare of pesticide handlers and appliers.

##### U.S Department of Transportation

The U.S. Department of Transportation (DOT), in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to the transportation of hazardous materials. The Hazardous Materials Transportation Act of 1974 (49 U.S. Code 5101 et seq.) directs the DOT to establish criteria and regulations regarding safe storage and transportation of hazardous materials. Hazardous materials regulations are contained in 49 CFR 171–180, and address transportation of hazardous materials, types of materials defined as hazardous, and the marking of vehicles transporting hazardous materials. In particular, 49 CFR 173, titled “Shippers’ General Requirements for Shipments and Packaging,” defines hazardous materials for transportation purposes; within this portion of the code, 49 CFR 173.3 provides specific packaging requirements for shipment of hazardous materials, and 49 CFR 173.21 lists categories of materials and packages that are forbidden for shipping. 49 CFR 177, titled “Carriage by Public Highway,” defines unacceptable hazardous materials shipments.

The DOT Pipeline and Hazardous Materials Safety Administration has designated many chemical compounds, including some pesticides, as hazardous materials. If transport of one or more of these hazardous pesticides is required under the CalVTP, compliance with DOT Regulation 49 CFR 100-185 would be required.

#### State

##### The Safe Drinking Water and Toxic Enforcement Act

This Safe Drinking Water and Toxic Enforcement Act (Proposition 65), passed as a ballot initiative in 1986, requires the state to annually publish a list of chemicals known to the state to cause cancer or reproductive toxicity so that the public and workers are informed about exposures to potentially harmful compounds. California EPA’s Office of Environmental Health Hazard Assessment (OEHHA) administers the act and evaluates additions of new substances to the list. Proposition 65 requires companies to notify the public about chemicals in the products they sell or release into the environment, such as through warning labels on products or signs in affected areas and prohibits them from knowingly releasing significant amounts of listed chemicals into drinking water sources. For pesticide use in a workplace setting, Proposition 65 requirements are met through compliance with DPR regulations, further described below under “California Pesticide Regulatory Program.” Glyphosate is the only chemical proposed for use under the CalVTP that has been listed under Proposition 65 in California by the OEHHA. Glyphosate was listed via the “Labor Code” listing mechanism, based on the International Agency for Research and Cancer’s (IARC) classification of glyphosate as *probably carcinogenic to humans* (Group 2A) in 2015 (OEHHA 2019). Refer to additional information presented in Table 3.10-1 and Appendix HAZ-1.

##### California Hazardous Waste Control Act

The California Hazardous Waste Control Act (HWCA) regulates the generation, treatment, storage, and disposal of hazardous waste (California Health and Safety Code Section 2510 et seq.). Hazardous waste is any material or substance that is discarded, relinquished, disposed of, or burned, or for which there is no intended use or reuse, and the material or substance causes or significantly contributes to an increase in mortality or illness; or the material or substance poses a substantial present or potential hazard to human health or the environment. These materials or substances include spent solvents and paints (oil and latex), used oil, used oil filters, used acids and corrosives, and unwanted or expired products (e.g., pesticides, aerosol cans, cleaners). If the original material or substance is labeled Danger, Warning, Toxic, Caution, Poison, Flammable, Corrosive or Reactive, the waste is very likely to be hazardous. The HWCA would apply to any CalVTP activities that require storage or disposal of hazardous waste (primarily pesticide use under the program).

##### California Pesticide Regulatory Program

DPR regulates the sale and use of pesticides in California. DPR is responsible for reviewing the toxic effects of pesticide formulations and determining whether a pesticide is suitable for use in California through a registration process. Although DPR cannot require manufacturers to make changes in labels, it can refuse to register products in California unless manufacturers address unmitigated hazards by amending the pesticide label. Consequently, many pesticide labels that are already approved by the EPA also contain California-specific requirements. Pesticide labels defining the registered applications and uses of a chemical are mandated by the EPA as a condition of registration. The label includes instructions telling users how to make sure the product is applied only to intended target pests and includes precautions the applicator should take to protect human health and the environment. For example, product labels may contain such measures as restrictions in certain land uses and weather (i.e., wind speed) parameters.

DPR also designates pesticides that can impair human health or pose hazards to the environment as “restricted materials” (similar to RUPs classification by EPA). Pesticides designated as restricted materials (state or federal) have additional use requirements which may include some or all of the following: (1) applicator certification from DPR or the applicable CAC, (2) enhanced supervision requirements for uncertified applicators, (3) a restricted materials permit from the CAC, and (4) additional requirements established by regulation. DPR usually designates restricted materials on the basis of active ingredient, concentration, container size, or use patterns on the labeling. The goal is to allow determination of the status by examining the product container and its labeling (DPR 2018).

Title 3, CCR section 6450, et. seq. further restricts the use of certain pesticides or active ingredients. These restrictions apply to all pesticide applications approved through the restricted materials permit process (through the applicable CAC). Regulatory restrictions may include the amount of pesticide that can be applied; methods of application; where the pesticide can be applied; or additional personal protective equipment that must be worn or used. The permit application process provides CACs with the opportunity to discuss the additional use restrictions with the property operator or pest control business well in advance of the actual application. Unlike permit conditions that are established by the CAC, regulatory use requirements are state regulations and are not attached to the permit (DPR 2018).

All herbicide use under the CalVTP would be required to comply with DPR regulations, such as adhering to pesticide labels and application directions, wearing personal protective equipment, and obtaining a restricted material permit if herbicides designated as ‘restricted materials’ are proposed for use.

##### California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC), a division of the California EPA, has primary regulatory responsibility over hazardous materials in California, working in conjunction with the EPA to enforce and implement hazardous materials laws and regulations. DTSC can delegate enforcement responsibilities to local jurisdictions.

