

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

RULE 4651 SOIL DECONTAMINATION OPERATIONS (Adopted April 16, 1992; Amended December 17, 1992; Amended September 20, 2007)

1.0 Purpose

The purpose of this rule is to limit volatile organic compound (VOC) emissions from soil that has been contaminated with a VOC-containing liquid.

2.0 Applicability

This rule shall apply to operations involved in the excavation, transportation, handling, decontamination, and disposal of contaminated soil.

3.0 Definitions

- 3.1 Aeration: exposure of excavated soil containing volatile organic compounds to the atmosphere.
- 3.2 Air Pollution Control Officer (APCO): as defined in Rule 1020 (Definitions).
- 3.3 Approved: requirements accepted by the APCO and EPA that have been determined to be in compliance with Rule 4651 or a permitted facility that satisfy the requirements of Rule 4651.
- 3.4 Contaminated Soil: soil which registers fifty (50) ppmv or greater of VOC concentration before suppression materials have been applied when measured as hexane at a distance of three (3) inches above the surface with an organic vapor analyzer, or soil containing VOC which has been identified for decontamination or disposal by the designated lead agency.
- 3.5 Decontamination: the removal, destruction, remediation, or encapsulation of VOC from contaminated soil according to Section 5.4.
- 3.6 Decontaminated Soil: soil that has undergone the decontamination process. For the purposes of this rule, decontaminated soil is still considered contaminated unless it satisfies the requirements of Section 5.4.6.
- 3.7 District: as defined in Rule 1020 (Definitions).
- 3.8 Emergency Excavation: an excavation of contaminated soil carried out pursuant to an order of a state or local government agency issued because the contaminated soil poses an imminent threat to public health, safety, or the environment.

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- 3.9 EPA: the United States Environmental Protection Agency or any person designated to act on its behalf.
- 3.10 Excavation: the process of exposing, digging out, and removing contaminated soil, including but not limited to digging out and removal of soil, sand, asphalt, concrete, or other materials necessary to expose the contaminated soil.
- 3.11 Facility: a portion of real property that is on one or more contiguous or adjacent properties all of which are under common ownership or control. A facility includes, but is not limited to, all buildings, storage areas, installations, structures, VOC control systems, and treatment of contaminated soil on the properties.
- 3.12 Operation: any physical action resulting in a change in the location, form, or physical properties of a material, or any chemical action resulting in a change in the chemical composition or the chemical or physical properties of a material.
- 3.13 Operator: includes but is not limited to any person who owns, leases, supervises, or operates a facility and equipment.
- 3.14 Organic Vapor Analyzer: a hydrocarbon analyzer, which satisfies the specification requirements of EPA Method 21, 40 CFR Part 60.
- 3.15 Petroleum: crude oil or any fraction thereof that is liquid at Standard Conditions of temperature and pressure (60°F and 14.7 pounds per square inch absolute), including, but is not limited to aviation fuel, gasoline, kerosene, fuel oils, diesel, and other related hydrocarbons.
- 3.16 Storage Pile: For the purposes of this rule, any pile of soil resulting from operations related to the excavation of contaminated soil.
- 3.17 Uncontaminated Soil: soil which registers below fifty (50) ppmv of VOC concentration before suppression materials have been applied when measured as hexane at a distance of three (3) inches above the surface of the excavated soil with an organic vapor analyzer or decontaminated soil which registers below 50 ppmw of VOC content or soil that has been identified as uncontaminated by the designated lead agency.
- 3.18 Vapor Suppressant: At least six (6) inches of uncontaminated soil or any material that is demonstrated to reduce VOC emissions into the atmosphere from contaminated soil by at least 10%.

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- 3.19 VOC Control Device: any machine or technology used to reduce VOC emissions from contaminated soil. Such devices include, but are not limited to, thermal oxidizers, carbon canisters, or incineration devices.
- 3.20 Volatile Organic Compound (VOC): as defined in Rule 1020 (Definitions).
- 4.0 Exemptions
- 4.1 The requirements of this rule shall not apply to:
- 4.1.1 Excavation, handling, transportation, and decontamination of less than one (1) cubic yard of contaminated soil per occurrence.
- 4.1.2 Operations related to the accidental spillage of five (5) gallons or less of VOC-containing liquid per occurrence.
- 4.1.3 Contaminated soil exposed for the sole purpose of sampling.
- 4.1.4 Soil contaminated solely by a known VOC-containing liquid or a petroleum liquid that has an initial boiling point of 302°F or higher, as determined by Section 6.5.1, provided that the soil is not heated above ambient temperature and samples of the contaminating liquid can be obtained.
- 4.2 Except for the administrative requirements in Section 6.3.1, the rule requirements shall not apply to operations related to the accidental spillage of more than five (5) gallons but no more than 42 gallons of VOC-containing liquid.
- 4.3 Except for the requirements in Section 4.3.1 to Section 4.3.5, the requirements of this rule shall not apply to the emergency excavation of contaminated soil performed by, at the direction of, under the jurisdiction of, or pursuant to the requirements of, an authorized health officer, agricultural commissioner, fire protection officer, or other authorized state or local government officer.
- 4.3.1 Whenever possible, the APCO shall be notified by fax or by other approved methods prior to commencing such excavation of contaminated soil.
- 4.3.2 No later than 48 hours following the commencement of the excavation, the operator shall notify the APCO in writing, in accordance with Section 6.1. No later than 30 working days after excavation is completed, the operator shall provide the APCO a written verification of completion of the emergency excavation, in accordance with Section 6.2.

