

---

# **EMERGENCY PETROLEUM SPILL WASTE MANAGEMENT GUIDANCE**



---

**Colorado Department  
of Public Health  
and Environment**

**Hazardous Materials and Waste Management Division  
(303) 692-3300**

First Edition  
January 2014

---

*This guidance is meant to provide general information to help you comply with Colorado's solid and hazardous waste regulations. It cannot cover every situation and is not intended to do so. It does not modify or replace adopted regulations, which undergo periodic revisions. If there is a conflict between the guidance and the regulations, the regulations govern. This document is not intended and cannot be relied upon to create any rights, substantive or procedural, enforceable by any party in litigation with Colorado. The Division reserves the right to act at variance with this guidance and to change it at any time.*

*Some portions of the regulations are complex and this guidance does not go into details of these complex situations. If you have any questions, please contact us at:*

*Hazardous Materials and Waste Management  
Colorado Department of Public Health and Environment  
4300 Cherry Creek Drive South  
Denver, Colorado 80246-1530*

*Technical Assistance  
(303) 692-3320  
(888) 569-1831 ext. 3320  
(303) 759-5355 fax  
[comments.hmwmd@state.co.us](mailto:comments.hmwmd@state.co.us)*

## INTRODUCTION

The Colorado Department of Public Health and Environment (the “Department”) is notified of hundreds of spill incidents each year, many of them involving petroleum products such as gasoline, diesel fuel, jet fuel, hydraulic oil and crude oil. The purpose of this guidance is to clarify what the accepted waste generation, management, characterization and disposal practices are when responding to emergency petroleum releases regulated by the Department. Emergency petroleum releases are catastrophic spill incidents (e.g., ruptured pipe lines, tanker truck roll-overs, derailments, sudden releases from tanks or other containers) that typically involve time-critical decisions to minimize safety risks and impacts to the environment. Open communication and coordination between the responders and the Department are needed to ensure that regulatory requirements do not become an obstacle to cleaning up the release or inadvertently cause the responsible party to be noncompliant and subject to possible enforcement action.

This guidance may also be used for the purpose of responding to release incidents that don’t involve time-critical decisions associated with the containment, characterization and remediation of releases. Examples include the discovery of historic releases of petroleum products from old underground storage tanks, oil that leaked for years from an elevator hydraulic lift, old oil-stained soils uncovered during property redevelopment, etc. All of the same considerations discussed in the post emergency waste characterization and management section below apply to these non-emergency situations.

## EMERGENCY NOTIFICATIONS

Emergency releases (e.g., a ruptured 55-gallon drum, spills from an overturned tank truck, etc.) must be reported to the Department’s toll-free 24-hour environmental emergency spill reporting telephone number (1-877-518-5608). A more complete discussion of all reporting requirements for chemical spills and releases in Colorado may be found in the Environmental Spill Reporting Guidance Document on the Internet at: <https://www.colorado.gov/pacific/cdphe/emergency-reporting-line>.

## RELEASES REGULATED BY THE DEPARTMENT

A number of state agencies may regulate the remediation of petroleum released into the environment, depending upon the source of the release and whether or not other types of contamination may be present. In general, the Department regulates all releases of petroleum and their cleanup, except for the following:

- The Colorado Oil and Gas Conservation Commission (COGCC) oversees spill incidents associated with oil and gas exploration and production-related activities defined as “primary field operations at or near the wellhead”, such as a release from a tank battery near the production wells. The COGCC does not regulate the spill of products or materials that are not from the well (e.g., fuel spilled on the well pad or ground, unused fracturing fluids, or used equipment lubricating oils). More information on this category of exempt waste may be found in EPA’s publication “Exemption of Oil and Gas

Exploration and Production Wastes from Federal Hazardous Waste Regulations”  
(<http://www.epa.gov/osw/nonhaz/industrial/special/oil/oil-gas.pdf>)