The hazardous waste management program enforced by DTSC was created by the HWCA (California Health and Safety Code Section 25100 et seq.), which is implemented by regulations described in the CCR Title 26. The state program is similar to, but more stringent than, the federal program under RCRA. The regulations list materials that may be hazardous and establish criteria for their identification, packaging, and disposal.

Environmental health standards for management of hazardous waste are contained in CCR Title 22, Division 4.5. In addition, as required by California Government Code Section 65962.5, DTSC maintains a Hazardous Waste and Substances Site List for the state, commonly called the Cortese List.

California’s Secretary for Environmental Protection has established a unified hazardous waste and hazardous materials management regulatory program (Unified Program) as required by Senate Bill 1082 (1993). The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities for the following environmental programs:

* hazardous waste generator and hazardous waste onsite treatment programs;
* Underground Storage Tank program;
* hazardous materials release response plans and inventories;
* California Accidental Release Prevention Program;
* Aboveground Petroleum Storage Act requirements for spill prevention, control, and countermeasure plans; and
* California Uniform Fire Code hazardous material management plans and inventories.

The six environmental programs within the Unified Program are implemented at the local level by local agencies—Certified Unified Program Agencies (CUPAs). CUPAs carry out the responsibilities previously handled by approximately 1,300 State and local agencies, providing a central permitting and regulatory agency for permits, reporting, and compliance enforcement.

DTSC regulations would be applicable to the CalVTP if herbicides or other substances proposed for use qualify as a hazardous substance (some pesticides and herbicides become hazardous waste when discarded and, accordingly, must be disposed of as a hazardous waste).

##### California Division of Occupational Health and Safety Administration

The California, Division of Occupational Safety and Health Administration (Cal/OSHA), assumes primary responsibility for developing and enforcing workplace safety regulations within the state. Cal/OSHA standards are more stringent than federal OSHA regulations and are presented in CCR Title 8. Standards for workers dealing with hazardous materials include practices for all industries (General Industry Safety Orders); specific practices are described for construction, and hazardous waste operations and emergency response. Cal/OSHA conducts on-site evaluations and issues notices of violation to enforce necessary improvements to health and safety practices. Among other requirements, Cal/OSHA requires many entities to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans and provides specific regulation to limit exposure of construction workers to lead.

Implementation of treatments under the CalVTP would require compliance with the Cal/OSHA safety standards and practices regarding workplace safety and providing a safe and healthy environment for workers.

##### California Air Resources Board

The California Air Resources Board (CARB) oversees California’s Smoke Management Program, which addresses potentially harmful smoke impacts from agricultural, forest, and range land management burning operations. The legal basis of the program is found in the *Title 17 Smoke Management Guidelines for Agricultural and Prescribed Burning,* adopted by CARB on March 23, 2000 (CARB 2011). The Guidelines state that each air district or region shall adopt, implement, and enforce a smoke management program, in coordination with CARB and other appropriate stakeholders. Elements of the program include permitting requirements for agricultural and prescribed burns, meteorological and smoke management forecasting, and a daily burn authorization system (CARB 2000). The *California Wildfire Smoke Response Coordination*, prepared under the auspices of CARB’s California Air Response Planning Agency (CARPA) and the California Interagency and Smoke Council, provides useful information and resources seeking assistance in protecting the public’s health from the impacts of smoke during wildfires (CARPA 2014). This program is discussed in more detail in Section 3.4, “Air Quality” and would be applicable to prescribed burning under the CalVTP.

##### State Water Resources Control Board and Regional Water Quality Control Boards

The State Water Resource Control Board (SWRCB) and nine regional water quality control boards (RWQCBs) are responsible for ensuring implementation and compliance with the provisions of the federal Clean Water Act and the State Porter-Cologne Act. The Porter-Cologne Act of 1969 is California’s statutory authority for the protection of water quality. Along with the SWRCB and RWQCBs, water quality protection is the responsibility of numerous water supply and wastewater management agencies, as well as city and county governments, and requires the coordinated efforts of these various entities. These entities and water quality protection are discussed in more detail in Section 3.11, “Hydrology and Water Quality,” and would be applicable to any treatment activities under the CalVTP that could directly or indirectly affect water quality.

##### California Department of Forestry and Fire Protection

Public Resources Code 4201-4204 directs CAL FIRE to map fire hazards within SRAs based on relevant factors such as fuels, terrain, and weather. These statutes were passed after significant WUI fires occurred; consequently, these hazards are described according to their potential for causing ignitions to buildings. These zones, referred to as Fire Hazard Severity Zones, provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires (Board and CAL FIRE 2018). Additionally, the Public Resources Code, beginning with Section 4427, includes fire safety regulations that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with internal combustion engines; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire suppression equipment that must be provided on site for various types of work in fire-prone areas. These requirements would apply to CalVTP activities within a Very High Fire Hazard Severity Zone.

#### Local

When state agencies, including CAL FIRE, are conducting governmental activities under the authority of state law or the State Constitution, in this case, treatments implemented under the proposed CalVTP, they are exempt from local government plans, policies, and ordinances (unless a constitutional provision or statute directs otherwise). Nonetheless, CAL FIRE voluntarily seeks to operate consistently with local governance to the extent feasible. Given its statewide extent and the possible number of local and regional responsible agencies, this PEIR does not identify potentially applicable local government plans, policies, and ordinances. Types of local regulations relevant to hazardous materials, public health, and safety include general plan policies, local emergency operations plans, and zoning requirements. This PEIR assumes that any vegetation treatments proposed by local or regional agencies under the CalVTP would be consistent with local plans, policies, and ordinances, as required by SPR AD-3.