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- 4.3.3 The operator shall maintain records pursuant to Section 6.3.1.
- 4.3.4 The operator shall cover the excavated contaminated soil with a tarp or other covering within 24 hours of excavation. Within 30 days of excavation, the soil shall be decontaminated, recycled, disposed of in an approved facility, or returned to excavation and permanently covered with at least six (6) inches of uncontaminated soil, unless otherwise directed by an authorized health officer, agricultural commissioner, fire protection officer, or other authorized state or local government officer.
- 4.3.5 The operator shall also comply with all applicable requirements of Section 5.3 and Section 5.4.

5.0 Requirements

5.1 Excavation of Contaminated Soil

The operator excavating contaminated soil shall comply with the following:

- 5.1.1 A written notice, according to Section 6.1, shall be submitted to the APCO prior to commencement of excavation of known contaminated soil. Where contaminated soil is discovered during excavation, operators shall provide written notice according to Section 6.1 within 48 hours after detection. No later than 30 working days after excavation is completed, the operator shall provide the APCO a written verification of completion of the excavation, in accordance with Section 6.2.
- 5.1.2 Any excavation of soil resulting from operations related to contaminated soil shall be monitored for VOC contamination during the excavation and at least once every 15 minutes, unless the excavated soil is treated according to Section 5.2.1.
 - 5.1.2.1 All readings shall be taken using the applicable test methods in Section 6.5.2.
 - 5.1.2.2 All VOC concentration readings shall be recorded according to Section 6.3.4.
- 5.1.3 Excavated soil that has been detected as contaminated soil shall be placed in storage piles and handled as required by Section 5.2, and
- 5.1.4 Excavated contaminated soil shall be decontaminated, recycled, disposed of in an approved facility, returned to excavation and permanently covered with at least six (6) inches of uncontaminated soil, or transported to a location outside of the San Joaquin Valley Air Basin within thirty

(30) calendar days from the time of excavation or as directed by an authorized health officer, agricultural commissioner, fire protection officer, or other authorized state or local government officer having jurisdiction.

5.2 Handling of Contaminated Soil

The operator handling contaminated soil shall comply with the following:

5.2.1 For VOC concentration of the excavated contaminated soil measuring at 1,000 ppm or greater, the contaminated soil shall be sprayed with water or vapor suppressant and be subject to the following requirements in addition to all applicable requirements of the rule:

5.2.1.1 Place the contaminated soil in sealed containers as soon as possible, but no more than 30 minutes after excavation, and handle pursuant to Section 5.1.4, or

5.2.1.2 Load the contaminated soil into trucks as soon as possible but no more than 30 minutes after excavation, moisten with additional water, cover as required in Section 5.3, and transport immediately to an approved facility, or

5.2.1.3 Implement other approved alternative storage methods and handle pursuant to Section 5.1.4.

5.2.2 Storage piles of contaminated soil shall be clearly isolated and identifiable from storage piles of uncontaminated soil according to Section 6.3.2,

5.2.3 Storage piles of contaminated soil that have been inactive for more than 60 consecutive minutes shall be subject to one of the following:

5.2.3.1 Treat with water or a vapor suppressant and cover with heavy-duty plastic sheeting to reduce VOC emissions. The covering shall have at least a six-foot overlap of adjacent sheets, be securely anchored, and have minimal headspace where vapors may accumulate, or

5.2.3.2 Cover with a layer of uncontaminated soil no less than six (6) inches deep.

5.2.4 A visual inspection of all storage piles of contaminated soil shall be conducted at least once every 24 hours, except when operators do not report to the facility for a given 24-hour period, to ensure the integrity of the covered surfaces and compliance with Section 5.2.5. Record of the visual inspections shall be maintained pursuant to Section 6.3.3.

5.2.5 Aeration of contaminated soil shall not be allowed except that which occurs during removal or addition of contaminated soil to a storage pile. This prohibition includes the use of contaminated soil in daily, intermediate, or final cover operations at disposal sites.