- The Colorado Department of Labor and Employment’s Division of Oil and Public Safety oversees the cleanup of petroleum products released from regulated underground petroleum storage tanks and ancillary equipment that are 110 gallons or greater and aboveground petroleum storage tanks that are between 660 and 39,999 gallons in size.
- The Colorado Department of Transportation oversees spill incidents within the right of way and easement of Colorado highways because they are responsible for performing necessary highway repairs so that all applicable transportation standards are complied with. However, the Department will be involved in situations where large spills impact areas outside the right-of-way, have the potential to degrade ground water and surface water quality, threaten sensitive environments or habitat and/or may pose a threat to drinking water supplies.
- Although not part of the Department, the U.S. Environmental Protection Agency’s Emergency Response Program has the authority to become involved in any large spill incident response to ensure that adequate and timely response measures are taken in communities affected by hazardous substances releases and oil spills where state and local first responder capabilities have been exceeded or where additional support is needed. EPA conducts time-critical and non-time-critical removal actions when necessary to protect human health and the environment by either funding response actions directly or overseeing and enforcing actions conducted by potentially responsible parties.

## **EMERGENCY ACTIONS AND WASTE MANAGEMENT**

Emergency spill incidents involving the sudden release of petroleum products will require immediate action to stop the spill, contain and recover what has been released and begin the process of remediating the affected area. The basic steps in responding to spill incidents during these time critical moments are discussed below. You should have a comprehensive action plan ahead of time for responding to spill incidents that may occur at your facility. This may be included in your contingency plan, Spill Prevention, Control and Countermeasures (SPCC) plan or other emergency planning documents.

### **Step 1: Stop the Spill**

Properly qualified and equipped personnel should stop the leak or spill - if this can be done safely. This may include turning off nozzles or valves from a leaking container and plugging or patching puncture-type holes, tears, cracks and the like, if possible. If the spill or leak cannot be stopped, catch the flowing liquid using a variety of containers, dikes, dams, booms or whatever is available. Controlling the source, in combination with confining any released material, will minimize environmental damage and cleanup costs.

## **Step 2: Recover Spilled Liquids**

All free liquids should be recovered using appropriate pumps, vacuum trucks, or sorbents. Spreading sorbent material, such as kitty litter, sand, ground corncobs, straw, sawdust, wood chips, peat, synthetic sorbent pads or dirt can help contain the released petroleum.

## **Step 3: Recover Contaminated Environmental Media**

In many situations, immediate action should be taken to recover contaminated environmental media in order to minimize the spread of contamination. For example, petroleum soaked snow and/or soil should be excavated and containerized as soon as possible, before it has a chance to migrate any significant distance, either across the ground surface or vertically down into the soil. Recovered contaminated environmental media should be placed immediately into appropriate containers (e.g., tanks, drums, roll-offs or into trucks for direct transportation to the disposal facility). Temporarily (maximum of 72 hours from the time of the release) stockpiling of contaminated environmental media on plastic, asphalt or concrete is an acceptable alternative when containers aren't readily available. Any free liquid that drains from containers or temporary staging piles, whether precipitation or the spilled product, must also be quickly recovered. The location of the spill incident may require that the contaminated environmental media be transported to a more secure location for temporary storage pending characterization and disposal (e.g., a nearby landfill or other facility suitable for stockpiling this material). The temporary stockpiling of contaminated environmental media in areas other than where the spill occurred may contaminate underlying soil or surrounding surfaces, requiring that these storage areas also be tested and possibly remediated once the temporary staging piles are removed.

## **POST EMERGENCY WASTE CHARACTERIZATION AND MANAGEMENT**

Depending upon the magnitude and location of the spill incident, the emergency spill response may be complete within a few hours or a couple of days. All materials that came in contact with the released petroleum, everything from the earthen berms to absorbents, are now a solid waste and potentially a hazardous waste. Once the emergency is under control, these materials will need to be gathered, containerized, characterized and appropriately disposed.

Highly flammable products (flash point less than 140°F) and those that contain significant quantities of benzene will be regulated as a characteristic hazardous waste when released into the environment (e.g., gasoline, natural gas products, certain jet fuels and crude oils). Releases of other petroleum products or wastes that are less flammable or that contain little to no benzene are regulated as a solid waste (e.g., kerosene, most diesel fuel, hydraulic oil and heating oil). Unless the recovered oil will be recycled, releases of used oil are regulated as hazardous waste if the waste exhibits one or more hazardous waste characteristics (e.g., toxicity for heavy metals). Used oil means any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities.