### Impact Analysis and Mitigation Measures

#### Analysis Methodology

The analysis of impacts related to hazardous materials and public health and safety focuses on the potential for the creation of significant hazards to the public or environment through the routine use of hazardous materials or reasonably foreseeable upset and accident conditions involving hazardous materials, emissions of hazardous materials within one quarter mile of a school, activities to be located on a hazardous materials site or near an airport, interference with an adopted emergency response plan, or exposure of persons to significant injury, loss, or death due to wildfire. Significance determinations account for the influence of relevant SPRs, which are incorporated into treatment design and listed below.

* **SPR AD-3 Consistency with Local Plans, Policies, and Ordinances**: The project proponent will design and implement the treatment in a manner that is consistent with applicable local plans (e.g., general plans, Community Wildfire Protection Plans, CAL FIRE Unit Fire Plans), policies, and ordinances to the extent the project is subject to them. This SPR applies to all treatment activities and treatment types, including treatment maintenance.
* **SPR HYD-4 Identify and Protect Watercourse and Lake Protection Zones:** The project proponent will establish Watercourse and Lake Protection Zones (WLPZs) on either side of watercourses as defined in the table below, which is based on 14 CCR Section 916.5 of the California Forest Practice Rules (February 2019 version). WLPZ’s are classified based on the uses of the stream and the presence of aquatic life. Wider WLPZs are required for steep slopes.

Procedures for Determining Watercourse and Lake Protection Zone (WLPZ) widths

| Water Class | Class I | Class II | Class III | Class IV |
| --- | --- | --- | --- | --- |
| Water Class Characteristics or Key Indicator Beneficial Use | 1) Domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area and/or  2) Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning. | 1) Fish always or seasonally present offsite within 1000 feet downstream and/or  2) Aquatic habitat for nonfish aquatic species.  3) Excludes Class III waters that are tributary to Class I waters. | No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high-water flow conditions after completion of timber operations. | Man-made watercourses, usually downstream, established domestic, agricultural, hydroelectric supply or other beneficial use. |
| WLPZ Width (ft) – Distance from top of bank to the edge of the protection zone | | | | |
| < 30 % Slope | 75 | 50 | Sufficient to prevent the degradation of downstream beneficial uses of water. Determined on a site-specific basis. | |
| 30-50 % Slope | 100 | 75 |
| >50 % Slope | 150 | 100 |

Source: 14 CCR Section 916.5 [936.5, 956.5] (February 2019 version)

* The following WLPZ protections will be applied for all treatments:
* Treatment activities with WLPZs retain at least 75 percent surface cover and undisturbed area to act as a filter strip for raindrop energy dissipation and for wildlife habitat. If this percentage is reduced, a qualified RPF will provide the project proponent with a site- and/or treatment activity-specific explanation for the percent surface cover reduction, which will be included in the PSA. After completion of the PSA and prior to or during treatment implementation, if there is any deviation (e.g., further reduction) from the reduced percent as explained in the PSA, this will be documented in the post-project implementation report (referred to by CAL FIRE as a Completion Report). This requirement is based on 14 CCR Section 916.4 [936.4, 956.4] Subsection (b)(6) (February 2019 version) and 14 CCR Section 916.5 (February 2019 version).
* Equipment, including tractors and vehicles, must not be driven in wet areas or WLPZs, except over existing roads or watercourse crossings where vehicle tires or tracks remain dry.
* Equipment used in vegetation removal operations will not be serviced in WLPZs, within wet meadows or other wet areas, or in locations that would allow grease, oil, or fuel to pass into lakes, watercourses, or wet areas.
* WLPZs will be kept free of slash, debris, and other material that harm the beneficial uses of water. Accidental deposits will be removed immediately.
* Burn piles will be located outside of WLPZs.
* No fire ignition (nor use of associated accelerants) will occur within WLPZs however low intensity backing fires may be allowed to enter or spread into WLPZs.
* Within Class I and Class II WLPZs, locations where project operations expose a continuous area of mineral soil 800 square feet or larger shall be treated for reduction of soil loss. Treatment shall occur prior to October 15th and disturbances that are created after October 15th shall be treated within 10 days. Stabilization measures shall be selected that will prevent significant movement of soil into water bodies and may include but are not limited to mulching, rip-rap, grass seeding, or chemical soil stabilizers.

Where mineral soil has been exposed by project operations on approaches to watercourse crossings of Class I, II, or III within a WLPZ, the disturbed area shall be stabilized to the extent necessary to prevent the discharge of soil into watercourses or lakes in amounts that would adversely affect the quality and beneficial uses of the watercourse.

Where necessary to protect beneficial uses of water from project operations, protection measures such as seeding, mulching, or replanting shall be used to retain and improve the natural ability of the ground cover within the WLPZ to filter sediment, minimize soil erosion, and stabilize banks of watercourses and lakes.

* Equipment limitation zones (ELZs) will be designated adjacent to Class III and Class IV watercourses with minimum widths of 25 feet where side-slope is less than 30 percent and 50 feet where side-slope is 30 percent or greater. An RPF will describe the limitations of heavy equipment within the ELZ and, where appropriate, will include additional measures to protect the beneficial uses of water.

This SPR applies to all treatment activities and treatment types, including treatment maintenance.