5.3 Transportation of Contaminated Soil

The operator transporting contaminated soil, whether by truck or other means of transportation, shall comply with all of the following prior to leaving the facility:

5.3.1 Any truck or trailer transporting contaminated soil shall be filled such that contaminated soil does not extend above the sides or rear of the truck,

5.3.2 Contaminated soil shall be treated with water or a vapor suppressant and covered with an continuous heavy duty plastic sheeting or other covering to prevent spillage of contaminated soil during transport, and

5.3.3 Chain-of-custody records shall be maintained according to Section 6.3.1 by the operators to document transfer of the transported contaminated soil.

5.4 Ex-situ Decontamination of Contaminated Soil

The operator decontaminating soil shall comply with the following:

5.4.1 VOC emissions from the decontamination of contaminated soil shall be controlled by one of the following:

5.4.1.1 Installation and operation of a VOC collection and control device with a VOC destruction or removal efficiency of at least 95%, or

5.4.1.2 Any other approved VOC control device demonstrated to be equivalent.

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- 5.4.2 Key system operating parameters shall be monitored to demonstrate compliance of the VOC control device during decontamination operations. Examples of key system operating parameters may include, but are not limited to, temperatures, pressures, and flow rates.
- 5.4.3 VOC control device shall be operated and maintained in accordance with the manufacturer's recommendations and any additional operating and maintenance standards determined necessary by the APCO and EPA to ensure proper operation of the VOC control device.
- 5.4.4 Decontaminated soil shall be subject to the following requirements:
 - 5.4.4.1 Monitor soil for contamination using the test method in Section 6.5.2 and
 - 5.4.4.2 Record all VOC concentration readings according to Section 6.3.4.
- 5.4.5 Decontaminated soil measured as contaminated shall comply with all applicable requirements of this rule and be subject to one of the following:
 - 5.4.5.1 Return the contaminated soil to the excavation and permanently cover with six (6) inches or more of uncontaminated soil, or
 - 5.4.5.2 Decontaminate the contaminated soil to the extent that the soil is no longer considered contaminated as defined in Section 3.17, or
 - 5.4.5.3 Transport the contaminated soil to an approved disposal facility, or
 - 5.4.5.4 Transport the contaminated soil to an approved treatment or recycling facility, or
 - 5.4.5.5 Transport the contaminated soil to a location outside of the San Joaquin Valley Air Basin.
- 5.4.6 Decontaminated soil that is to be treated as uncontaminated soil shall require soil samples to be obtained from each storage pile of according to Section 6.6 and tested using the applicable test methods in Section 6.5.3 or Section 6.5.4.

6.0 Administrative Requirements

6.1 Written Notice of Excavation Activity

The operator shall include the following information in the notice of excavation activities required by Sections 4.3 and 5.1:

- 6.1.1 Names and addresses of operator(s) performing and responsible for excavation,
- 6.1.2 Location of site where excavation will occur,
- 6.1.3 Scheduled starting date of excavation. If the excavation does not commence on the start date, renotification is required,
- 6.1.4 Estimated volume of soil to be excavated,
- 6.1.5 Estimated volume (in gallons) of VOC liquid spilled in the soil, if known, and
- 6.1.6 Where emergency excavation is conducted at the direction of an authorized officer, pursuant to Section 4.3: name, title and contact information of the authorized officer, and a copy of the signed emergency declaration from the authorized officer.

6.2 Written Verification of Completion of Excavation Activity

The operator shall include the following information in the written verification as required by Section 4.3 and Section 5.1.

- 6.2.1 Names and addresses of operator(s) performing and responsible for excavation,
- 6.2.2 Address of site where excavation occurred,
- 6.2.3 Date(s) of excavation,
- 6.2.4 Estimated volume of contaminated soil excavated, and
- 6.2.5 Estimated average VOC content of the contaminated soil or estimated volume of VOC contaminant, and
- 6.2.6 Final disposition of the contaminated soil.

6.3 Recordkeeping

Records shall be retained for at least five (5) years, shall be readily available, and shall be made available to the APCO upon request.

6.3.1 Recordkeeping Requirements for Chain-of-Custody:

Operators shall maintain records at the time custody is transferred. Records shall include but are not limited to the following:

6.3.1.1 The identities and business addresses of the relevant parties such as the generator, transporter, and storage/treatment facilities,

6.3.1.2 The volume of contaminated soil generated or received,

6.3.1.3 All analytical data associated with the contaminated soil (this section does not apply to Section 4.3),

6.3.1.4 The date and location of excavation of the contaminated soil, and

6.3.1.5 The date and signatures of the operators at the time custody is transferred.

6.3.2 Recordkeeping Requirements for Excavated Storage Piles

Each storage pile shall be identified according to, but not limited to, the following information:

6.3.2.1 Location of storage pile.

6.3.2.2 Unique identification of storage pile.

6.3.2.3 Date that soil storage pile was excavated.

6.3.3 Recordkeeping Requirements for Visual Inspection

Operators shall maintain visual inspection records at least once every 24 hours except when operators do not report to the facility for that given 24 hours. The records shall include, but are not limited to the following information:

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6.3.3.1 Location and unique identification of each specific storage pile.