The Department's solid waste program will generally oversee the cleanup of spill incidents involving petroleum products that are regulated as solid waste, not hazardous waste. And although the Department's hazardous waste program may oversee the cleanup of a spill incident

based on the material released (e.g., gasoline), the remediation wastes generated during the cleanup of such a spill incident will not necessarily be classified as hazardous waste. The constituents that make a petroleum product a hazardous waste are often highly volatile and may evaporate during the course of the cleanup effort, rendering the remediation waste a solid waste when sampled for disposal purposes. Similarly, products that soak into the soil to the extent that free liquids will not drain from them will likely no longer exhibit the hazardous waste characteristic of ignitability. This transition from a hazardous to a solid waste can only be determined through testing (e.g., Toxicity Characteristic Leaching Procedure for the characteristic of toxicity and the Pensky-Martens Closed Cup Flash Tester or a Setaflash Closed Cup Tester for the characteristic of ignitability). Test results and other information used to make the hazardous waste determination should be kept for at least three years after the waste is disposed.

Additional waste management activities will likely include the following:

- All waste (e.g., sorbent materials), recovered product and contaminated media (e.g., soil berms, excavated soil, contaminated water) must be properly containerized and characterized in preparation for disposal. Samples must be representative of the waste material being disposed, so they must be collected from contaminated portions of the accumulated material using sampling techniques that minimize the loss of volatile constituents. The number of samples collected should also be adequate to properly characterize the volume of material excavated. For example, one sample for each 20 cubic yard roll-off container for smaller volumes generated; a minimum of two samples to characterize every 100 cubic yards of petroleum contaminated soil for larger volumes generated. Composite samples may be collected for the purpose of characterizing relatively homogeneous petroleum contaminated soil that does not contain volatile fractions (gasoline range organics C<sub>4-10</sub>). Composite sampling should generally be limited to mixtures that contain only semi-volatile organic compounds that have relatively high boiling points, usually greater than 100°C, don't evaporate readily, and contain organic compounds generally in the range greater than C<sub>10-12</sub>.
- For material that could potentially be a hazardous waste (contaminated with gasoline or crude oil), the stockpiled contaminated media and debris will need to be characterized and containerized (drums, tanks, roll-offs or similar containers) within 72 hours of its generation, potentially requiring expedited sampling and analysis. The temporary stockpiling of contaminated environmental media may contaminate underlying soil or surrounding surfaces, requiring that these storage areas also be tested and possibly remediated once the temporary staging piles are removed.
- If the remediation waste is determined to be a hazardous waste because it exhibits the characteristic of ignitability (e.g., a recovered liquid like gasoline that cannot be reused or recycled without first being treated in some fashion) or the toxicity characteristic (e.g., benzene as determined by the Toxicity Characteristic Leaching Procedure), it must be stored in closed containers (drums, tanks, roll-offs) and shipped to a permitted facility within 90 days of being generated for further treatment, storage or disposal. Treatment of contaminated soil to render it non-hazardous may be allowed if done in accordance with the generator treatment requirements in Section 100.21(d) of the Colorado Hazardous Waste Regulations.

- If testing reveals that the remediation wastes are non-hazardous, several options may be available to the party performing the cleanup to manage the waste. Some options for managing petroleum contaminated soil include: reuse; thin-spreading of small quantities of contaminated soils on the ground to enhance the biodegradation of the petroleum constituents; composting to promote the microbial degradation of constituents; thermal treatment at facilities specifically designed to treat these soils; or disposal at a permitted landfill, assuming it meets their acceptance criteria. Options to either reuse or manage the contaminated soil onsite must be approved by the Department prior to implementing those techniques.

## **POST –EMERGENCY REMEDIATION**

Testing will be needed to delineate the extent of contamination in soil and ground water and to confirm that remedial actions have successfully removed all contamination above approved cleanup levels. The techniques employed are similar to the traditional methods used to characterize contamination at release sites. Contact the Department to determine our role in the process and the level of detail required in either work plans or reports prepared in response to the spill incident.