* **SPR HAZ-1 Maintain All Equipment:** The project proponent will maintain all diesel- and gasoline-powered equipment per manufacturer’s specifications, and in compliance with all state and federal emissions requirements. Maintenance records will be available for verification. Prior to the start of treatment activities, the project proponent will inspect all equipment for leaks and inspect everyday thereafter until equipment is removed from the site. Any equipment found leaking will be promptly removed. This SPR applies to all treatment activities and treatment types, including treatment maintenance.
* **SPR HAZ-2 Require Spark Arrestors**: The project proponent will require mechanized hand tools to have federal- or state-approved spark arrestors. This SPR applies only to manual treatment activities and all treatment types, including treatment maintenance.
* **SPR HAZ-3 Require Fire Extinguishers:** The project proponent will require tree cutting crews to carry one fire extinguisher per chainsaw. Each vehicle would be equipped with one long-handled shovel and one axe or Pulaski consistent with PRC Section 4428. This SPR applies only to manual treatment activities and all treatment types, including treatment maintenance.
* **SPR HAZ-4 Prohibit Smoking in Vegetated Areas:** The project proponent will require that smoking is only permitted in designated smoking areas barren or cleared to mineral soil at least 3 feet in diameter (PRC Section 4423.4). This SPR applies to all treatment activities and treatment types, including treatment maintenance.
* **SPR HAZ-5 Spill Prevention and Response Plan:** The project proponent or licensed Pest Control Advisor (PCA) will prepare a Spill Prevention and Response Plan (SPRP) prior to beginning any herbicide treatment activities to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of herbicides, adjuvants, or other potential contaminants. The SPRP will include (but not be limited to):
* a map that delineates staging areas, and storage, loading, and mixing areas for herbicides;
* a list of items required in an onsite spill kit that will be maintained throughout the life of the activity;
* procedures for the proper storage, use, and disposal of any herbicides, adjuvants, or other chemicals used in vegetation treatment.

This SPR applies only to herbicide treatment activities and all treatment types, including treatment maintenance.

* **SPR HAZ-6 Comply with Herbicide Application Regulations:** The project proponent will coordinate pesticide use with the applicable County Agricultural Commissioner(s), and all required licenses and permits will be obtained prior to herbicide application. The project proponent will prepare all herbicide applications to do the following:
* Be implemented consistent with recommendations prepared annually by a licensed PCA.
* Comply with all appropriate laws and regulations pertaining to the use of pesticides and safety standards for employees and the public, as governed by the EPA, DPR, and applicable local jurisdictions.
* Adhere to label directions for application rates and methods, storage, transportation, mixing, container disposal, and weather limitations to application such as wind speed, humidity, temperature, and precipitation.
* Be applied by an applicator appropriately licensed by the State.

This SPR applies only to herbicide treatment activities and all treatment types, including treatment maintenance.

* **SPR HAZ-7 Triple Rinse Herbicide Containers:** The project proponent will triple rinse all herbicide and adjuvant containers with clean water at an approved site, and dispose of rinsate by placing it in the batch tank for application per 3 CCR Section 6684. The project proponent will puncture used containers on the top and bottom to render them unusable, unless said containers are part of a manufacturer’s container recycling program, in which case the manufacturer’s instructions will be followed. Disposal of non-recyclable containers will be at legal dumpsites. Equipment will not be cleaned, and personnel will not be washed in a manner that would allow contaminated water to directly enter any body of water within the treatment area or adjacent watersheds. Disposal of all herbicides will follow label requirements and waste disposal regulations.

This SPR applies only to herbicide treatment activities and all treatment types, including treatment maintenance.

* **SPR HAZ-8 Minimize Herbicide Drift to Public Areas:** The project proponent will employ the following herbicide application parameters during herbicide application to minimize drift into public areas:
* application will cease when weather parameters exceed label specifications or when sustained winds at the site of application exceeds 7 miles per hour (whichever is more conservative);
* spray nozzles will be configured to produce the largest appropriate droplet size to minimize drift;
* low nozzle pressures (30-70 pounds per square inch) will be utilized to minimize drift; and
* spray nozzles will be kept within 24 inches of vegetation during spraying.

This SPR applies only to herbicide treatment activities and all treatment types, including treatment maintenance.

* **SPR HAZ-9 Notification of Herbicide Use in the Vicinity of Public Areas:** For herbicide applications occurring within or adjacent to public recreation areas, residential areas, schools, or any other public areas within 500 feet, the project proponent will post signs at each end of herbicide treatment areas and any intersecting trails notifying the public of the use of herbicides. The signs will include the signal word (i.e., Danger, Warning or Caution), product name, and manufacturer; active ingredient; EPA registration number; target pest; treatment location; date and time of application; restricted entry interval, if applicable per the label requirements; date which notification sign may be removed; and a contact person with a telephone number. Signs will be posted prior to the start of treatment and notification will remain in place for at least 72 hours after treatment ceases.

This SPR applies only to herbicide treatment activities and all treatment types, including treatment maintenance.

#### Thresholds of significance

Thresholds of significance are based on Appendix G of the State CEQA Guidelines. A treatment implemented under the proposed CalVTP would result in a significant impact related to hazardous materials and public health and safety if it would:

* create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
* create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
* emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
* be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment;
* for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area;
* impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
* expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

#### Issues Not Evaluated Further

While it is conceivable that some CalVTP treatment activities may occur within 2 miles of an airport, activities proposed under the CalVTP do not include the development of new structures or facilities. Therefore, the CalVTP would not violate any structural height standards that could interfere with aircraft flight patterns or air traffic control communications. Prescribed burning is maintained at low intensities that would not generate sufficient smoke to affect air traffic. Furthermore, the CalVTP would not pose a significant safety hazard for people residing or working within 2 miles of an airport because no new residents would result from CalVTP implementation, and teams of workers would be small and only present within a given project area temporarily. This issue is not discussed further in this PEIR.

Implementation of the CalVTP would not alter potential emergency evacuation routes or impair an adopted emergency plan, as no alterations to roadways would occur and treatment activities would be temporary and occur off road and in remote areas. While there may be disruptions to some rural access points when vegetation treatment activities are being implemented, these disruptions would be temporary and implemented for the protection of the public during treatments (e.g., when prescribed burning is occurring) and access would be return to existing conditions once the activity is complete. Thus, the CalVTP would not have any significant impacts on adopted emergency response or emergency evacuation plans. This issue is not discussed further in this PEIR.