6.3.3.2 Name, date, and signature of operator inspecting the storage piles.

6.3.4 Recordkeeping Requirements for VOC concentration readings pursuant to Section 5.1 and Section 5.4.

6.3.4.1 The identities and business addresses of the relevant parties such as the generator or storage/treatment facilities,

6.3.4.2 The volume of contaminated or decontaminated soil,

6.3.4.3 Date of contaminated or decontaminated soil,

6.3.4.4 VOC concentration reading, and

6.3.4.5 The origin of the contaminated or decontaminated soil.

6.3.5 Calibrations for all approved monitoring instruments shall be recorded and kept available onsite.

6.4 Testing Requirements

6.4.1 The operator of a VOC control device used to decontaminate excavated soil shall demonstrate compliance with the requirements of Section 5.4.1 before operation of such system.

6.4.2 Source sampling to determine the compliance status of an emissions source shall be witnessed or authorized by District personnel.

6.4.3 The operator of the facility shall maintain a copy of the source test protocol. A copy of the source test results must be maintained for at least five years and be readily available to the APCO upon written or oral request.

6.5 Test Methods

Test methods referenced shall be the latest approved method. The following methods shall be used:

6.5.1 The initial boiling point of a liquid from samples of contaminated soil shall be measured in accordance with one of the following applicable methods:

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- 6.5.1.1 ASTM D86 for soil contaminated with petroleum liquid or
 - 6.5.1.2 ASTM D-1078-93 for soil contaminated with known organic chemical.
 - 6.5.2 The VOC concentration of soils shall be measured as hexane using an organic vapor analyzer, complying with EPA Reference Method 21.
 - 6.5.3 The VOC content of soil that can be reasonably demonstrated to be contaminated only with petroleum shall be determined by using EPA Reference Method 8015 or EPA Test Method 25D.
 - 6.5.4 The VOC content of soil that is contaminated by unknown VOC-containing liquids, or that cannot be reasonably demonstrated to be contaminated only with petroleum, shall be determined by using EPA Reference Method 8015 or EPA Test Method 25D. In addition to one of the aforementioned methods, the operator shall use EPA Reference Method 8260B or the gas chromatographic method in the Leaking Underground Fuel Tank (LUFT) Manual (October 1989).
 - 6.5.5 An operator may use an equivalent alternative test method to those listed in Sections 6.5.1 through 6.5.4 for which APCO and EPA approval has been obtained.
 - 6.5.6 When more than one test method or set of test methods is specified for any testing, a violation of any requirement of this rule established by any one of the specified test methods or set of test methods shall constitute a violation of this rule.
- 6.6 Soil Sampling Procedure for Decontaminated Soil
- 6.6.1 One composite sample shall be collected and analyzed for VOC for every 50 cubic yards of excavated soil that has been determined to be uncontaminated by the test method in Section 6.5.2. At least one (1) composite sample shall be collected from each storage pile within 12 hours of soil decontamination.
 - 6.6.2 A composite sample shall consist of one sample taken from the center of each of four (4) equal sectors using the procedures described in Section 6.6.3 or other approved methods.
 - 6.6.3 Samples shall be taken from at least twelve (12) inches below the surface of the pile using a driven-tube type sampler, capped and sealed with inert materials, and extruded in the lab in order to reduce the loss of volatile materials; or by using a clean brass or stainless steel tube (at least twelve

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(12) inches long) driven into the soil with a suitable instrument. The ends of the brass tube shall then be covered with aluminum foil, then plastic end caps, and finally wrapped with a suitable tape. The samples shall then be immediately placed on ice, or dry ice, for transport to a laboratory.

6.6.4 Chain-of-custody records shall be kept by the operators to document possession of a sample from the time it is taken in the field until it is analyzed.

7.0. Compliance Schedule

7.1 All contaminated soil excavation, handling, transporting, and decontamination projects shall be in compliance with the rule on and after March 20, 2008.

7.2 Any VOC control device whose initial installation occurs on or after September 20, 2007 shall be in full compliance with the requirements of the rule upon initial operation.

7.3 Any VOC control device installed prior to September 20, 2007 shall be in full compliance with the requirements of the rule no later than March 20, 2008.