## **AGENCY INTERACTION DURING RESPONSE**

Various local, state or federal agencies may be involved both during and after the emergency spill response, depending upon its magnitude and location. For example:

- A typical release along a highway in the State of Colorado will likely be responded to by the Colorado State Patrol and/or local emergency responders, who will work with either the county or the Colorado Department of Transportation (the Department of Transportation) to make sure the release has been addressed such that the roadway is safe for travel. Once the emergency response is over and the road has been repaired to the satisfaction of the county or Department of Transportation, overseeing completion of the remediation will become the responsibility of the Department of Public Health and Environment (the Department). The Department has the authority to require cleanup both inside and outside of the road right of way. However, in spill incidents involving state highways, the Department will defer remedial decisions that may affect the structural integrity and reopening of the highway to the Department of Transportation. The Department will oversee the remediation of petroleum that leaves the Department of Transportation's right of way and enters other properties, however. These "other properties" include private property or property owned by city, county, state or federal government agencies. During the remedial activities, the Department will continue to coordinate with and address the concerns of the Department of Transportation, the county and any impacted government or private property owners. The Department's Hazardous Materials and Waste Management Division will ensure that surface water is not impacted and that contaminated soil and groundwater are satisfactorily remediated. The Department's Water Quality Control Division (WQCD) may also become involved in the response action if a waterway is located nearby. Their involvement would

likely be limited to assessing the potential impact to surface water and ensuring down gradient water users are notified, if necessary.

- A release from a pipeline in the State may be responded to by local emergency response personnel and/or pipeline personnel. Once the emergency is over and the pipeline has been repaired, overseeing the completion of site remediation will become the responsibility of the Department of Public Health and Environment. During remediation activities, the Department will continue to coordinate with and address the concerns of any impacted government or private property owners.

## REFERENCES RELATED TO THIS SUBJECT

The following hazardous waste guidance is available through the Department's website at <https://www.colorado.gov/cdphe/hwguidance>:

- Hazardous Waste Identification guidance document – Describes the criteria by which a solid waste may be classified as a hazardous waste.
- Hazardous Waste Treatment by Generators guidance document – Describes the process and treatment activities a generator is allowed to perform to make a waste less hazardous, safer for transport, more amenable for storage or reduced in volume.
- Corrective Action guidance document – Describes the process of characterizing and remediating a release site, as well as describe the process whereby hazardous waste contaminated media may be treated and disposed of as a solid waste.

# QUICK REFERENCE GUIDE TO SPILLS OF PETROLEUM PRODUCTS AND WASTES

## GASOLINE

### **Waste Characterization & Disposal**

**Acceptance at Landfill:** 1) No free liquids per Paint Filter Test. 2) Analysis of petroleum contaminated soil waste demonstrates that it doesn't exhibit the hazardous waste toxicity characteristic for benzene, D018. 3) Waste Acceptance Plan in the facility Engineering Design and Operations plan identifies petroleum contaminated soil as an accepted waste stream or identifies acceptance of petroleum contaminated soil with prior Department and local governing body approval in accordance with a waiver approved under Section 1.5 of the Solid Waste Regulations.

The toxicity characteristic is determined using the Toxicity Characteristic Leaching Procedure (TCLP), Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846.

The characteristic of ignitability is determined by a Pensky-Martens Closed Cup Tester using the test method specified in ASTM Standard D-93-79 or D-93-80, or a Setaflash Closed Cup Tester using the test method specified in ASTM standard D-3278-78.

**Recovered Liquids:** Recovered liquids that can't be reused or recycled must be stored in a closed and labeled container, and shipped to a permitted facility within 90 days of being generated for further treatment, storage or disposal. Unless recycled, the recovered gasoline would be classified as a characteristic hazardous waste for ignitability and toxicity.

### **Confirmation Sampling Following Remediation**

**Constituents to Sample for:** benzene, toluene, ethyl benzene, xylenes (BTEX), total petroleum hydrocarbons (TPH) in the gasoline range organics, and polynuclear aromatic hydrocarbons (PAHs) on the the sample having the highest total petroleum hydrocarbon value

**Acceptable Analytical Methods:** BTEX (EPA Methods 602, 8021, 8260 or equivalent); TPH (EPA Method 8015B-TVPH); PAHs (EPA Method 8270 SIM or equivalent)

**Remedial Objectives:** BTEX and PAH constituents below both residential (EPA Regional Screening Levels) and groundwater protection (Colorado Soil Evaluation Values) screening levels. These screening level tables can be found at <https://www.colorado.gov/pacific/cdphe/approach-soil-screening-values>. Total petroleum hydrocarbons (TPH) is only used as a remediation guide and not a confirmation of remediation completeness.