The exposure of people to smoke-related hazards, including potential respiratory effects of smoke resulting from prescribed burns, are analyzed in Section 3.4, “Air Quality.” The exposure of people or structures to risks from wildland fires is addressed in Section 3.17, “Wildfire.” Potential impacts to the environment, including to special-status species and watercourses, from the transportation, use, and storage of hazardous materials are addressed in Section 3.6, “Biological Resources” and Section 3.11, “Hydrology and Water Quality.”

Given that the treatable landscape covers a large geographic area, it is conceivable that schools would be located within one-quarter mile of treatment activities. While children are considered to be of greater sensitivity to hazards and hazardous materials than adults, the relative effects of implementing treatments under the CalVTP are addressed in the impact analysis below. No substantial differences between the effects on schools compared to the general public are anticipated. Thus, impacts specifically associated with schools are not discussed further.

#### Impact Analysis

Impact HAZ-1: Create a Significant Health Hazard from the Use of Hazardous Materials

Treatment activities proposed under the CalVTP would require the use of various types of equipment and vehicles, which need fuels, oils, and lubricants to operate. The use, transport, and disposal of these substances could result in an accidental upset or health hazard if released into the environment. SPR HAZ-1 would be implemented during treatment activities under the CalVTP; it requires that all equipment be properly maintained per manufacturer’s specifications, requires regular inspection of all equipment for leaks, and requires that any equipment found leaking is required to be promptly removed from a treatment site. This SPR would minimize leaks and the potential for resultant contamination to enter the environment. Furthermore, several federal and state laws regulate the use, transport, storage, and disposal of hazardous materials, including the HWCA, DTSC’s Unified Program, and OSHA and EPA regulations, which all project proponents would be required to comply with. Accelerants would be used to implement prescribed burns; however, fire ignition (including use of accelerants) would not occur in the protection zones for watercourses (SPR HYD-4); therefore, water quality would not be affected. Although implementation of the CalVTP would increase the pace and scale of treatments and thus increase the use of hazardous materials in the treatable landscape, no new or more severe significant hazards to the public would be created from implementation of the CalVTP. This impact would be **less than significant**.

Implementation of prescribed burning, manual treatments, and mechanical treatments associated with the CalVTP would require the transportation, use, and storage of ~~common household~~ hazardous materials such as fuels, oils, and lubricants. Prescribed herbivory would ~~utilize~~use livestock and thus would not use hazardous materials, except in transport. Herbicide application is discussed under Impact HAZ-2.

Treatment activities under the CalVTP would ~~utilize~~use mechanical equipment and vehicles, such as chainsaws, large tractors, and large trucks, which need fuels, oils, and lubricants to operate. These types of substances are considered household hazardous materials and can adversely impact human health or the environment if released in large quantities. Equipment and vehicles are likely to be fueled, lubricated, and serviced as needed on-site during multi-day treatments. ~~Fuels~~ Accelerants would also be used during prescribed burns for fire ignition. The use of these substances could result in an accidental release of these hazardous substances into the environment should any leaks or spills occur. SPR HAZ-1 would be implemented which requires that all equipment be properly maintained per manufacturer’s specifications and requires inspection of all equipment for leaks prior to the start of a project and every day until the project is complete; any equipment found leaking is required to be promptly removed from a given project site. This SPR would minimize leaks and the risk of resultant contamination from entering the environment. Furthermore, several federal and state laws described in Section 3.10.2, “Regulatory Setting,” regulate the use, transport, storage, and disposal of hazardous materials to minimize potential health risks, including the HWCA, DTSC’s Unified Program, and OSHA and EPA regulations; all project proponents implementing qualifying treatments under the CalVTP would be required to comply with these regulatory requirements. In addition, these types of household hazardous materials proposed for use under the CalVTP are currently in use under existing conditions within the treatable landscape.~~Although fuels would be used during prescribed burns for ignition, no accelerants or any other substances would be used, and fuels used for prescribed burning would be completely consumed during the burning process such that no hazardous materials would persist.~~

As described in Section 3.10.1, “Environmental Setting,” when accelerants are oxidized during the burning process, new chemicals may be formed. Many of these are gaseous or particulate chemicals that are quickly dispersed and diluted in the open air and therefore would not present a health risk. However, it is possible that some solid or liquid residues may remain on the soil after these accelerants are used. According to an accelerant risk assessment conducted by USFS where conservative assumptions were used to analyze risks associated with accelerant residuals, the exposure pathways were identified as water and soil, but no health risks were predicted from potential residues remaining after the use of accelerants to ignite a prescribed burn (USFS 2002). Personnel using ignition tools with accelerants must be trained and qualified in the use of the particular tool selected, which would minimize the risk of accidents. Additionally, ignition equipment and associated accelerants would not be used close to the public because areas where prescribed burns are planned are not open to public use. Further, accelerants would not be used in the protection zones for watercourses (SPR HYD-4) and therefore would not affect water quality.

~~Furthermore, several federal and state laws described in Section 3.10.2, “Regulatory Setting,” regulate the use, transport, storage, and disposal of hazardous materials to minimize potential health risks, including the HWCA, DTSC’s Unified Program, and OSHA and EPA regulations; all project proponents implementing qualifying treatments under the CalVTP would be required to comply with these regulatory requirements. In addition, these types of household hazardous materials proposed for use under the CalVTP are currently in use under existing conditions within the treatable landscape.~~Although implementation of the CalVTP would increase the pace and scale of treatments and thus increase the use of household hazardous materials in the treatable landscape, with implementation of SPRs and adherence to relevant regulations, no new or more severe significant hazards would be created from the use of ~~common household~~ hazardous materials under the CalVTP. This impact would be **less than significant**.