## **DIESEL AND FUEL OILS**

### **Waste Characterization & Disposal**

**Acceptance at Landfill:** 1) No free liquids per Paint Filter Test. 2) Waste Acceptance Plan in the facility Engineering Design and Operations plan identifies petroleum contaminated soil as an accepted waste stream or identifies acceptance of petroleum contaminated soil with prior Department and local governing body approval in accordance with a waiver approved under Section 1.5 of the Solid Waste Regulations.

**Recovered Liquids:** Recovered liquids that can't be reused or recycled must be stored in a closed container and shipped to a permitted facility within 90 days of being generated for further treatment, storage or disposal.

### **Confirmation Sampling Following Remediation**

**Constituents to Sample for:** total extractable petroleum hydrocarbons (TEPH) in the diesel organics range, and polynuclear aromatic hydrocarbons (PAHs) on the sample having the highest total extractable petroleum hydrocarbon value

**Acceptable Analytical Methods:** TEPH (EPA Method 8015B-TEPH); PAHs (EPA Method 8270 SIM or equivalent)

**Remedial Objectives:** PAH constituents below both residential (EPA Regional Screening Levels) and groundwater protection (Colorado Soil Evaluation Values) screening levels. These screening level tables can be found at <https://www.colorado.gov/pacific/cdphe/approach-soil-screening-values>. Total extractable petroleum hydrocarbons (TEPH) is only used as a remediation guide and not a confirmation of remediation completeness.

## **CRUDE OIL**

### **Waste Characterization & Disposal**

**Acceptance at Landfill:** 1) No free liquids per Paint Filter Test. 2) Analysis of petroleum contaminated soil demonstrates that it doesn't exhibit the hazardous waste toxicity characteristic for benzene, D018. 3) Waste Acceptance Plan in the facility Engineering Design and Operations plan identifies petroleum contaminated soil as an accepted waste stream or identifies acceptance of petroleum contaminated soil with prior Department and local governing body approval in accordance with a waiver approved under Section 1.5 of the Solid Waste Regulations.

The toxicity characteristic is determined using the Toxicity Characteristic Leaching Procedure (TCLP), Test Method 1311 in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846.

The characteristic of ignitability is determined by a Pensky-Martens Closed Cup Tester using the test method specified in ASTM Standard D-93-79 or D-93-80, or a Setaflash Closed Cup Tester using the test method specified in ASTM standard D-3278-78.

**Recovered Liquids:** Recovered liquids that can't be reused or recycled must be stored in a closed container and shipped to a permitted facility within 90 days of being generated for further

treatment, storage or disposal. Unless recycled, the recovered crude oil may be classified as a characteristic hazardous waste for the characteristic of ignitability and/or toxicity based on appropriate testing.

### **Confirmation Sampling Following Remediation**

**Constituents to Sample for:** benzene, toluene, ethyl benzene, xylenes (BTEX), total extractable petroleum hydrocarbons (TEPH) in the oil and grease organics range, and polynuclear aromatic hydrocarbons (PAHs) on the sample having the highest total petroleum hydrocarbon value

**Acceptable Analytical Methods:** BTEX (EPA Methods 602, 8021, 8260 or equivalent); TEPH (EPA 8015B-TEPH); PAHs (EPA Method 8270 SIM or equivalent)

**Remedial Objectives:** BTEX and PAH constituents below both residential (EPA Regional Screening Levels) and groundwater protection (Colorado Soil Evaluation Values) screening levels. These screening level tables can be found at <https://www.colorado.gov/pacific/cdphe/approach-soil-screening-values>. Total extractable petroleum hydrocarbons (TEPH) is only used as a remediation guide and not a confirmation of remediation completeness.