##### Mitigation Measures

No mitigation is required for this impact.

Impact HAZ-2: Create a Significant Health Hazard from the Use of Herbicides

Herbicide application under the CalVTP would require increased transportation, use, storage, and disposal of various herbicides, which could result in risks related to human exposure when applied in areas in close proximity to the public. Under normal conditions, compliance with all laws, regulations, and herbicide label instructions, along with proper personal protective equipment (PPE), would prevent significant risks related to human exposure to herbicides. However, potentially adverse effects could occur if a large spill were to occur or should spraying from equipment on vehicles occur in close proximity to public areas. Several SPRs have been incorporated into the program to minimize the potential for significant health risks (SPR HAZ-5 through 9). These SPRs require project proponents to prepare a SPRP prior to beginning herbicide treatment activities to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of herbicides, adjuvants, or other potential contaminants (SPR HAZ-5); comply with all herbicide application regulations to protect the safety of workers and the public during the transport, use, storage, and disposal of herbicides (SPR HAZ-6); triple rinse herbicide containers with clean water at an approved site and dispose of rinsate per 3 CCR Section 6684 and dispose of all herbicides following label requirements and waste disposal regulations to avoid direct contamination to a water body or watershed (SPR HAZ-7); employ techniques during herbicide application to minimize drift (SPR HAZ-8); and include signage indicating that herbicide application is occurring or has occurred where members of the public could be present within 500 feet of areas receiving herbicide treatments (SPR HAZ-9). Although implementation of the CalVTP would increase the pace and scale of treatments and thus increase the use of herbicides in the treatable landscape, no new or more severe significant hazards to the public would be created from implementation of the CalVTP. This impact would be **less than significant**.

Herbicides would be applied to remove target vegetation in the treatable landscape, and targeted application of herbicides would comprise approximately ten percent of treatment activities under the CalVTP. The herbicides proposed for use under the program are the same as those currently used by CAL FIRE under existing conditions; however, herbicide application associated with the CalVTP would result in an increase in application that would require increased transportation, use, storage, and disposal of various herbicides. Human exposure could occur to workers or the public through handling of herbicides or from herbicide drift from target areas due to wind, respectively.

As described in Appendix HAZ-1 of this PEIR, the toxicity of a pesticide (i.e., herbicides and fungicides) is determined by the documented adverse laboratory and field effects to target and non-target organisms that occur after an exposure to that compound. The key to potential adverse (toxic) effects is the nature of the exposure to the compound, which is based on the specific amount of the compound that reaches an organism’s tissues (i.e., the dose). Several other factors are involved in an exposure, such as the duration of time over which the dose is received, the target tissue or physiological function affected, and the sensitivity of the organism of interest to the compound. Table 3.10-1 provides an overview of the herbicides proposed for use, the formulation and common name of each, and potential for significant human toxicity. Refer to Appendices HAZ-1 and HAZ-2 for detailed evaluations of each compound proposed for use under the CalVTP, including methods of transport and their potential to cause significant harm to humans and ecological resources.

Table 3.10-1 Human Toxicity of Chemicals Proposed for Use under the CalVTP

| Chemical | Formulation | Human Toxicity |
| --- | --- | --- |
| Glyphosate  (Roundup)  (Roundup Pro)  (RoundupProMax) | Isopropylamine salt, potassium salt, dimethylamine salt & diammonium salt | Overall low toxicity. Skin and eye irritation possible. No evidence of neurotoxicity, immunotoxicity, or acute toxicity. Reproductive toxicity at very high doses. Recent claims of carcinogenicity (class 2A) based on animal studies. ~~Unvalidated claims~~Substantial evidence finds human carcinogenicity unlikely. Very low toxicity via oral and dermal routes. Possible endocrine-disruptor.1 |
| Borax | Tetraborate decahydrate | Overall low toxicity. No evidence of carcinogenicity, neurotoxicity, immunotoxicity, or general toxicity. Reproductive and developmental toxicity at very high doses. |
| Clopyralid  (Lontrel T&O)  (Cody Clopyralid)  (Alligare)  (Confront)  (Thistledown) | Monoethanolamine salt | Very low toxicity if ingested. Clopyralid is classified by the U.S. EPA as “not likely to be a human carcinogen.”19 Clopyralid caused birth defects in laboratory animal studies at doses that were severely toxic to the mother. No birth defects were observed in animals given clopyralid at doses several times greater than those expected during normal exposure. Not mutagenic (capable of changing genetic material [DNA] of an organism). |
| Hexazinone  (Valpar)  (Pestanal) | Hexazinone [3-cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4(1H,3H)-dione] | Acute (oral and dermal) toxicity is low. Hexazinone can be highly irritating and corrosive to the eye. The U.S. EPA has evaluated the dietary risk associated with hexazinone and has determined that there is a reasonable certainty that no harm to any population subgroup will result from aggregate exposure to hexazinone when considering dietary, drinking water, and residential exposure and all other non-occupational sources of pesticide exposure for which there is reliable information. |
| Imazapyr  (Imazapyr 2SL) | isopropylamine salt | Overall low toxicity. No evidence of carcinogenicity, neurotoxicity, immunotoxicity, or reproductive/developmental toxicity. Slightly toxic via acute oral, dermal, and inhalation routes. No evidence of carcinogenicity or mutagenicity. |
| Sulfometuron Methyl | Methyl 2-[[[[[94,6-dimethyl-2-pyrimidinyl)amino]carbonyl]sulfonylbenzoatee) “Oust” Herbicide | Low toxicity via oral, dermal, and inhalation routes. Classified as ‘‘not likely to be carcinogenic to humans.’’ No mutagenicity or genetic toxicity. |
| Triclopyr   (Turflon Ester)  (Garlon 3)  (Garlon 4) | Butoxyethyl ester & triethylamine salt | Overall low toxicity (moderate toxicity if ingested) (technical triclopyr acid). Slightly toxic via acute oral, dermal, and inhalation routes (TEA and TBEE) slightly toxic by acute oral and dermal routes. Practically nontoxic by inhalation. Not carcinogenic (technical triclopyr acid). Slightly toxic via acute oral, dermal, and inhalation routes (TEA and TBEE) slightly toxic by acute oral and dermal routes. Practically nontoxic by inhalation. Not carcinogenic. |
| Nonylphenol 9 Ethoxylates (NP9E) | NPEs are surfactants that are part of the broader category of surfactants known as alkyphenol ethoxylates (APEs). NPEs represent approximately 80% to 85% of the volume of APEs. | Acute (oral and dermal) toxicity is low. NP9E can be highly irritating and corrosive to the skin and eye. NP9E does not have significant skin sensitizing potential. NP9E is not mutagenic, or in vivo micronucleus assay. There are no data on its carcinogenic potential. |
| Penoxsulam & oxyfluorfen Mix  (Cleantraxx) | **Penoxsulam:** 3-(2,2-Difluoroethoxy)-N-(5,8-dimethoxy[l,2,4]triazolo[l,5-c]pyrimidin2-y1)-a,a,a-trifluorotoluene-sulfonamid **Oxyfluorfen:** 2-chloro-1-(3-ethoxy-4-nitrophenoxy) 4-(triftuoromethyl) | Very low toxicity by ingestion or through dermal exposure (low skin irritation). No evidence of carcinogenicity in long term studies with rats. Questionable mutagenicity, no teratogenicity or reproductive effects. Penoxsulam is practically non-toxic to birds and mammals, very toxic to fish, worms and bacteria. |
| Indaziflam  (Specticle) | N-[(1R,2S)-2,3-dihydro-2,6-dimethyl-1H-inden-1-yl]-6-[(1RS)-1­ fluoroethyl]-1,3,5-triazine-2,4-diamine | Low acute toxicity via the oral, dermal, and inhalation routes of exposure. It is not irritating to the eye or skin and is not a dermal sensitizer. |

Notes: 1 There have been court cases involving Roundup and the juries in these cases have awarded several million dollars to plaintiffs. ~~However~~Although glyphosate has been listed under Proposition 65 based on the IARC’s classification of glyphosate as probably carcinogenic (based on one study in mice), decades of actual laboratory and field testing of glyphosate conclude that ~~glysophate~~ glyphosate is not likely to be carcinogenic to humans and no other meaningful risks to human health occur when the product is used according to the label. Recent expert panels have been convened to directly evaluate the claims of the IARC that glyphosate is carcinogenic to humans. Reports of these panels strongly counter that claim and indicate there is insufficient evidence that glyphosate is carcinogenic. Refer to Appendix HAZ-1 for more detailed information regarding glyphosate~~glysophate~~  and human health risks.

Source: Appendix HAZ-1 and HAZ-2 of this PEIR; see citations therein.

As shown in Table 3.10-1, most of the herbicides proposed for increased use under the CalVTP pose low levels of toxicity to humans, although some can result in skin and eye irritation or can be slightly toxic if exposure occurs. As discussed above under Section 3.10.2, “Regulatory Setting,” the U.S. DOT, in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to the transportation of hazardous materials. The EPA oversees pesticide use and health and safety through the WPS. The WPS is a regulation for pesticides and herbicides which is aimed at reducing the risk of pesticide poisonings and injuries among workers and pesticide handlers. The WPS contains requirements for pesticide safety training, notification of pesticide applications, use of PPE, restricted-entry intervals after pesticide application, decontamination supplies, and emergency medical assistance. In addition, Cal/OSHA has safety standards and practices regarding workplace safety and providing a safe and healthy environment for workers, and the California Pesticide Regulatory Program regulates the sale and use of pesticides in California. DPR is responsible for reviewing the toxic effects of pesticide formulations and determining whether a pesticide is suitable for use in California through a registration process. The label includes instructions telling users how to make sure the product is applied only to intended target pests and includes precautions the applicator should take to protect human health and the environment. These include weather parameters including wind speed to avoid drift and precipitation to minimize unintended runoff. RCRA, HWCA, and the DTSC include regulations applicable to the packaging, storage, and disposal of specific hazardous materials. Some pesticides and herbicides become hazardous waste when discarded and, accordingly, must be disposed of as a hazardous waste. CAL FIRE and other project proponents implementing herbicide use under the CalVTP would adhere to all of the required regulations. Compliance with all laws, regulations, and herbicide label instructions, along with proper PPE, would prevent significant risks related to human exposure to herbicides.

Several SPRs have been incorporated into the program to further minimize the potential for human exposure and potential health risks (SPR HAZ-5 through HAZ-9). These SPRs require that project proponents to prepare a SPRP prior to beginning herbicide treatment activities to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of herbicides, adjuvants, or other potential contaminants (SPR HAZ-5); comply with all herbicide application regulations to protect the safety of workers and the public during the transport, use, storage, and disposal of herbicides (SPR HAZ-6); triple rinse herbicide containers with clean water at an approved site and dispose of rinsate per 3 CCR Section 6684 and dispose of all herbicides following label requirements and waste disposal regulations to avoid direct contamination to a water body or watershed (SPR HAZ-7); employ techniques during herbicide application to minimize drift (SPR HAZ-8); and include signage indicating that herbicide application is occurring or has occurred where members of the public could be present within 500 feet of areas receiving herbicide treatments (SPR HAZ-9).