## **USED OIL AND HYDRAULIC OIL**

### **Waste Characterization & Disposal**

**Acceptance at Landfill:** 1) No free liquids per Paint Filter Test. 2) Analysis of soil contaminated with used oil demonstrates that it doesn't exhibit the hazardous waste toxicity characteristic for lead (D008) or benzene (D018), or the halogenated compounds tetrachloroethylene (D039) or trichloroethylene (D040) if process knowledge or field test kits suggest they may be present in the used oil. If process knowledge indicates that listed hazardous wastes (generally solvents) were disposed of in the used oil, the entire mixture must be disposed of as hazardous waste. Analysis of soil contaminated with hydraulic oil demonstrates that it does not contain polychlorinated biphenyls (PCBs) greater than 1 mg/kg unless knowledge of the material released indicates the oil and/or equipment it came from never contained PCBs. Petroleum contaminated soil containing greater than 1 mg/kg PCBs must generally be sent to an EPA-approved landfill or incinerator. 3) Waste Acceptance Plan in the facility Engineering Design and Operations plan identifies petroleum contaminated soil as an accepted waste stream or identifies acceptance of petroleum contaminated soil with prior Department and local governing body approval in accordance with a waiver approved under Section 1.5 of the Solid Waste Regulations.

**Recovered Liquids:** Recovered liquids that can't be reused or recycled must be stored in a closed container and shipped to a permitted facility within 90 days of being generated for further treatment, storage or disposal. Unless recycled, the recovered used oil may be classified as a characteristic hazardous waste for toxicity or a listed waste based on appropriate testing. Used oil containing greater than 2 mg/kg polychlorinated biphenyls (PCBs) can only be burned in a permitted incinerator.

### **Confirmation Sampling Following Remediation**

**Constituents to Sample for:** Halogenated volatiles, benzene, toluene, ethyl benzene, xylenes (BTEX), total petroleum hydrocarbons (TPH) in the oil and grease organics range, polynuclear aromatic hydrocarbons (PAHs) on the sample having the highest total petroleum hydrocarbon (Oil & Grease) value, and polychlorinated biphenyls (PCBs) if appropriate

**Acceptable Analytical Methods:** Halogenated volatiles and BTEX (EPA Methods 602, 8021, 8260 or equivalent); TPH (EPA Method 1664 with silica gel cleanup); PAHs (EPA Method 8270 SIM or equivalent); PCBs (EPA Method 8082A or equivalent)

**Remedial Objectives:** Halogenated volatiles, BTEX, PAH constituents and PCBs below both residential (EPA Regional Screening Levels) and groundwater protection (Colorado Soil Evaluation Values) screening levels. These screening level tables can be found at <https://www.colorado.gov/pacific/cdphe/approach-soil-screening-values>. Total petroleum hydrocarbons (TPH) is only used as a remediation guide and not a confirmation of remediation completeness.

## **NEW OIL AND GREASE**

### **Waste Characterization & Disposal**

**Acceptance at Landfill:** 1) No free liquids per Paint Filter Test. 2) Waste Acceptance Plan in the facility Engineering Design and Operations plan identifies petroleum contaminated soil as an accepted waste stream or identifies acceptance of petroleum contaminated soil with prior Department and local governing body approval in accordance with a waiver approved under Section 1.5 of the Solid Waste Regulations.

**Recovered Liquids:** Recovered liquids that can't be reused or recycled must be stored in a closed container and shipped to a permitted facility within 90 days of being generated for further treatment, storage or disposal.

### **Confirmation Sampling Following Remediation**

**Constituents to Sample for:** total petroleum hydrocarbons (TPH) in the oil and grease organics range and polynuclear aromatic hydrocarbons (PAHs) on the sample having the highest total petroleum hydrocarbon value

**Acceptable Analytical Methods:** TPH (EPA 1664 with silica gel cleanup); PAHs (EPA Method 8270 SIM or equivalent)

**Remedial Objectives:** PAH constituents below both residential (EPA Regional Screening Levels) and groundwater protection (Colorado Soil Evaluation Values) screening levels. These screening level tables can be found at <https://www.colorado.gov/pacific/cdphe/approach-soil-screening-values>. TPH is only used as a remediation guide and not a confirmation of remediation completeness.