Per these SPRs and existing laws and regulations, pesticides would be applied under the guidance of licensed and certified personnel and according to label requirements; storage, loading and mixing would be conducted according to specifications that would protect against spills or entry of chemicals into aquatic features; project proponents would prepare a SPRP prior to beginning any herbicide treatment activities to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of herbicides, adjuvants, or other potential contaminants; cleanup of containers would be conducted according to guidelines that prevent contamination; and all appropriate laws and regulations pertaining to the use of pesticides and safety standards for employees and the public, as governed by the EPA and DPR would be followed. Furthermore, the potential for herbicide drift would be minimized by limiting application when winds exceed 7 miles per hour and through the use of specific spray nozzles. These would be especially useful in minimizing drift from herbicides that are sprayed from equipment on an ATV or tractor. Notifying the public prior to and following application of herbicides for a specified period at public areas within 500 feet of an application site would allow the public to avoid areas where treatments are occurring or have recently occurred, if so desired. Together, the SPRs and regulatory requirements provide a foundation for assuring effective, yet relatively safe, use of herbicides when treatment is determined to be needed. Therefore, the impact associated with use of herbicides under the CalVTP would be **less than** **significant**.

##### Mitigation Measures

No mitigation is required for this impact.

Impact HAZ-3: Expose the Public or Environment to Significant Hazards from Disturbance to Known Hazardous Material Sites

Soil disturbance by mechanical treatments and prescribed burning have the potential to expose workers, the public, and the environment to risks associated with existing hazardous materials if present within treatment areas. Treatment activities would typically occur in undeveloped areas, which are unlikely to contain hazardous materials; however, there is a risk that contamination could exist. Disturbance of contaminated sites could result in the exposure of the public and environment to health hazards from existing hazardous materials. This impact is **potentially** **significant**.

Hazardous materials, if present in soils, can be disturbed and dispersed by vegetation treatment activities that require soil disturbance. Soil contamination generally occurs in areas that are or have been previously developed, especially with industrial-type uses or for defense activities (e.g., an air force base). The treatable landscape is in tree, shrub, and grass fuel types, sometimes near developed areas. Although there could be some hazardous materials sites adjacent to the treatable landscape, such as in urban areas, the treatable landscape itself is unlikely to contain hazardous material sites from previous uses because of its undeveloped nature. However, because of the geographic extent of the treatable landscape, it is conservatively assumed that there is a potential for known hazardous materials sites to be located within the treatable landscape.

Most treatment activities under the CalVTP would not require soil disturbance (i.e., manual treatments, prescribed herbivory, prescribed burning, herbicide application) because activities would be limited to the use of hand crews, livestock, low intensity burning, or herbicides to kill or remove the above-ground portions of vegetation in the treatment area. However, some activities (e.g., mechanical treatments) could result in churning up the surface of the ground during treatment as vegetation is removed, which could accidentally release hazardous materials into the environment if present. If released, hazardous material could enter waterways via runoff or expose the public to harmful effects through inhalation or dermal exposure. Prescribed burning could lead to unexpected ignitions should any ignitable hazardous waste be present, which could expose workers to risks associated with unexpected fire or explosions. Therefore, both mechanical treatments and prescribed burning have the potential to expose people (e.g., workers or the public) or the environment to significant health hazards if hazardous materials sites are inadvertently disturbed in treatment areas; if it occurred, this impact would be **potentially** **significant**.

##### Mitigation Measures

Mitigation Measure HAZ-3: Identify and Avoid Known Hazardous Waste Sites

Prior to the start of vegetation treatment activities requiring soil disturbance (i.e., mechanical treatments) or prescribed burning, CAL FIRE and other project proponents will make reasonable efforts to check with the landowner or other entity with jurisdiction (e.g., California Department of Parks and Recreation) to determine if there are any sites known to have previously used, stored, or disposed of hazardous materials. If it is determined that hazardous materials sites could be located within the boundary of a treatment site, the project proponent will conduct a DTSC EnviroStor web search (<https://www.envirostor.dtsc.ca.gov/public/>) and consult DTSC’s Cortese List to identify any known contamination sites within the project site. If a proposed mechanical treatment or prescribed burn is located on a site included on the DTSC Cortese List as containing potential soil contamination that has not been cleaned up and deemed closed by DTSC, the area will be marked and no prescribed burning or soil disturbing treatment activities will occur within 100 feet of the site boundaries. If it is determined through coordination with landowners or after review of the Cortese List that no potential or known contamination is located on a project site, the project may proceed as planned.

###### Significance after Mitigation

As noted in Section 3.10.2, “Regulatory Setting” above, the DTSC maintains a database of sites with known hazardous waste contamination, commonly referred to as the Cortese List. Many of these sites occur in industrial environments outside of the treatable landscape, but some instances of past industrial and defense-related land uses may exist in what are now considered wildlands where CalVTP treatments could occur. Mitigation Measure HAZ-3 is designed to identify and avoid these sites where they occur, if present in the treatable landscape.

Specifically, Mitigation Measure HAZ-3 requires that proponents coordinate with landowners to determine previous land uses and the potential for hazardous wastes to be present. If a potential for hazardous waste is identified within a project site (treatment area) through landowner coordination, Mitigation Measure HAZ-3 further requires project proponents to review DTSC’s Cortese List to determine whether a known hazardous waste site is present within the boundary of a project site. If hazardous waste is present, the project proponent would mark the areas and no prescribed burning or soil disturbing treatment activities would occur within 100 feet of its boundaries. Because any hazardous waste sites that could be affected by mechanical treatment or prescribed burning activities would be identified and avoided, no exposure-related risks associated with the disturbance of a hazardous waste site to the public or environment would occur. With implementation of Mitigation Measure HAZ-3, this impact would be reduced to **less than significant**.